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**DEPARTMENT of LINGUISTICS
CALIFORNIA STATE UNIVERSITY, FRESNO**

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A Sideward Movement Approach to Non-Constituent Deletion

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1 Introduction: Two Puzzles

This paper attempts to show that a sideward movement analysis of so-called “Left-Peripheral Deletion” (LPD; Sag (1976)) constructions improves on the traditional deletion analysis in at least two important ways. First, it avoids the need to appeal to the theoretically unsatisfying notion of non-constituent deletion. Second, under the new analysis, directionality effects (Ross (1970) and others) follow from independent properties of the computational system.

Two puzzles motivate the new analysis. First, note that under standard views, deletion affects a single constituent at PF, as in the following examples (strikeout text here and elsewhere show “deleted” material):

1.
 - a. I will eat parsnips, and you will [VP ~~eat parsnips~~] too (VP-Ellipsis)
 - b. Kim likes parsnips, and Dana [v ~~likes~~] kale (Gapping)
 - c. Parsnips disgust someone, but I don’t know who [IP ~~parsnips disgust~~] (Sluicing)

LPD forms, though, contravene this standard assumption. The apparent deletion targets a non-constituent in the following English examples:

2.
 - a. We often eat parsnips on Monday, and ~~we often eat~~ kale on Tuesday
 - b. Kim will give many parsnips to you, but ~~Kim will~~ not give a one to me

In (2a), the “deletion” targets a linear string rather than a constituent. In (2b), we find apparent discontinuous deletion as well. In verb-final languages such as Japanese, problems also arise in that the deletion takes place across a clausal boundary:

3. Robin-wa Kim-ni hon-o ageta, Robin-wa Terry-ni
 -TOP -DAT book-ACC give.PT -TOP -DAT
 zasshi-o ageta
 magazine-ACC give.PT
 ‘Robin gave Kim a book, and Terry a magazine’

The data in (2) and (3) point out what we shall call the Non-Constituency Puzzle. An attempt to avoid the puzzle with a general “delete under identity” rule overgenerates ungrammatical deletions:

4. a. *I prefer hot dogs with mustard, and you ~~prefer hot dogs~~ with ketchup
 b. *Kim will chop the parsnips, and Terry ~~will boil the parsnips~~

A second motivation for a new LPD analysis comes from directionality facts. Ross (1970) correctly notes that left-branching material appears to delete forward, and right-branching material appears to delete backward. In the English (2a), for instance, the elements *we*, *usually*, and *eat* each occupy a left branch, and indeed the deletion proceeds forward (keeping the first occurrence and deleting all subsequent/forward occurrences). In the Japanese example of (3), the topic *Robin-wa* occupies a left branch and deletes forward; the right-branching verb *ageta*, however, deletes backward. Ross’ generalization proves correct, but lacks explanatory power; nothing *a priori* would force left-branching material to delete forward rather than backward, for example. The Directionality Puzzle, then, consists of arriving at Ross’ correct generalization through an appeal to independently motivated principles.

We pursue here a movement-based account of LPD in our effort to solve the Non-Constituency Puzzle and the Directionality Puzzle. Our work owes an intellectual debt to Johnson’s (1994) analysis of Gapping, and in the following section we extend his essential idea to LPD constructions. We then recast the analysis in terms of Sideward Movement in an effort to clear up some possible theoretical difficulties.

2 LPD as ATB Movement (First Approximation)

Johnson (1994) gives an analysis of Gapping which involves Across-the-Board (ATB) movement of verbs from a coordination of (in effect) ν P conjuncts. Space limitations preclude a full discussion of this analysis here, but we will use it as a starting point and make the following extension:

5. LPD results from ATB verb movement from VP conjuncts.

Crucially, LPD constructions do not come about from an underlying coordination of clauses. Rather, they involve conjoined VP constituents, with a single

underlying subject base-generated in the [Spec, vP] position. Derivations for the forms in (2) under this idea become (slightly simplified):

6. a. [ip [i' often [i' [vp we [vp [vp eat parsnips on Monday] and [vp eat kale on Tuesday]]]]]]
 b. [ip We₁ [i' often [i' [vp t₁ eat₂ [vp [vp t₂ parsnips on Monday] and [vp t₂ kale on Tuesday]]]]]]
7. a. [IP [I' will [LP Kim [VP [VP give many parsnips to you] but [VP not [VP give a one to me]]]]]]
 b. [IP Kim₁ [I' will [LP t₁ give₂ [VP [VP t₂ many parsnips to you] but [VP not [VP t₂ a one to me]]]]]]

This analysis has several key points. First, the apparent deletion of the verb in the second conjunct is actually derived via verb movement. Second, for LPD-type constructions to result, the verb must raise in ATB fashion at least as high as the *v* position. A prediction thus follows: languages where the verb does not raise out of VP will lack LPD constructions; this prediction bears out (see Agbayani and Zoerner (2000) for data and further discussion). Third, anything external to the VP-coordination (such as the subject or adverbs such as *often*) will appear to be part of the “deleted” material because it has scope over the entire VP-coordination even though there is but one base-generated instance. Fourth, adjuncts to the second conjunct, such as *not* in (7b), can give the appearance of discontinuous deletion, since they do not take part in the ATB raising. We see, then, a solution to the non-constituency puzzle; apparent non-constituent deletion simply results from ATB verb movement.

The same analysis applies straightforwardly to head-final languages. The derivation for (3) becomes:

8. a. [IP [LP Robin-wa [[VP Kim-ni hon-o ageta] [VP Terry-ni zasshi-o ageta]]]]
 b. [IP Robin-wa, [LP t₁ [[VP Kim-ni hon-o t₂] [VP Terry-ni zasshi-o t₂]] ageta₂]

Here, the lone subject raises to the leftmost [Spec, IP] position, while the verbs undergo ATB movement to the clause-final I position. Apparent directionality effects, then, fall out as a result of properties of verb raising; either leftward to a head-initial I position, or rightward to a head-final I position (Koizumi (2000)). We do not need to stipulate a directionality on deletion processes, but can appeal to the head-initial/final status of the language in question.

The above analysis, in fairly straightforward fashion, offers a plausible solution for both the Non-Constituent Puzzle and the Directionality Puzzle. However, it does rely on the conceptually suspect notion of ATB movement. Since the original work

on ATB movement, it has remained a mystery just why ATB movement should exist, and why it should obviate Coordinate Structure Constraint violations. Recent work by Nunes (2001) attempts to recast ATB movement in terms of “Sideward Movement” instead. In the next section, we modify the above analysis by extending the Sideward Movement analysis to LPD constructions as well. Successful application of the concept of Sideward Movement not only elucidates the nature of ATB movement, but also, we argue, renders directionality effects without even having to appeal to the head-parameter.

3 Sideward Movement and LPD

We have argued that LPD involves coordination of VP constituents. We therefore need to present some preliminary assumptions regarding coordination and the notion of Spell-Out before developing our analysis of sideward movement.

We assume along with Johannessen (1993), Munn (1993) and Zoerner (1999), amongst others, that a coordinator (&) heads its own projection, which we will label &P. Munn (1993), in particular, has made the suggestion that in coordinate structures in English the & head and its complement (which functions as the second conjunct) form an &P which is adjoined to the first conjunct. A general template for two-termed coordinate structures in English under this idea becomes:

9. [CONJ 1 Conjunct 1 [CONJ 1 [&P and [Conjunct 2]]]]

Crucially, Conjunct 2 stands as the complement of the head &, and the &P structure is adjoined to Conjunct 1.

We assume, as a premise, the notion that derivational domains (‘cycles’) may be constructed in parallel, and that Spell-Out may apply multiple times (i.e., to each cycle, henceforth ‘Cyclic Spell-Out’; Uriagereka (1999)). For the structure in (9), we propose that Cyclic Spell-Out applies to the adjunct [*&P and [Conjunct 2]*] prior to its merger with Conjunct 1, and that the adjunct structure crucially must be Spelled-Out *before* the embedding structure. The logic is similar to that offered by Nunes and Uriagereka (2000) for Parasitic Gap constructions; according to this account, an adjunct is spelled out through Cyclic Spell-Out for linearization purposes prior to its merging with the embedding (i.e., projecting or ‘main’) structure. Complex adjuncts cannot be linearized with respect to elements in the ‘main’ structure, under the simple notion that asymmetric c-command maps to linear precedence between lexical items (Kayne 1994, Chomsky 1995 [chap. 4]). This is the case under the assumption that phrasal syntactic objects are not legitimate objects at the PF level, so that the computational system should not deliver complex structures to the phonological component through Spell-out, because the linearization procedure would not be able to determine precedence relations among all of the lexical items (e.g., the precedence relations between the

lexical items in the ‘main’ structure and the lexical items within the complex adjunct). The solution to the problem is to appeal to multiple Spell-Out (Uriagereka (1999)). In the case at hand, the adjunct &P is spelled out separately from [Conjunct 1] to which it adjoins, and in the phonological component its lexical items are linearized internal to the adjunct.¹ Furthermore, we claim that Spell-Out renders an element embedded within the spelled-out domain invisible for further computation (see also Nunes and Uriagereka 2000).

With these notions in mind, let us present the proposed partial derivation of (2a) repeated in (10a), with explanation to follow (angled brackets <...> enclose copies of material (eventually) deleted at PF, and ~~outline~~ text indicates spelled-out material):

10. a. We often eat parsnips on Monday, and ~~we often eat~~ kale on Tuesday
- b. Numeration: {We, often, eat, parsnips, on (2), Monday, kale, Tuesday, and}
- c. K = [&P and [VP eat kale on Tuesday]]
 L = [PP on Monday]
 M = [NP parsnips]
- d. K = [&P and [VP <eat¹> kale on Tuesday]] ← Copy verb
 O = [VP eat¹ parsnips on Monday] ← Merge verb with L, M via
 sideward movement
- e. K = [&P and [VP <eat¹> kale on Tuesday]] ← Cyclic Spell-out of K
- f. P = [VP eat¹ parsnips on Monday [VP [&P and [VP <eat¹> kale on Tuesday]]]] ← Merge K, O
- g. Q = [IP [I' often [I' [VP we [I' <eat¹> [VP <eat¹> parsnips on Monday [VP [&P and [VP <eat¹> kale on Tuesday]]]]]]]]] ← Merge v;
 Raise verb to v;
 Merge subject;
 Merge adverb

By hypothesis, the numeration provides only a single instance of the verb. The verb is initially merged in the adjunct &P (K), which must be Spelled-Out prior to its merger with the first conjunct VP. However, the [+V] feature within v needs to be checked, and we have multiple NP constituents needing theta-role assignment and Case-assignment. Therefore, in (10d) above, the verb (after having satisfied necessary Case/theta-role requirements within K), moves in sideward fashion as a Last Resort to the newly-created O. Movement is analyzed as the pair of operations

Copy + Merge (with copies not in the head of a chain deleted at PF). Within O, the moved verb can satisfy the necessary Case/theta-role requirements within that domain. Cyclic Spell-Out then applies, rendering K inaccessible to further computation. Subsequent operations (Merge and Move) render the desired surface order of terms. Note that if Sideward Movement of the verb does not apply (or does not apply prior to Cyclic Spell-Out) in (10d), then the verb cannot be copied in K and re-merged in domain O, since Cyclic Spell-Out would render K inaccessible to further computation (though the entire domain K itself can be merged into the larger structure, as its label information is still accessible to computation until K itself is further embedded within a spelled-out domain). As a result, the NP *parsnips* in O would not be licensed, causing the derivation to crash. The application of Sideward Movement of the verb is thus a Last Resort.²

The analysis above recasts ATB verb movement in terms of Sideward Movement motivated by Last Resort. The derivation involves but a single verb. Apparent ATB effects result from independent properties of the computational system: operations such as Copy, Merge and PF-deletion, and the design characteristics of the system itself, such as Parallel construction of cyclic domains, Cyclic Spell-Out and Last Resort. If correct, this analysis arrives at the benefits of the Johnson-type analysis of Gapping constructions without appealing to the theoretically unsatisfying notion of ATB movement.

4 Deriving Directionality Effects

We now turn to a derivation of a Japanese example to show that the present analysis can likewise render Directionality Effects. We will assume the following basic template for coordination in Japanese (as in Johannessen (1993) and Zoerner (1999), reinterpreted via a Munn (1993)-style adjunction structure for coordination):

11. [CONJ 2 [CONJ 2 [&P [Conjunct 1] &]] Conjunct 2]

This contrasts with the English-type template shown in (9). Crucially, here we find Conjunct 1 as the complement of & (this may in part result from the fact that head-final languages tend to have bound morpheme & terms; arguably right-clitics).³ Thus, Conjunct 1 and the & head form the &P adjunct which is adjoined to Conjunct 2.

Recall our claim that Cyclic Spell-Out applies to the &P adjunct prior to its merger with the ‘main’ structure; this means that the apparent “gap” will appear in Conjunct 1 in Japanese-type languages, rather than in Conjunct 2 as in the English example in the previous section. Otherwise, matters proceed largely as before. A partial derivation of (3) repeated as (12) is shown in (13) (we simplify here by glossing over VP-shells; also note that the example involves a phonetically null &):

12. Robin-wa Kim-ni hon-o Terry-ni zasshi-o ageta
 -TOP -DAT book-ACC -DAT magazine-ACC give.PT
 ‘Robin gave Kim a book, and Terry a magazine’
13. a. Numeration: {Robin, Kim, hon, Terri, zasshi, ageta, &}
- b. K = [&P [VP Kim-ni hon-o ageta] &]
 L = [NP Terry-ni]
 M = [NP zasshi-o]
- c. K = [&P [VP Kim-ni hon-o <ageta>¹] &] ← Copy verb
 O = [VP Terry-ni zasshi-o ageta¹] ← Merge verb with L, M via
 sideward movement
- d. K = [&P [VP Kim-ni hon-o <ageta>¹] &] ← Cyclic Spell-Out applies
 to K
- e. P = [VP [VP [&P [VP Kim-ni hon-o <ageta>¹] &]] Terry-ni zasshi-o
 ageta¹] ← Merge K, O
- f. Q = [VP Robin-wa [V' [VP [VP [&P [VP Kim-ni hon-o <ageta>¹] &]]
 Terry-ni zasshi-o <ageta>¹]] ageta¹] ← Merge v; raise verb to v;
 Merge subject

Again, by hypothesis the numeration provides only a single instance of the verb. Therefore, in (13c) the verb must undergo Sideward Movement to O as a Last Resort movement; otherwise, the derivation would crash due to the failure of Case/theta satisfaction in O, as well as an unchecked [+V] feature in *v*. Since the operation of Cyclic Spell-Out must apply to the [&P [Conjunct 1] &] structure prior to its merger with Conjunct 2 (because the lexical elements in &P could not be linearized at PF otherwise), K becomes invisible for further computation. Thus, Sideward Movement must apply as a Last Resort from Conjunct 1 to Conjunct 2, yielding the “backward” gapping pattern (in contrast to the English case, which yields “forward” gapping). The Sideward Movement analysis, then, along with the given configuration of coordination, derives the Directionality Effect without appeal to the head parameter or directionality conditions of any kind. Directionality Effects are the result of language-particular properties for coordination and universal operations and design characteristics of the computational system.

5 Conclusion

So-called LPD constructions have provided a puzzle in the literature, since they do

not conform to the standard expectation that only constituents delete. This paper attempts to show that LPD in fact involves no deletion at all. Rather, a Sideward Movement analysis seems to solve both the Non-constituent Puzzle and the Directionality Puzzle in fairly straightforward fashion. This preliminary work seems promising, and may extend to other putative deletion processes such as Gapping and Pseudogapping. This avenue of research may suggest that ultimately the grammar does not need deletion operations of this sort at all.

Notes

We would like to thank the audience at WECOL 2003 for helpful comments and discussion. Any and all remaining errors are our own.

- 1 This follows a more radical view of Cyclic Spell-Out than suggested recently by Chomsky (2001), where Spell-Out occurs only at each phase level.
- 2 Note that issues of computational complexity arise from the need to appeal to a certain degree of “look ahead” in the derivation. We leave this issue aside for now.
- 3 See also Johannessen’s (1993) analysis of unbalanced coordination in head-final languages, which lends further support for this treatment of coordination in Japanese.

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Cupeño Morphology is(n't)Inherently Stressful*

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1.0 Introduction

Stress in Cupeño is sensitive to the class of root morpheme involved in a construction. This fact has been accounted for in the literature (Alderete 2001) by proposing that certain roots are lexically marked as stressed while others are not. Roots claimed to be marked in the lexicon as stressed will always surface as stressed. This fact is proposed to follow from the Optimality Theoretic meta-constraint $ROOTFAITH \gg AFFIXFAITH$ (McCarthy and Prince 1995). In this paper we argue that the surface truth of this meta-constraint in Cupeño follows from the morpho-syntax of the language. We show below that the class of roots specified as stressed is that of main verbs, while those that are unstressed are light verbs. The structural position of these roots affects the timing of their spell-out (where phonological realization occurs), and the stress differences of these two classes can be predicted from this fact.

The account herein will assume the morpho-syntactic framework of Distributed Morphology (DM) (Halle and Marantz 1993). It will be shown that the properties of cyclic spell-out, working from the inside-out (Bobaljik 2000) can explain the primacy of root phonology over that of affixes given by the constraint above. This, along with Chomsky's (1995) theory of phases, will allow us to show that the root(stressed) vs. light(unstressed) verb paradigm falls out of a system in which these classes are structurally distinct.

2.0 Stress Patterns in Cupeño

Stress on the Cupeño verbal word almost universally falls on the root. The position of this stress is predictably initial (this is the default stress pattern in the language), but may be lexically prespecified to fall on a non-initial syllable of the root. This root stress will be subsequently called inherent in this text, although this terminology is not technically correct, as will be seen. When a syllable of the root is inherently stressed, stress will never shift to another syllable regardless of whether other inherently stressed morphemes are affixed

to the root. However, there are instances where the root is not inherently stressed. If this is the case, word stress is determined by the morphological make-up of the entire verbal word, including affixes. Affixes may also be inherently stressed (here in the usual, lexically-specified use of the word), but this is rare in the language. Inherently stressed affixes are only apparent when in construction with non-inherently stressed roots, as seen below. In 1) we show verbal words containing roots that are inherently stressed.

- 1a) /pe-ʔiy-pi/ → [pe-ʔi-pi] ‘He would go away’
3sg-go.away-subirr
b) /ʔáyu-qá/ → [ʔáyu-qa] ‘..He wants’
want-pres.sg
(Alderete 2001a: 473)

In 2) we see that on verbal words containing non-inherently stressed roots, stress may be either default initial, or may fall on an inherently stressed affix.

- 2a) /yax-em/ → [yáx-em] ‘(you.pl) say!’
say-clitic
(Alderete 2001b: 50)
b) /max-qá/ → [max-qá] ‘...giving...’
give-pres.sg
(Alderete 2001a: 470)

The inherently stressed affixes, and non-inherently stressed verbal roots in Cupeño can be seen in Tables 1 and 2, below.

Table 1: Inherently Stressed Affixesⁱ

-qá	‘present imperfective singular’
-qál	‘past imperfective singular’
-í	‘nominal base/object suffix’
-í	‘different subject subordinator’

Table 2: Stressless Verbal Roots

kusr	‘get/take’	nganga	‘weep’
max	‘give’	tewa	‘see’
neq	‘come’	tuku	‘carry with tumpline’
yax	‘say/stative BE’	meq	‘kill a single victim’
tava	‘put down’	muh	‘shoot with bow’
wen	‘put in’	kwa	‘eat’

When a non-inherently stressed root combines with more than 1 stressed affix, stress will fall on the leftmost affix.ⁱⁱ

- 3) /yax-í-qá-te/ → [yex-í-qe-te] ‘one who is going to say’
 say-nom-pres.sg-abso
 (Alderete 2001b: 59)

In section 3 below, Alderete’s OT account of the above facts will be briefly discussed. In section 6 we will re-analyse this data, arguing that the stress pattern seen above is best captured by looking to the morpho-syntax of the language.

3.0 Alderete’s Account

This section includes a short review of the aspects of Alderete’s account relevant to the present discussion. Alderete uses the proposed Optimality Theoretic universal ranking of ROOTFAITH>>AFFIXFAITH to explain why inherent stress on a root will always surface. In the tableau below, MaxProm entails realizing inherent stress. The fact that MaxPromRoot outranks MaxPromAffix ensures that inherent root stress will always surface.

Figure 1: Alderete’s Root Faithfulness

/pe + túl + qá	Max-Prom-Root	Max-Prom-Affix
a. pe-tul-qá	!*	-
•b. pe-túl-qa		*
c. pé-tul-qa	!*	*

(Alderete 2001b. modified)

This system assumes that whether a root is stressed or stressless is a lexical property. For examples with stressless roots, Alderete utilizes alignment constraints to explain the position of stress. These constraints are primarily proposed to account for the shifting of stress away from the Person-Number prefixes in the event of an inherently stressed suffix. As explained (see en. 1) these prefixes are not inherently stressed, and therefore the work performed by alignment constraints is considerably less than was assumed. We will argue below that the positioning of stress in these constructions can be explained within a theory that assumes cyclic spell-out.ⁱⁱⁱ

4.0 Distributed Morphology and Phases

The analysis we offer below is grounded in the theory of Distributed Morphology (Halle and Marantz 1993) and assumes that spell-out occurs at the strong phase (Chomsky 1995). Below we give a brief overview of these theoretical assumptions.

4.1 Distributed morphology

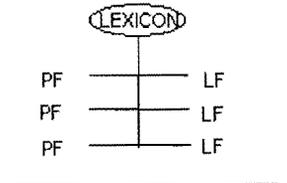
Distributed Morphology (DM) is the late-insertion, piece-based theory of grammar developed by Halle and Marantz (1993). The notion “distributed” comes from the architecture of grammar (still of the Y-type) that explodes the lexicon into three separate components; a set of morphosyntactic features manipulated by syntactic operations, a set of vocabulary items corresponding to phonological content, and an encyclopedia that gives semantic interpretation for vocabulary items in contexts. Syntax generates structures by operations that combine morphosyntactic features, which are then handed to the morphological component for interpretation. Interpretation consists of filling in syntactic nodes with phonological and semantic information, a procedure of vocabulary insertion termed Spell-out.

The process of interpretation in DM follows a cyclic order with the most embedded node spelled-out first. In addition, DM motivates morphological operations of fusion, fission, and morphological merger to account for mismatches between phonological and syntactic levels. Two terminal nodes occurring as sisters may merge together by fusion, creating a single node expressing the features contained in both. This accounts for the appearance of portmanteau forms in morphology. Fission is the opposite case where a terminal node splits into two sister nodes resulting in vocabulary insertion at both spots. Morphological merger closely approximates head-movement in syntax in adjoining terminal nodes under a zero-level category node (the head). Embick and Noyer (2001) also argue for *Local Dislocation*, a type of morphological merger where a zero-level element trades its linear position with its sister node. This captures morpheme rearrangement without violating the hierarchical relations formed in syntax.

4.2 Phases

It has been proposed that, possibly for computational reasons, the derivation of a sentence occurs in steps, or phases (Chomsky 1995, and subsequent work). Instead of the familiar T-shaped model of the derivational system, phases force us to look at the system as antenna-shaped.

Figure 2: Derivation with Phases



These phases have been proposed to be propositions, or agentive vPs and CP, but Legate (2003) has argued that even unaccusative and passive vPs constitute phases as well. It has also been put forth that the phase is triggered by certain functional heads, including vP and CP, but not necessarily limited to those two (see Matushansky 2003 for discussion of determining whether there are nominal phases). What is important to the discussion here is whether Cupeño stress is affected by phases. We will limit ourselves here to discussion of vP and CP, but there is evidence from Cupeño that DP phases exist as well.^{iv}

5.0 Cyclic Spell-Out from the Inside-Out

Spell-out in Cupeño is cyclic, in agreement with the constraints on allomorphy in line with Bobaljik (2000). Evidence of this is seen in number allomorphy in aspect suffixes and the thematic *-in* suffix.

Aspect suffixes and the thematic *-in* suffix have suppletive forms that are based on whether subject agreement is singular or plural. The *-in* thematic suffix, seen in (4), surfaces as *-men* when the subject is plural, while the aspectual suffixes have corresponding plural forms that agree with plural subjects.

(4) Suppletive *-in* suffixes

- a. wíchax-ne-n-qal
throw-1SG-IN-PAST.IMP.SG
'I was throwing it'
- b. wíchax-pe'-men-wen
throw-1PL-IN.PL-PAST.IMP.PL
'We were throwing it'

(5) Present Imperfective

- a. Né-ye 'apú=sre='ep tew-qá' ne-'ách-i
1SG-mother already=DUB=2SG.ERG see-PRES.IMP.SG 1SG-pet-OB
'Mother, did you perhaps just now see my pet?'

- b. 'é-mene=sre=l=pe nénen-we
 2SG-with=DUB=3PL.ABS=IRR go.along-PRES.IMP.PL
 'They are probably going along with you.'

(6) Future imperfective

- a. tukumáy=ne=pe ne-má-'aw nengú-nash
 tomorrow=1SG=IRR 1SG-hand-? hold-FUT.IMP.SG
 'Tomorrow I will hold it in my hand'

- b. tukumáy=che=pe che'-má-'aw nengú-wene
 tomorrow=1PL=IRR 1PL-hand-? hold-FUT.IMP.PL
 'Tomorrow we will hold it in our hands'

A condensed listing of the aspectual suffixes is seen in (7).

(7) Aspect Suffixes

	Past	Present	Future
Imperfective Singular	-qal	-qa	-nash
Imperfective Plural	-wen	-we	-wene

(Condensed from Hill, ms.)

The data in (4-6) demonstrates that number allomorphy in Cúpeño operates on the same constraints developed by Bobaljik (2000) for Itelmen. Allomorphy here is sensitive to the number features encoded in the terminal node that is structurally higher to the node being filled with vocabulary material. In this case the relevant nodes are $AGRS^0$, the exponence of subject agreement, which in Cúpeño is structurally the highest syntactic position filled with vocabulary material. The other two nodes which show sensitivity to $AGRS^0$, v^0 and ASP^0 , are structurally lower and the first to undergo spell-out. It is important to note that the opposite case never occurs in Cúpeño, there are no instances where features will trigger allomorphy for nodes that are structurally lower in the syntax. Aspect and the *-in* thematic suffix show sensitivity to morphosyntactic features that operate on a strict root-outwards basis. This lends support to the operation of *rewriting* proposed by Bobaljik (2000) where features are erased as they are filled in with vocabulary material and are no longer available to trigger allomorphy for nodes higher in the syntax. It also demonstrates how spell-out operates on a root-outward basis, beginning with the most embedded item (the root) and moving outward to nodes higher in the syntax.

6.0 Light vs. Main Verbs in Cupeño

In this section the syntactic and phonological status of the stressless verbal roots, presented in Table 2), will be discussed. These twelve items are the only verbal roots in Cupeño lacking inherent stress.

Verb roots in Cupeño fall into three classes, named for the theme suffix they are realized with. The three classes are *in*-class, *yax*-class and \emptyset -class verbs. *In*-class verbs are generally transitive, *yax*-class verbs are intransitive (including unaccusative and stative items) and \emptyset -class verbs are generally unergative. In Barragan (2003) it is argued convincingly that the stressless root *yax* (on par with the thematic verbal suffixes *-in* and *- \emptyset*) is a light verb.

Assuming *yax* to be representative of the stressless roots in table 2, we can therefore see a structural distinction between the stressed and stressless verbal roots in Cupeño. Light verbs head *vP*, and are unstressed, while main verbs head *VP*, and are stressed. But are the remaining stressless roots in Table 2 light verbs? The roots in the first column could be feasibly considered to be light verbs based on their semantics, while the roots in the second row seem to have more contentful meaning. As their semantic nature is inconclusive as to whether these verbs are occupying the head of *vP*, other evidence is necessary. The actual nature of these stressless roots may be determined by their distribution.

Almost absolutely, the above verbs do not appear in constructions with the light/thematic verbs *-yax* and *-in*. In the example below we see that stress falls on the Aspectual suffix, rather than the verbal root, revealing its unstressed nature.

- (8) /ne-tew-qál/ netewqál 'I saw.'
1sg-see-imperfect

If these roots are only found in constructions where they are undominated by *vP* (or are raising into *vP* themselves), as evidenced by the fact that they do not surface with *vP* affixes, this explains why they do not have inherent stress (to be expanded on below). This structural account is similar to that found in Oltra-Massuet and Arregi (to appear), dealing with stress in Spanish. In any case, these verbs do not seem to belong to the class of unergative \emptyset -class verbs (with the possible exception of *nganga* 'weep'), but nonetheless overwhelmingly surface without a thematic/light verb. These facts add credence to the proposal herein, that the phonological asymmetry between roots and affixes is not inherent to these morphemes, but is rather a reflex of their syntactic structural positions and the interaction of these positions with the mechanism of PF spell-out. Therefore Cupeño stress isn't due to inherent lexical specification.

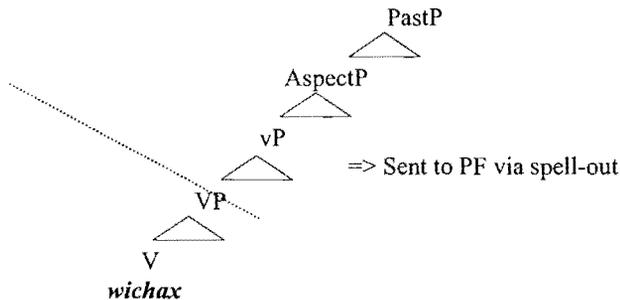
Further evidence for stressless roots being situated in *vP* is found in a few examples where these forms are found with the *-in* thematic suffix. What is revealing about these examples is that in these cases stress falls on the root

itself, and does not fall on the thematic suffix. In these cases the roots are now stressed forms and are no longer stressless, making it clear that stress assignment is a structural property that is correlated intimately with the position of the root relative to vP. The crucial data necessary here to differentiate the stress pattern below from the pattern of default initial stress is not available, as these constructions are rare. We predict that in the forms in (9), were they to occur with PN-prefixes, these prefixes would fall to the left of ‘-in’ in the examples below. Therefore the root will always be initial.

- (9)a. tew "see" téw-in "glance, take a quick look"
 b. qwa "eat" qwá'-in "eat a little"

The structural distinction between stressed and stressless roots must now be viewed as a consequence of cyclic spell-out that is sensitive to the phase boundary. In this case the relevant phase is vP, where VP, including verbal roots and any other material that is spelled-out in the first phase is sent to PF, where they are taken into consideration for stress assignment. Roots that are spelled-out in this first phase automatically receive stress because they are the only item in the verbal word to reach PF.

- (10) wíchax-ne-n-qal
 throw-1SG-IN-IMP.PAST.SG
 'I was throwing it'



PF cannot ‘look ahead’ to see if these main verb (VP) roots will undergo affixation, and therefore must assign word stress to the root. Once this stress assignment has taken place its position is fixed. This accounts for the phenomenon referred to as inherent stress throughout this paper. Main verb root stress is immobile because it is determined within the vP phase, while affixation occurs in the higher, CP, phase. As only one stress is permissible per phonological word, no morphemes affixed to the stressed root will be able to

surface as stressed. The vP phase boundary makes a structural and lexical division between stressed and stressless roots. Only those items that are spelled-out in the first phase receive ‘inherent’ stress. Stressless roots can receive initial stress, as seen in (2a), but this is actually a case of default initial stress that is assigned as a last resort.

One might wonder why the VP root does not raise through vP to host the affixes in the CP domain, escaping spell-out in the lower phase. The answer is that all VP roots in Cupeño are affixed with a light verb in vP. This v⁰ morpheme, as it is closer to the inflectional affixes, is the element that raises to host affixation (see Barragan 2003). The V⁰ therefore has no motivation to raise out of its initial merger position.

As a consequence of being situated in the head of vP, stressless roots escape spell-out in the first phase and are not spelled out until the next higher CP phase. The evidence in (9) may indicate that (at least some) stressless roots are generated within the VP and move up when there is no intervening light verb. Stressed forms like in (9) would then arise when this movement is blocked as described above, and the canonically stressless form is spelled out in the first phase, receiving ‘inherent’ stress.

Stress assignment for stressless roots falls under the domain of the second strong phase CP. In these light-verb constructions, no main-verb root or other inherently stressed item has been stressed at PF in the vP phase. Once CP has been constructed, PF will have to take into account all the items spelled-out in this phase (all elements in vP to AGRP - not only the vP root) but will only be able to stress one inherently stressed item from this phase.

We propose that the mechanism that PF uses to determine stress assignment in this higher CP is cyclic, following Bobaljik (2000), and shown to already be necessary in Cupeño in section 5, above. Stress will be assigned to the first inherently stressed affix that is spelled-out in that phase, working from the inside-out. The actual list of inherently stressed affixes in this CP phase is small and restricted to the items listed in table 1, repeated below. (see en. ii for a comment on the different subject subordinator)

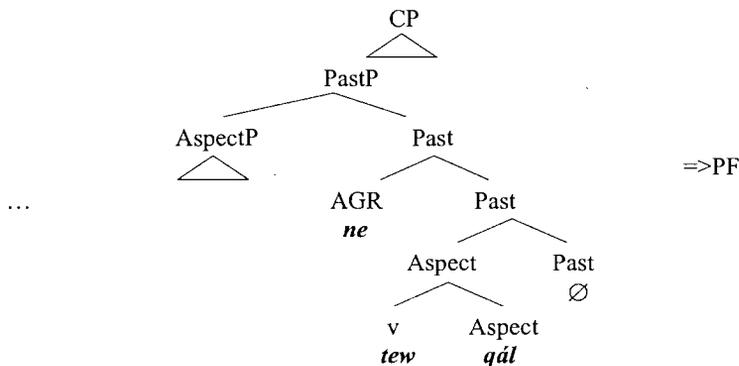
-qa	‘present imperfective singular’
-qal	‘past imperfective singular’
-i	‘nominal base/object suffix’
-i	‘different subject subordinator’

Recall that roots situated in vP are no longer considered inherently stressed roots, in fact ‘inherent’ stress on the main verb roots is a result of spell-out, and not a lexically specified property, and are not in competition with these inherently stressed affixes. As noted above, the head of the CP phase, C⁰, is privileged in that it will always receive stress at PF if there is no stressed VP root. The exception to this rule is that if both the nominalizer and the different

subject subordinator are affixed in the same construction, the nominalizer will receive stress. The behaviour of the different subject subordinator is complex, and not yet fully understood, so will not be included in the discussion below.

In light-verb constructions, then, PF will spell-out the morphemes involved from the inside-out. The innermost v^0 morpheme is spelled out first, but as it is not lexically marked to receive stress, stress will not be assigned. Inherent stress will only be assigned in this phase if one of the stressed aspectual suffixes listed above are present. When these affixes are spelled out in these constructions, no stress has yet been assigned. PF is then free to assign stress to these affixes, and no further stress will be permitted on the verbal word. If it is the case that no inherently stressed affix is spelled out at vocabulary insertion, then PF assigns default initial stress to either the root or the subject agreement prefix. The example below shows the structure of a stressless verbal word after movement has occurred.

- (11) ne-tew-qál
 Isg-see-IMP
 “I saw”



Default initial stress is therefore assigned as a last resort and either falls onto the root or the subject agreement prefix, if present^v. Default initial stress is not restricted to verbal roots, but can be seen to be a general rule of Cupeño stress assignment as evident in nominal forms with or without possessive prefixes. Examples of this is seen in (11)

(11) Stressless Nominal Roots with PN Prefixes

- a. pé-m-tema 'their tooth'
'3PL-tooth'

(Hill ms. Cupeño Nouns: 8)

- b. nú-yu 'my hair'
1SG-hair

(Hill ms. Cupeño Nouns: 6)

Stress assignment in nominal roots falls outside the scope of the current work, but has many striking parallels to stress assignment with verbal roots that demonstrates the importance of the phase boundary. In future work, we will argue that the relevant phase boundary that separates stressed nominal roots from stressless roots is the nominal phase nP.

7.0 Conclusion

We have demonstrated that verbal stress in Cupeño is best understood as a reflection of the syntactic position of the verbal morphology. The stressed vs. stressless root phenomenon is determined primarily by the interactions of cyclic spell-out and phase boundaries, and their interaction with PF. Stressed roots are those roots that are sent to PF during the first vP phase while stressless roots escape this phase and are not sent to PF until the next CP phase. This account does not need to stipulate inherent root stress and collapses the list of inherently stressed affixes to four affixes. The generalization that stress in Cupeño is determined derivationally is incompatible with Alderete's OT/realizational account. For the generalizations exposed in this paper to be accounted for within Alderete's framework, they would have to be stipulated. Future work will focus on tying the nominal system into this analysis, whereby stress and stressless roots are distinguished by the nP phase boundary.

NOTES

* We would like to thank Jane Hill, Heidi Harley, Andrew Carnie, Glynne Piggott, Heather Goad, Jonathan Bobaljik and Susi Wurmbrand for their advice, support and suggestions to this and earlier versions of this paper. Any remaining errors of fact or interpretation are the sole responsibility of the present authors. Abbreviations are as follows: ABS absolute case, DUB dubitative, ERG ergative case, FUT future, IMP imperfective, IN *-in* theme-class suffix, IRR irrealis, OB object case, PAST past, PL plural, SG singular, YAX *-yax* theme-class suffix.

¹One difference between Alderete's (2001) account and the one put forth here is that we do not consider the Person-Number prefixes in Cupeño to be inherently stressed. These prefixes receive default initial stress in constructions with no other stressed morphemes. Alderete takes (i) to counter-exemplify this claim.

/pi + pé + wen/ -- [pi-pé-wen] 'He put it'

3sgOB +3sg + PUT (Alderete 2001b: 50)

In (i) we take the object prefix /pi/ to be a clitic (it is not obligatory), and therefore adjoined to the phonological word. Default stress is then assigned to the subject prefix, as it is initial in the phonological word.

¹¹ The Different Subject Subordinator /i/ takes stress whenever in construction with non-inherently stressed roots that are not affixed with the nominalizer /i/. The reasons for this will be left for further research, but may be caused by this affix being situated in CP, a phase head.

¹² See also McCarthy (to appear) for arguments that alignment constraints (and all gradable constraints) must be ruled out as possible constraints in Optimality Theory.

¹³ Nominal roots in Cupeño, like verbal roots, are generally stressed. Those that are not stressed are a cohesive class, namely inherently possessed nouns. In Barragan and Newell (2003) we suggest that this non-canonical stress is caused by structural differences between inherently and non-inherently stressed nouns, which force the inherently stressed noun root to raise across a phase boundary (nP). This will be further explored in future work.

¹⁴ Person-Number prefixes in Cupeño are only present on Past tense verbs.

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How do Subject Idioms Make *YOU* Feel?

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1. Introduction

Within the framework of Distributive Morphology (DM), a strong prediction is made about impossibility of subject idioms, idioms which consist of lexically fixed subject and verb. This prediction follows from theoretical assumptions about the special status of the external argument with regards to its relationship to the verb (Marantz, 1984; Kratzer, 1996) and a strict locality requirement on availability of special meanings (Marantz 1997). The existence of subject idioms in a language thus poses a problem to DM and has to receive an adequate explanation. This paper examines subject idioms in Russian and explains why they are possible without breaking away from the mainstream theory of predicate-argument structure and theta assignment. The analysis suggested here demonstrates that these idioms are not 'true' subject idioms in a sense that their subjects are not external arguments of the verbs, but are base-generated internal arguments. Under this analysis, Russian subject idioms do not present a problem for DM.

The paper is structured in the following way: Section 2 gives an account of the reasons why 'true' subject idioms present a problem to DM. Sections 3 and 4 present an Experiencer analysis of Russian subject idioms with transitive verbs, supported by evidence from binding, case marking and word order. Conclusions are summarized in Section 5.

2. Why are Subject Idioms Problematic for DM?

Within the DM model, there is no lexicon in a sense of the storage of sound-meaning correspondences. The tasks performed by the lexicon in earlier theories are 'distributed' through several components of the grammar. Three such components (Lists) are identified: the Lexicon, the Vocabulary and the Encyclopedia. Crucially, the Lexicon is a set of bundles of morphosyntactic features relevant only to the principles of syntax. In other words, syntax does not manipulate words, but abstract morphemes like [Root], [sg]/[pl], [Det], [CAUSE], etc. The sound correspondences for abstract morphemes are encoded in the Vocabulary, defined as a set of Vocabulary Items, each of which provides

“the set of phonological signals available in the language for the expression of abstract morphemes” (Harley and Noyer 1999:467). The last piece of the puzzle is the Encyclopedia, which relates Vocabulary Items to meanings that are irrelevant for the computational system and are understood to be a part of extralinguistic knowledge.

In DM, any expression whose meaning is not predictable from its morphosyntactic structural description is understood as an *idiom* (Marantz 1997). Under this view, *cat* is an idiom since there is nothing in its compositional morphosyntactic make-up that can predict its reference to ‘a feline, furry pet’. Such understanding of the term includes conventional idioms, which are defined as “groups of words in a particular syntactic arrangement that receive a ‘special’ interpretation” (Harley and Noyer 1999:470). All idioms require Encyclopedia Entries, which connect the output of the grammar to non-compositional meanings. Thus no distinction is made between the derivation of idiomatic (in the conventional sense) and non-idiomatic sentences. Idiom chunks undergo all the syntactic and morphological processes that do other roots. When all ‘merge and move’ operations are completed and the bundles of features are shipped to LF, at the point of Conceptual Interface roots receive special meanings from the Encyclopedia depending on their syntactic context. For example, the verb *kick* in the context of *to __ the bucket* receives from the Encyclopedia the special meaning ‘die’, *cat* in the context of *let the __ out of the bag* is interpreted as ‘secret’, etc.

DM makes a prediction that ‘true’ subject idioms (verbal idioms with a frozen external argument and an open object position) should not exist on the basis of a number of theoretical assumptions about predicate-argument structure and particularly the special status of external arguments, which are discussed in the next section.

2.1. The special status of external arguments

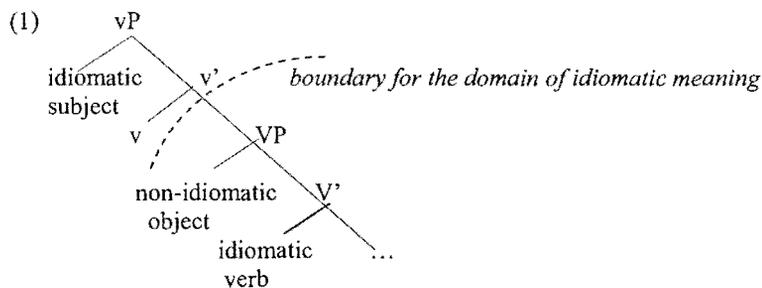
The distinction between internal and external arguments is one of the fundamental postulates of contemporary predicate-argument theory. The modern version of this distinction is two-fold: external and internal arguments originate in distinct structural positions and receive their semantic roles from different syntactic heads. On Marantz’s (1984) view, objects are theta-marked directly by the verb, whereas subjects receive their thematic role compositionally from the verb phrase and thus are not true arguments of their verbs. He argued that the choice of a particular object can influence the meaning of the predicate and the semantic role of the logical subjects of the sentence, but the choice of a particular subject does not determine the semantic role of the object or the meaning of the predicate on the whole. He supported this claim with verb+object combinations like *throw a baseball*, *throw a party* and *throw a fit*, in which the choice of the object influences the meaning of the predicate. Such

view of the thematic assignment explained the rarity of idioms that consist of an idiomatic verb and an idiomatic subject, since subjects are not true arguments of their verbs. Marantz claimed that “idiomatic material should not appear as a logical subject” (1984:29) and that if subject idioms exist at all they either involve an unaccusative verb, in which case the syntactic subject of the sentence is the logical object of the verb (*The roof caved in on X*), or they have fixed sentential syntax (*What’s eating X?*), or they have a free possessive slot (*The cat’s got X’s tongue*).

Kratzer (1996) further develops Marantz’s argument and suggests that external arguments, particularly Agents, are introduced by Voice (equivalent to Chomsky’s (1993) little *v*), a functional head that takes VP as its complement. She argues that “any semantic connection between verbs and their external arguments must be mediated by the Event Argument, whereas verbs can directly select their internal arguments” (Kratzer 1996:115).

To summarize, external arguments have a special status because they are not true arguments of their verbs. First of all, they are introduced by a separate head (Voice/ *v*), and secondly they are not theta-marked directly by the verb, but by the functional head projecting them. This structural peculiarity of external arguments is the reason why they are predicated not to be parts of verbal idioms.

Marantz (1997) argues for a very specific locality requirement on the availability of idiomatic meaning. He proposes that the syntactic head which projects agents (little-*v*) defines a locality domain for special meanings, i.e. “nothing above this head may serve as the context for the special meaning of any root below this head, and vice versa” (Marantz 1997:208). If we assume that the derivation of idioms follows all the regular syntactic operations, the base-generated configuration of arguments of a subject idiom with an external argument should be as the one in (1).



Marantz’s locality requirement on idiomatic interpretation would predict that such a sentence could receive only non-idiomatic interpretation if any, since the external argument in Spec-*vP* cannot serve as context for the idiomatic interpretation of the verb root downstairs. We will see later in the paper that this

prediction is true. If the theoretical assumptions discussed above are true, any existing subject idioms must receive an analysis in which their subject is treated not as an external argument, but as a derived subject, which originates within the VP as in the case of unaccusative verbs.

3. Subject Idioms in Russian

In Russian, there are a number of idioms that seem to be good candidates for being true subject idioms, since they have idiomatic nominative subjects, idiomatic transitive verbs and free accusative objects. It is these idioms that present the most obvious problem for DM and are considered in this paper.

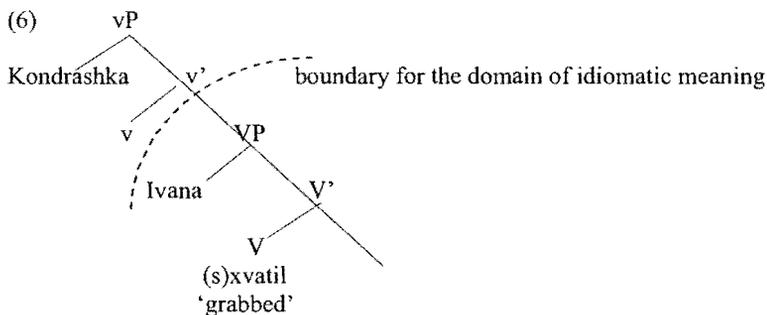
3.1. Russian subject idioms with a transitive verb

The sentences in (2)-(5) have an idiom (italicized) with transitive verbs (*(s)xvatit'* 'grab', *zajest'* 'eat up', *zamuchat'* 'torture/torment', *oxvatit'* 'seize', an idiomatic subject marked with nominative case and a non-idiomatic object marked with accusative case. The subject is either animate as in (2) or inanimate as in (3)-(5); the non-idiomatic object is always a person. Crucially, these sentences are not passive, but active constructions with the objects 'scrambled' to the sentence-initial position.

- (2) Ivana chut' *KONDRASHKA* ne (*s*)*xvat-il*.
 Ivan-acc almost Kondrashka-nom not grabbed
 'Ivan was almost grabbed by paralysis'¹ = 'Ivan was frightened to death'.
- (3) Ivan-a *zajela sovest'*.
 Ivan-acc ate-up conscience-nom
 'Ivan is eaten up by his conscience' = 'Ivan had guilty conscience'.
- (4) Ivana *zamuchali somnenija*.
 Ivan-acc tortured doubts-nom
 'Doubts tormented Ivan' = 'Ivan experienced serious doubts'.
- (5) Ivana *oxvatil strax*.
 Ivan-acc seized fear-nom
 'Fear seized Ivan' = 'Ivan experienced fear'.

At the first glance the idioms in (2)-(5) can be characterized as 'true' subject idioms in the terminology of Marantz since they are verbal idioms, which have a fixed logical subject and a free internal argument position. It is exactly this kind of idioms that should be impossible, if the postulates of DM about predicate-argument structure and locality requirements on special meaning are true. Consider the idiom in (2): if the subject *Kondrashka* is the external argument and is projected by little *v*, the verb (*s*)*xvatit'* 'grab' will not receive the special meaning 'frighten' since it does not appear in the immediate context of

Kondrashka, and the sentence will receive a non-idiomatic interpretation ‘Some person Kondrashka grabbed Ivan’.

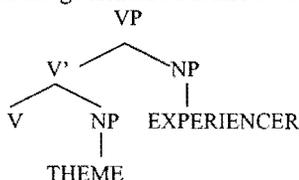


The other set of problems comes from the theta assignment: with non-idiomatic transitive predicates, the external argument receives its thematic role Agent from the Agent-projecting head *v*, whereas the internal argument is theta-marked by the main verb. But in (2), the thematic roles are not Agent and Theme as would be the case of non-idiomatic (s)*xvatil* ‘grab’, but *Ivan* is Experiencer and the other noun behaves like Cause. In fact, in all examples above, the non-idiomatic object, *Ivan*, is the Experiencer of an emotional state induced by the idiomatic predicate consisting of a transitive verb and the idiomatic subject which has a thematic role of Cause. Based on the semantics of these idiomatic sentences, we can hypothesize that they involve psychological causative verbs known in the literature as Object Experiencer (ObjExp) verbs. These verbs demonstrate special syntactic behavior, which led linguists (Belletti and Rizzi 1988, Pesetsky 1995, etc.) to conclude that their main property is the absence of the external argument from their theta-grid. Instead these verbs are believed to have two theta-roles, Experiencer and Causer².

3.2. Theme/Causer as an internal argument: theoretical background

Belletti and Rizzi (1988; henceforth B&R) view Causer (‘Theme’ in their terminology) as an internal argument of the verb and offer an unaccusative analysis to the ObjExp predicates, according to which both arguments of verbs like *frighten* in *Ghosts frighten John* are internal to the VP. In B&R’s terminology, the two arguments of *frighten* are Experiencer (*John*) and Theme (*ghosts*). Crucially for B&R, ObjExp verbs do not have an external argument, and their Themes are projected to a lower position than Experiencers. B&R’s D-structure configuration of ObjExp verbs is presented in (7) below.

(7) Base-generated structure of ObjExp verbs by B&R (1988) for Italian



B&R argue for this configuration of arguments based on the fact that in Italian as well as in English, the Experiencer in the object position can bind an anaphor contained within the subject. Consider examples from Italian (B&R 1988:312) and English (Pesetsky 1995:43) illustrating this backward binding phenomenon:

- (8) Questi pettegolezzi su di sé preoccupano Gianni più di ogni altra cosa.
 These gossips about self_i worry Gianni_i more than other thing
 'These gossips about himself worry Gianni more than anything else'
- (9) Each other_i's remarks annoyed John and Mary_i.

For the Experiencer to be able to bind the anaphor within the subject, argue B&R, the Experiencer must c-command the Theme, at least at the level of D-structure, thus suggesting the configuration in (7) for Italian.

3.3. Analysis

I argue that the idiomatic sentences presented in (2)-(5) above should be analyzed as ObjExp predicates with no external argument, but rather two internal arguments, Theme/Causer and Experiencer, both of which are generated within the VP. For the purposes of this paper, I will adopt B&R's unaccusative analysis of such predicates.

It has been suggested in the literature that the position of the arguments in ObjExp predicates can vary cross linguistically. In (10a-c) below there are configurations suggested in the literature for ObjExp verbs for Italian, German and French, which have been established on the basis of binding paradigms in these languages.

(10) Arguments in ObjExp predicates (B&R 1988, Herschensohn 1992)

(a) Italian	(b) German	(c) French
<pre> graph TD VP --> V_prime[V'] VP --> NP1[NP] V_prime --> V[V] V_prime --> NP2[NP] NP2 --> NP3[NP] NP2 --> EXPERIENCER[EXPERIENCER] NP3 --> THEME[THEME] </pre>	<pre> graph TD VP --> NP1[NP] VP --> V_prime[V'] NP1 --> EXPERIENCER[EXPERIENCER] V_prime --> V[V] V_prime --> NP2[NP] NP2 --> THEME[THEME] </pre>	<pre> graph TD VP --> V_prime[V'] VP --> NP1[NP] V_prime --> V[V] V_prime --> NP2[NP] NP2 --> NP3[NP] NP2 --> EXPERIENCER[EXPERIENCER] NP3 --> THEME[THEME] </pre>

Sections 3.3.1-3.3.2 demonstrate that Russian idiomatic predicates pattern with non-idiomatic ObjExp predicates with respect to binding and case licensing.

3.3.1. Backward binding in Russian ObjExp predicates

The backward binding paradigm is attested in Russian with ObjExp verbs. Consider the binding of reciprocals, *drug druga* ‘each other’ in (11a-b): the Experiencer can bind an anaphor inside the subject in the case of ObjExp predicates (a-b), but not in the case of a regular transitive predicates (c):

- (11)a. **Ivana i Mariju** radujut uspexi **drug druga**.
 [Ivan-acc and Mary-acc]; gladden-pl success-nom.pl [each other];
 ‘Each other’s success gladden Ivan and Mary’.
- b. **Ivana i Mariju** bespokojat problemy **drug druga**.
 [Ivan-acc and Mary-acc]; worry-pl problem-nom.pl [each other];
 ‘Each other’s problems worry Ivan and Mary’.
- c. ***Roditeli drug druga** ne priglasili **Ivana i Mariju**.
 Parents-nom [each other]; not invite [Ivan-acc and Mary-acc];
 ‘Each other’s parents didn’t invite Ivan and Mary’.

Both (11a-b) have ObjExp verbs, and the Experiencers, *Ivan* and *Marija*, bind the reciprocals inside the nominative subjects. In (11c), on the contrary, the reciprocals are not licensed, since the object NP cannot bind into the subject NP of a transitive predicate. This is the pattern attested in Italian and English ObjExp predicates.

Another instance of this pattern comes from cases when the anaphor is ‘buried’ within the nominative subject: the accusative *Peter* binds the anaphor within the subject only in the case of an ObjExp predicate (12a), but fails to do so in the case of a regular transitive predicate (12b), which follows the usual c-command requirement on the antecedent-anaphor relation:

- (12)a. Sluxi o **sebe** bespokojat **Petra**.
 [Gossips-nom about self_i-prep] worry Peter_i-acc
 ‘Gossips about himself worry Peter’.
- b. Sluxi o ***sebe** ploxo xarakterizujut **Petra**.
 [Gossips-nom about self_i-prep] badly characterize Peter_i-acc
 ‘Gossips about him characterize Peter badly’.

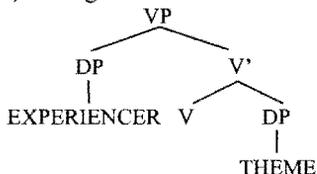
The primary piece of evidence in favor of the psychological analysis of the idiomatic verbs under question comes from the difference in binding between idiomatic vs. non-idiomatic usages of the same verb. When the verb *ovladet* ‘capture’ is idiomatic and psychological, the backward binding paradigm is

attested (13a), which is not the case when this verb is used as a regular transitive verb (13b):

- (13)a. *Strax za armii drug druga ovladel Novgorodom i Pskovom.*
 [Fear-nom for armies each other_i] captured [Novgorod and Pskov]_i
 ‘Fear for each other’s armies seized Novgorod and Pskov’.
- b. **Armii drug druga ovladeli Novgorodom i Pskovom.*
 [Armies-nom each other_i] captured [Novgorod and Pskov]_i
 ‘Each other’s armies captured Novgorod and Pskov’.

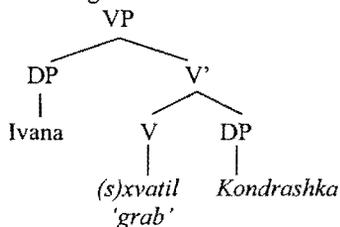
On the basis of these instances of anaphor binding by non-nominative arguments, we can conclude that in Russian ObjExp predicates, Experiencer can bind an anaphor within Theme/Causer. Such binding paradigm suggests the following configuration for ObjExp predicates in Russian similar to the one B&R proposed for Italian:

- (14) Base-generated structure of ObjExp verbs in Russian³



Going back to the idiomatic predicates presented in (2)-(5), we observe the same thematic relations that hold for non-idiomatic ObjExp predicates, hold for the idiomatic ones. Notice that the Experiencer analysis of idiomatic predicates allows for the idiom chunks to be base-generated in the most local of all configurations: the verb and its complement. Under such an analysis the idiomatic chunks are merged first and the idiomatic verb assigns the theta-role Theme/Causer to its idiomatic complement; its other theta-role, Experiencer, is discharged to a DP merged into its specifier.

- (15) Base-generated structures for the subject idiom ‘Ivana *Kondrashka sxvatil*’ = ‘Ivan was frightened to death’.



Binding tests applied to these expressions again confirm that Experiencer is positioned higher in the tree than Theme/Causer: two of the idioms can be modified with a PP containing reciprocals *drug druga* ‘each other’ within the Theme/Causer and these reciprocals are bound by the Experiencer:

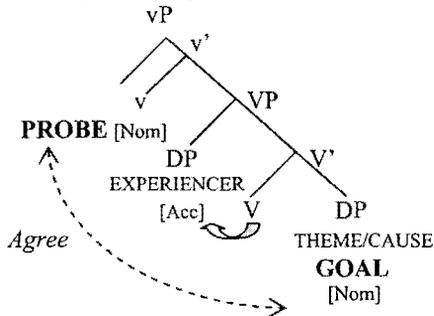
- (16)a. **Ivana i Mariju** *muchali somnenija* o chestnosti **drug druga**.
 [Ivan-acc and Maria-acc]_i tormented [doubts-nom about honesty each other]_i
 ‘Ivan and Maria were tormented by doubts about each other’s honesty’.
- b. **Ivana i Mariju** *oxvatil strax* za budush’eje **drug druga**.
 [Ivan-acc and Maria-acc]_i seized [fear-nom for future each other]_i
 ‘Ivan and Maria were seized by fear for each other’s future’.

3.3.2. Case licensing of ObjExp verbs

The configuration of arguments of ObjExp verbs argued for above raises a question about the case licensing of the arguments. Experiencer is marked with accusative case, whereas Theme/Causer receives nominative. The question that arises is why we get accusative case on Experiencer and not Theme/Causer, since the latter appears to be in the complement position of the verb. In their discussion of Italian, B&R (1988) propose a solution based on Burzio’s Generalization (Burzio 1986), which they modify in the following way: “V is a structural case assigner iff it has an external argument” (B&R 1988:332). They argue that in the case of ObjExp predicates, since the external argument is absent, the structural accusative case is unavailable, and Experiencer receives inherent case from the verb. Theme does not get any inherent case and has to move to get structural nominative case.

Russian has at least two inherent cases, dative and instrumental, and it has been suggested that accusative case could also be inherent for Experiencers in ObjExp predicates (Babyonyshev 1996). As for nominative case, it has been argued that in Russian it is licensed in the Spec-vP, the position for non-topical subjects (King 1995, Bailyn 2003). If we adopt a feature-checking analysis under *Agree* (Chomsky 2000), the little *v* is the Probe with the uninterpretable [Nom] feature. When the external argument is present, it is merged into the Spec-vP under *Agree* and ‘pure’ Merge. In the absence of the external argument, the little *v* probes down the tree for a potential Goal. In the case of ObjExp predicates, Experiencer gets inherent accusative case from the psychological verb and thus cannot serve as a Goal for [Nom] feature checking. The next available potential Goal is the Theme/Causer DP, which checks nominative case under *Agree* in-situ. The schema in (17) summarizes case licensing of ObjExp verbs in Russian.

(17) Case licensing of ObjExp verbs in Russian



3.3.3 Interim conclusions

In Section 3 we have seen that the distribution of thematic roles and structural configuration of arguments in Russian sentences with transitive idiomatic predicates suggest that they are ObjExp predicates in that both Experiencer and Theme/Causer are base-generated as the internal arguments of the verb. The idiomatic constituents (Verb+Theme/Causer) are base-generated in a local configuration (the verb and its complement) and thus obey Marantz's (1997) locality requirement on idiomatic interpretation. The theta-roles are assigned to both arguments by the idiomatic verb. The idiomatic predicates display the backward binding paradigm usually attested with ObjExp verbs. The case licensing for idiomatic DPs is identical to that of non-idiomatic ones in the case of both structural (nominative) and inherent (accusative and instrumental) cases. In short, subject idioms with transitive verbs discussed in this section are not 'true' subject idioms and therefore they present no problem to the framework of DM.

4. Additional Evidence for the Experiencer Analysis of Subject Idioms in Russian

This section provides additional evidence from word order in support of ObjExp analysis of Russian subject idioms with transitive verbs.

4.1. Word Order of Sentences with ObjExp Idiomatic Verbs

It is well accepted in the literature on Russian word order that the discourse-neutral order is SVO (Nom-V-Acc⁴). I demonstrate that it is true for sentences with regular transitive verbs, but sentences with ObjExp verbs behave differently. Consider sentences in (18a-c): they all are responses to a question that is usually used to yield discourse neutral, null-theme utterances as answers.

(18) Question:

‘What happened?’

Regular transitive verb:

- a. Ivan poluchil telegramu. Nom-V-Acc
 Ivan-nom received telegram-acc
 ‘Ivan received a telegram’.

ObjExp transitive verbs:

- b. Ivana rasstroili novosti. Acc-V-Nom
 Ivan-acc upset-pl news-pl-nom
 ‘The news upset Ivan’.
- c. Ivana bespokojat roditeli. Acc-V-Nom
 Ivan-acc worry-pres parents-nom
 ‘Ivan is worried by his parents’.

These data indicate that Nom-V-Acc is indeed a discourse-neutral order for regular transitive verbs, but for transitive ObjExp verbs Acc-V-Nom is discourse-neutral⁵. The idiomatic sentences introduced in (2)-(5) and repeated in (19) below, pattern with ObjExp verbs: with the exception of (19a) which has a ‘frozen’ focused word order⁶, they all have Acc-V-Nom order when pronounced with neutral intonation:

(19) Question:

‘What happened/ is happening?’

- a. Ivana chut’ KONDRASHKA ne (s)xvat-il. Acc-NOM-V
 Ivan-acc almost Kondrashka-nom not grabbed
 ‘Ivan was almost grabbed by paralysis’ = ‘Ivan was frightened to death’.
- b. Ivana zajela sovest’. Acc-V-Nom
 Ivan-acc ate-up conscience-nom
 ‘Ivan is eaten up by his conscience’ = ‘Ivan had guilty conscience’.
- c. Ivana zamuchali somnenija. Acc-V-Nom
 Ivan-acc tortured doubts-nom
 ‘Doubts tormented Ivan’ = ‘Ivan experienced serious doubts’.
- d. Ivana oxvatil strax. Acc-V-Nom
 Ivan-acc seized fear-nom
 ‘Fear seized Ivan’ = ‘Ivan experienced fear’.

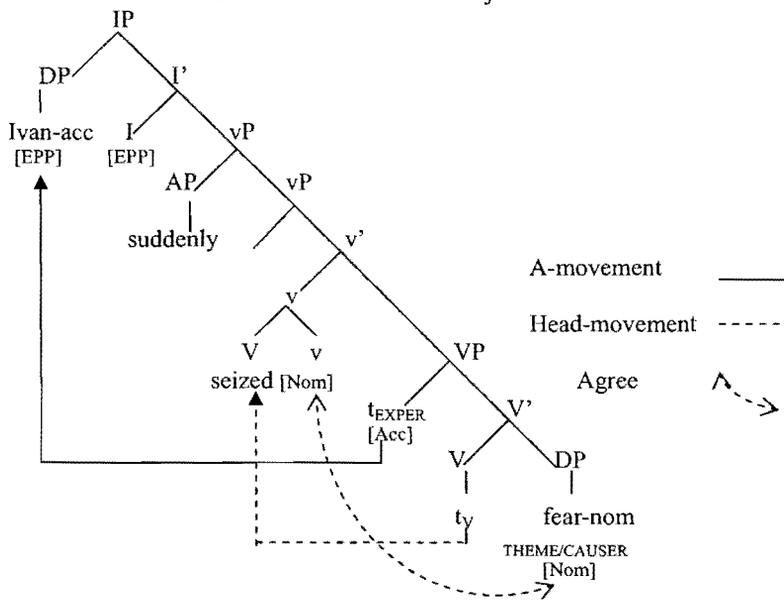
It is worth noting that even in ‘frozen’ idiom in (19a), the Experiencer occupies the sentence-initial position, a feature common for all idioms discussed in this paper. What is essential here is that the idioms in (19b-d) pattern with ObjExp verbs: in a discourse-neutral null-theme context, the word order is Acc-V-Nom or Experiencer-Verb-Theme.

4.2. Experiencer and the EPP checking

Why do Experiencers always appear sentence-initial in sentences with ObjExp predicates? One possible line of reasoning is based on Bailyn's (2003) analysis of scrambling in Russian. He demonstrates that the object of a transitive verb can undergo A-movement to the Spec-IP for the EPP checking. I propose to extend this analysis to ObjExp predicates: Experiencer raises to the Spec-IP to check the EPP feature of Infl, since it is positioned higher in the tree than Theme/Causer and thus is the closer target. On the basis of these assumptions, we can now suggest a complete derivation for the idiomatic sentences in (2)-(5). Consider (5) repeated in (20) below and modified by an adverb *vnezapno* 'suddenly' to demonstrate that Experiencer has indeed moved out of the vP/VP since most adverbs are considered to mark the vP boundary.

- (20) a. *Ivana vnezapno oxvatil strax.*
 Ivan-acc suddenly seized fear-nom
 'Fear suddenly seized Ivan'.

b. Full derivation of a sentence with a subject idiom



The diagram in (20b) shows that the Experiencer and the Theme/Causer are base-generated within the VP: in Spec-VP and as a sister to V respectively. Accusative case on the Experiencer DP is inherently assigned by the main verb;

nominative case is licensed on the Theme/Causer under *Agree* by the little *v*. The EPP feature of Infl is checked by the Experiencer *Ivan* since it is the closer target.

5. Conclusions

This paper addresses the important question of whether ‘true’ subject idioms exist. The data and analysis presented here demonstrate that Russian subject idioms fall into a class of predicates that do not have an external argument but a derived subject. The idioms presented in this paper behave like ObjExp predicates like *frighten* and *annoy* in both base-generated and surface word order. The evidence supporting such conclusion includes backward binding, case licensing and word order. In all these contexts, idiomatic predicates under question pattern with ObjExp predicates in their syntactic behavior. Thus the Russian data support Marantz’s predictions about the argument structure of subject idioms, which exclude Agents from the thematic grid of idiomatic verbs. On a larger scale, this paper provides support for the view of idioms argued for by Distributed Morphology. We have seen not only that the predictions made by DM about the locality restrictions on idiomatic interpretation hold for Russian, but also that there is nothing idiosyncratic in the derivation of idioms: they follow the same syntactic operations that their non-idiomatic counterparts do. It is the type of predicate, ObjExp vs. regular transitive, which determines whether the idiomatic meaning is available, since only in the first case the locality restriction on the idiomatic interpretation is observed.

6. Notes

¹ *Kondrashka* is a personal male name, but in case of this idiom it does not refer to a person. In its archaic idiomatic usage the word used to refer to paralysis, but most native speakers are not aware of this meaning anymore. In the 19th century literature, the word appears in an idiom ‘*X xvatil kondrashka*’ meaning ‘*X* was paralyzed’. The idiom in (2) is a modern day variant of this archaic idiom. It is resistant to any word order variations other than OSV with the focus stress on *Kondrashka*, since it immediately follows the focus marker *chut*. It is a ‘frozen’ idiom in terminology of Nunberg, Sag and Wasow (1994).

² The terminology differs from author to author: Theme (B&R 1988), Cause (Grimshaw 1990, Kratzer 1996), Causer (Pesetsky 1995), Stimulus (Arad 1998).

³ Kondrashova (1996) also suggests the same configuration for dative Experiencers in dative subject constructions.

⁴ Since terms ‘subject’ and ‘object’ can be ambiguous between base-generated and surface position of arguments, I use case marking labels in my discussion of word order.

⁵ Nom-V-Acc order with these verbs yields focused readings: one of the DPs must have extra stress, which leads to a contrastive focus interpretation.

⁶ The idiom in (19a) is a ‘frozen’ idiom in that resists scrambling and can only appear in Acc-NOM-V order with a focus stress on the subject. This focus stress is not identificational in the sense of Kiss (1998) since it doesn’t involve picking an element out of a set, but rather emotive in the sense of King (1995), who describes it as emphatic stress on a constituent in ‘emotive’ speech. Such focused

elements are “marked with sentence stress and occur immediately before the verb, following preverbal topic”(93), which is exactly the case of (19a).

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Nominative-Genitive Conversion^{*} as Last Resort

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1. Introduction

In this paper, I discuss the status of morphological Case and the organization of PF through observations of the so-called "*ga-no* conversion" or the "nominative-genitive (Nom-Gen) conversion" in Japanese. Based on the non-syntactic properties of nominative-genitive conversion in Japanese, I argue against the existing analyses of the phenomenon making use of purely syntactic devices (such as Move and/or Agree), and propose that Nom-Gen conversion arises in the course of morphological Case licensing in PF. I also discuss the cross-linguistic implication that the morphological nature of Nom-Gen conversion is attributed to the OV basic word order.

2. Nominative-Genitive Conversion: An Overview

2.1. Basic properties

It has been observed as taking place in a clause under a nominal head, typically in a relative clause or a noun-complement clause. In these environments, the leftmost noun phrase may be either marked with the nominative marker *ga* or with the genitive marker *no*, as shown in (1).

- (1) Nominative-Genitive Conversion in Japanese (S. I. Harada 1971)
- | | | | | |
|----|---|------------------------|-----------------|-------------------|
| a. | [[Tyuugokugo- ga/-no wakar-u] | nihonjin] | | |
| | Chinese- Nom/-Gen | understand-Pres | Japanese.person | |
| | 'a Japanese person who understands Chinese' | | | |
| b. | Taroo-wa | [[Hanako-ga/no | ki-ta] | koto]-o |
| | Taro-Top | Hanako-Nom/Gen | come-Past | fact-Acc |
| | sit-te | i-ru. | | |
| | know-Ger | be-Pres | | |
| | 'Taro knows that Hanako came.' | | | (Ger = Gerundive) |

Since S. I. Harada 1971, there are many works on Nom-Gen conversion in Japanese, all of which assume some sort of syntactic operations, such as NP-movement or head-movement, to associate the nominative variant and the genitive variant.¹

One piece of evidence for the syntactic approach to Nom-Gen conversion is that there is no accusative-genitive (Acc-Gen) conversion, as illustrated in (2).

- (2) Lack of Accusative-Genitive Conversion (Shibatani 1978, Saito 1982)
- a. [**Tyugokugo-o/*-no** hanas-u] nihonzin
Chinese-Acc/-Gen speak-Pres Japanese.person
 'a Japanese person who speaks Chinese'
- b. [[*pro*_i **yuurei-o/*-no** mi-ta]-no]-ni [[*pro*_i
ghost-Acc/Gen see-Past-NM-although
 odorok-ana-i] hito_i]-mo i-ru.
 surprise-Neg-Pres person-also be-Pres (NM =
 nominalizer)
 'There exists a person who does not get surprised even though s/he
 has seen a ghost.'

The lack of Acc-Gen conversion in contrast to the existence of Nom-Gen conversion may be arguably regarded as the familiar subject-object asymmetry, and the proponents of the recent account on the phenomenon in terms of feature-checking has argued that Nom-Gen conversion is a typical syntactic phenomenon sensitive to minimality, because, as schematized in (3), regardless of the choice of the Case-checking head, the subject is always closer to the higher functional head than the object phrase is.²

- (3) [_{DP} **D** [_{CP} **C** [_{AGR-SP} **AGR** [_{TP} **T** *pro*_i(subject) [_{VP} **NP** (object) **V**]]]]] NP_i
-

2.2. Lack of symptoms of syntactic operations in Nom-Gen conversion

2.2.1 *There is no minimality effects*

In spite of the evidence assessed by the proponents of syntactic approaches to Nom-Gen conversion, there is some data that shows the properties of Nom-Gen conversion that are NOT typical of syntactic phenomena. As for the minimality effects, it has been already pointed out by S. I. Harada (1971) that object may undergo Nom-Gen conversion. When the clause under a nominal head has a stative predicate, as in (1a), the object gets Nominative Case instead of Accusative (Kuroda 1965, Kuno 1973, among others). What is worth noting here is that in such cases, the object past the subject phrase is subject to conversion. If Nom-Gen conversion were indeed sensitive to minimality, then Case-checking from the higher functional head would be sensitive to the Case-feature of the subject and would fail to induce conversion on the object. But as (1a) shows, as long as the object can be marked with the nominative marker, it can undergo conversion. Hence the data like (1a) suggests that Nom-Gen conversion is not sensitive to minimality, and lacking sensitivity to one of the characteristics of syntactic phenomenon.

2.2.2. *There is no V-raising to C*

One possible way to derive Nom-Gen Conversion from a syntactic operation is to resort to head-movement. One such proposal is schematized in (4).

- (4) [_{CP} [_{TP} [_{VP} DP_{Subj}[ϕ] [_V [_{VP} ... V ...] v] T[ϕ]] C_{+Agr}]

For the head-raising analysis, Hiraiwa makes the following assumptions: First, he assumes that V and C and whatever intervening heads amalgamate in narrow syntax via AGREE, which corresponds to the special verbal inflection called the predicate-attributive (P-A) form. He further assumes that the P-A form involves a zero C, which is "affixal ([+Aff]), requiring C-T-v-V head amalgamation via AGREE. This amalgamate is assumed to be responsible for checking Genitive Case on the subject nominal phrase. As evidence for his claim, Hiraiwa gives an example like (5), in which Nom-Gen conversion takes place even though there is no phonologically overt nominal head above the subordinate clause:

- (5) *No need for a nominal head in Nom-Gen Conversion?*
 [John-ga/-no ku-ru] to ko-na-i to]-
 John-Nom/-Gen come-Pres and come-Neg-Pres and-
 de-wa ootigai-da.
 P-Top big.difference-Cop.Pres
 'It makes a great difference whether John comes or not.'
 (Hiraiwa 2002:548)

However, it is not clear if (5) does constitute decisive evidence for the head-raising analysis of Nom-Gen conversion; many native speakers, including myself, prefer having *no* in the position of C⁰ in (5). Notice also that it is possible to have different subjects for each conjunct in (5), as shown in (6).

- (6) The two conjuncts in (5) may have different subjects:³
 [[_{Gerund 1} John-ga/-no ku-ru] to [_{Gerund 2} **Bill-ga**
 John-Nom/-Gen come-Pres and **Bill-Nom**
 ku-ru to]]-**de-wa** ootigai-da.
 come-Pres and-P-Top big.difference-Cop.Pres
 'There's a big difference between *John's coming and Bill's not coming.*'

Given the data like (6), we can reconsider the structure of (5): It may not involve coordination of VP with the subject raised in an across-the-board manner; it in fact involves coordination of a much larger constituent. The fact that a postposition *de* attaches to the second conjunct in (5) indicates that what is coordinated is a *nominal* clause. The conjuncts in (5) can thus be taken as *gerunds*. By virtue of lacking finite T, gerunds do not involve V-raising, and therefore there is no V-to-C movement involved in Nom-Gen conversion.

2.2.3. The lack of semantic reflex

The lack of NP-raising in Nom-Gen conversion is verified by examples with quantifiers. A sentence with two quantifiers exhibits no ambiguity in Japanese *unless* the lower quantifier is scrambled over the upper one (Kuroda 1965, Hoji 1985, among others). Given a clause-bound nature of QR, a sentence with two quantifiers in reverse order may exhibit scope ambiguity as long as they belong to the same clause. If Nom-Gen conversion indeed involves NP-raising, then the prediction of the Movement approach is that the nominative variant and the

genitive variant would differ and that the only the genitive variant with NP-raising would be ambiguous after scrambling of the lower quantifier, as schematized in (7), since only in this case the lower quantifier is in the domain of the matrix clause and the two quantifiers are expected to commute with respect to scope.

- (7) a. The nominative-variant:

$$\begin{array}{l} [_{CP1} QP1_{(subject)} \quad [_{CP2} QP2 \dots]_{(object)} \quad V \dots] \text{unambiguous} \\ \rightarrow [_{CP2} QP2 \dots]_{(object)i} \quad [_{CP1} QP1_{(subject)} t_i \quad V \dots] \text{unambiguous} \end{array}$$
 b. The genitive-variant (Nom-Gen conversion has taken place):

$$\begin{array}{l} [_{CP1} QP1_{(subject)} \quad [_{QP2_j} [_{CP2} \dots t_j \dots]]_{(object)} \quad V \dots] \text{unambiguous} \\ \rightarrow [_{QP2_j} [_{CP2} \dots t_j \dots]]_{(object)i} \quad [_{CP1} QP1_{(subject)} t_i \quad V \dots] \text{ambiguous} \end{array}$$

The prediction appears to be borne out, which is shown by the contrast between (8) and (9).

- (8) The genitive variant - before and after scrambling
 a. Dareka-ga daremo-**no** ku-ru no-o mat-te
 someone-Nom everyone-**Gen** come-Pres NM-Acc wait-Ger
 i-ru.
 be-Pres
 'Someone is waiting for everyone's coming.' $\exists > \forall$
 b. [Daremo-**no** kuru no]_i-o dareka-ga_t mat-te
 everyone-**Gen** come-Pres NM-Acc someone-Nom wait-Ger
 i-ru.
 be-Pres
 'Someone is waiting for everyone's coming.' **ambiguous**;cf. (7a)
 (Sakai 1990:21)
- (9) Evidence for the movement approach? (Sakai 1990:22)

$$[Daremo-**ga** ku-ru no]_{i-o} \quad dareka-ga \quad t_i \quad mat-te$$
 everyone-**Nom**come-Pres NM-Acc someone-Nom wait-Ger
 i-ru.
 be-Pres
 'Someone is waiting for everyone to come.' $\exists > \forall$; cf. (7b) & (8b)

In the genitive variant (8), the two quantifiers show scope interactions after scrambling, patterning with monoclausal cases (cf. (7a)). However, ambiguity is lacking in (9), which is the nominative variant with fronting of a constituent containing the lower quantifier. The contrast between (8b) and (9) apparently suggests that the movement approach is on the right track.

However, notice that not all quantifiers can be used for the scope test in Japanese. As discussed in Ueyama 1998 and 1999, among others, only those

quantifiers such as *10 izyoo no* 'more than 10' or *55% no* 'of 55%' can be used to detect formal dependencies (in the sense of Fiengo and May 1994) established by c-command between quantifiers. Ueyama notes that it is less likely to obtain an ambiguous reading in a sentence with two quantifiers such as *10 izyoo no* or *55% no*, since this class of quantifiers (denoted as ^{FD}QPs in Ueyama's works) "resist a specific group reading more strongly than QPs such as *daremo* 'everyone' (Ueyama 1998:42)." It is thus necessary to modify the examples for the quantifier test, using the more appropriate kind of quantifiers.

The modified examples with Nom-Gen conversion are shown in (10) and (11).

(10) *(Nom-Gen Conversion and ^{FD}QPs: The nominative variant)*

a. *Before scrambling – unambiguous*

30%-no ginkoo-ga [50-izyoo-no kaisya-ga
 30%-Gen bank-Nom 50.or.more-Gen company-Nom
 toosan-suru-no]-o mat-te i-ru.
 bankrupt-do-NM-Acc wait-Ger be-Pres

30%>> 50 or more, *30% > 50 or more

'30% of the banks are waiting for 50 or more companies to go bankrupt.'

*'For 50 or more companies, 30% of the banks are waiting for them to go bankrupt.'

b. *After scrambling – unambiguous*

[50-izyoo-no kaisya-ga toosan-suru-no]-o
 50.or.more-Gen company-Nom bankrupt-do-NM-Acc
 30%-no ginkoo-ga t_i mat-te i-ru.
 30%-Gen bank-Nom wait-Ger be-Pres

30%>> 50 or more, ???*30% > 50 or more

'30% of the banks are waiting for 50 or more companies to go bankrupt.'

???*'For 50 or more companies, 30% of the banks are waiting for them to go bankrupt.'

(11) *Nom-Gen Conversion and ^{FD}QPs: The genitive variant*

a. *Before scrambling – unambiguous*

30%-no ginkoo-ga [50-izyoo-no kaisya-no
 30%-Gen bank-Nom 50.or.more-Gen company-Gen
 toosan-suru-no]-o mat-te i-ru.
 bankrupt-do-NM-Acc wait-Ger be-Pres

30%>> 50 or more, *30% > 50 or more

'30% of the banks are waiting for 50 or more companies to go bankrupt.'

*'For 50 or more companies, 30% of the banks are waiting for them to go bankrupt.'

b. *After scrambling – unambiguous*

[50-izyoo-no kaisya-no toosan-suru-no]-o
 50.or.more-Gen company-Gen bankrupt-do-NM-Acc

30%-no ginkoo-ga t_i mat-te i-ru.
 30%-Gen bank-Nom wait-Ger be-Pres
30% >> 50 or more, ??/?*30% > 50 or more
 '30% of the banks are waiting for 50 or more companies to go bankrupt.'
 '??/?*'For 50 or more companies, 30% of the banks are waiting
 for them to go bankrupt.'

(10) and (11), examples with QP^{FD}, show that there is no contrast between the nominative variant and the genitive variant even after the scrambling of the clause containing the target of Nom-Gen conversion: In both cases, there is no scope interactions between the two quantifiers after the scrambling. The lack of contrast between (10) and (11) indicates that there is no raising of the subject NP into the matrix clause in Nom-Gen conversion.⁴

2.3. Summary

To summarize, I have shown that *Nom-Gen* conversion in Japanese is not sensitive to minimality, and that no XP-movement or head-movement is involved in this phenomenon. These observations lead to the idea that Nom-Gen conversion takes place in a component *outside* narrow syntax.

3. A Morphological Approach to Nominative-Genitive Conversion

Based on the observations above that point to the non-syntactic characteristics of Nom-Gen conversion, I would like to claim that (i) the Nominative-variant and the genitive variant have the same structure in narrow syntax, and (ii) that Nom-Gen conversion arises in the Morphological component/PF.

3.1. Morphological Case as phonological Case features

At this point, I would like to consider the status of morphological Case in the theory of grammar. In proposing a restrictive theory of functional categories, which are fundamental elements in syntactic computation, Fukui and Sakai (2003) propose a visibility guideline for functional categories. Their claim is that functional categories, lacking inherent 'meaning' comparable to the meaning associated to lexical categories, need to be licensed in order to qualify as legitimate object in a restrictive syntactic theory. According to Fukui and Sakai (2003), there are essentially two ways to licensing functional categories, as summarized in (12).⁵

- (12) (i) Direct licensing: Be visible at PF by having its own
 (ii) Indirect licensing: Signal its existence by Induce movement
 (either phrasal or head movement)
 (Adapted from Fukui and Sakai 2003)

An interesting possibility is that these two options are mutually exclusive, so that if a functional category lacks phonetic content, it must trigger movement, and if a given functional category has phonetic content, it does not trigger

movement in C_{HL} . Note that this dichotomy of functional categories under this restrictive theory of functional categories fits with the abstract-morphology distinction of Case. I thus put forth the hypothesis that two kinds of Case are mutually exclusive, and that abstract Case features are active and detectable in C_{HL} , while morphological Case features are exclusively active in PF; for fuller discussion, see Harada 2002.

To be more specific about morphological Case licensing, I claim that their phonetic content must be properly activated after Spell-Out; otherwise nothing would block a subject DP in an ordinary transitive sentence incorrectly marked as accusative. As a mechanism for phonologically detectable Case-features, I assume Distributed Morphology (henceforth DM) (Halle and Marantz 1993, among others).⁶ The specific rules necessary to license Nominative and genitive Case in Japanese are given in (13).

- (13) Phonological Case-feature activation by Distributed Morphology:⁷
- a. Nominative Case licensing: /ga/ ↔ [CASE] /#NP_ (XP*) T (C) #
 - b. Genitive Case licensing: /no/ ↔ [CASE] /#NP_ (XP*) N #

The rules in (13) are assumed to interact with other operations of the grammar that are listed in (14).

- (14) Operations that interact with DM rules:
- a. Linearization. (in the sense of Fukui and Takano 1998)
 - b. Spell-Out

For Linearization, I adopt Fukui and Takano's (1998) mechanism, which, in a sense, does "the reverse of Merge" in PF - it targets maximal projections and breaks down a syntactic structure in a top-down manner. In essence, it gives the Spec-Head-Complement basic word order for languages with head-movement like English, and it gives the head-final order for languages without overt V-raising like Japanese; for details, see Fukui and Takano 1998.

Spell-Out maps a syntactic object to PF contingent upon Agree (Chomsky 2000). Following Fukui 1986 and Kuroda 1988, I assume that Japanese lacks (forced) agreement, which exempts the language Spell-Out (which is dependent on Agree) from occurring in a phase-by-phase manner. This assumption naturally leads to a question of at which point Spell-Out takes place in those languages lacking Agree. I hypothesize that the point in which a given lexical array is all used up is where Spell-Out occurs in this kind of language. In other words, Spell-Out takes place only once per linguistic expression in languages without syntactic Agree

3.2. Interactions of PF processes

Having laid out the theoretical assumptions, let us now consider how the DM rules and PF processes interact to yield Nom-Gen conversion. The points to bear in mind are as follows: (i) Nom-Gen conversion configuration consists of two phases (in the sense of Chomsky 2000, 2001); the relative or noun-complement clause, and if we assume DP as a phase, the DP containing the clause as well.

visible to the Case-marking rules, but because it lacks phonetic content, I assume that the rules apply to pro in a vacuous way and remains phonologically invisible even after all the PF processes have been applied.

3.3. Explaining the non-syntactic properties of Nom-Gen conversion

Having shown how the Nom-Gen conversion can be analyzed in Morphology, let us reconsider the non-syntactic properties of Nom-Gen conversion in light of the proposed PF analysis of the phenomenon. The lack of minimality effects, the lack of head-raising, and the lack of semantic reflex is straightforwardly accounted for. Since Nom-Gen conversion takes place outside C_{HL} , the phenomenon may not exhibit typical diagnostics of syntactic phenomena. Since Nom-Gen conversion arises through interactions of PF operations after Spell-Out, the two variants of Nom-Gen conversion have the same structure sent to LF, which accounts for the lack of semantics reflex with Nom-Gen conversion.

As for the lack of Acc-Gen conversion, I also regard it as being due to a principle operative at PF. Following Kuroda (1965, 1978, 1983), I assume a rule as in (16) to be responsible for activating the phonological content of the accusative Case feature:

- (16) DM rule for Accusative Case licensing:
 $/o/ \leftarrow \rightarrow [CASE] / _ V\#$ (cf. Kuroda 1965, 1978, 1983)

(16) essentially assigns *o* to the accusative Case features of the nominal immediately left-adjacent to V. Given an array of elements in a clause under a nominal head after Linearization as in (17), there is always more than one Case-licensing rule for the object phrase:

- (17) #Hanako hon kaw-v-ta mise#
 Hanako book buy-Past shop
 'the shop in which Hanako bought books'

Notice that the scope of this rule is much narrower than the nominative and the genitive rules. Given that the "Elsewhere Condition" (Chomsky and Halle 1968, Kiparsky 1973, among others) to be operative in PF, it then follows that (16), a more specific rule, is always preferred for licensing Case of the object NPs than the rules in (13).⁸

4. Nominative-Genitive Conversion across Languages

Having proposed the PF analysis of Nom-Gen conversion and having explained the properties of the phenomenon, now I would like to turn to a cross-linguistic remark on Nom-Gen conversion.

As noted in the literature, Nom-Gen conversion is often seen in head-final languages.⁹ In fact, as noted by Greenberg, among many others, there is a correlation between the OV basic word order and the Relative-Clause-Head Noun order in the nominal domain. Note that these languages have some special marking for T under a nominal head (being nominalized or attached by the attributive ending). Following Fukui and Takano 1998 in assuming that OV

order is due to the inactive status of a functional head, then if a given language does not have syntactically active *v*, then, the basic word order of the language is OV; if an OV language employs a particle system or a morphological Case system in licensing Case features on nominal constituents. Especially when such languages have a syntactically inactive T, either as its inherent nature of through affixation, the morphological Case system is activated for nominative Case licensing as well. Then we would expect that Case licensing would take place in conjunction with Linearization in PF, just as I have proposed for the case of Nom-Gen conversion in Japanese. By claiming that Nom-Gen conversion is a phenomenon taking place in PF, I make a connection between OV languages, which lack syntactically active functional categories, and the morphological Case system as a last resort to license Case features on nominal phrases.

5. Concluding Remarks

In this paper, I pointed out the problems with existing proposals on Nom-Gen conversion, which make crucial use of a feature-checking mechanism in C_{HL}). As an alternative, I accounted for Nom-Gen conversion in terms of interactions of Linearization and morphological case licensing via rules of Distributed Morphology, based on Fukui and Takano 1998 and Fukui and Sakai 2003. Various non-syntactic properties of Nom-Gen conversion were explained under the proposed morphological analysis of the phenomenon. An implication on the availability of Nom-Gen conversion across head-final languages was suggested along the lines of Fukui and Takano (1998).

Endnotes

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¹ See Bedell 1972, Shibatani 1978, Fukui and Nishigauchi 1992, Miyagawa 1993, Ura 1993, Watanabe 1996, Ochi 1999, 2001, and Hiraiwa 2002, among many others, for syntactic approaches to Nom-Gen Conversion in Japanese.

² Another syntactic that might be associated with Nom-Gen Conversion is the sensitivity to Unaccusativity. As Miyagawa (1989) notes, Nom-Gen conversion in a *toki*-clause (*when*-clause) is impossible unless the matrix predicate is unaccusative. If Miyagawa's observation is correct, then it would raise a question for the PF-analysis as to whether PF operations are sensitive to unaccusativity. However, it is not clear whether Nom-Gen Conversion is indeed sensitive to unaccusativity itself, since native speakers do not agree with Miyagawa on this point. It is also unclear why only a certain kind of adjunct clause is relevant in the availability of Nom-Gen Conversion with unaccusative predicates. I thank Keiko Murasugi for drawing my attention to this issue.

³ I am indebted to Takao Gunji, Hide Hoshi, Jim Huang, and Yukinori Takubo for helpful discussion on this point.

⁴ As pointed out to me by Hajime Hoji (personal communication), the examples may require further adjustment, given that the NP undergoing Nom-Gen conversion is in a specifier position.

⁵ For various proposals on licensing functional categories, see Cinque 1999, Koopman and

Szabolsci 2000, and Kayne 2003, among many others.

⁶ As pointed out to me by Heidi Harley (personal communication), employing DM to account for Case alternation raise a question of whether DM, which is originally proposed to constrain lexical insertion, can be operated on rule application. It may indeed be so, since under the assumption that abstract and morphological Case are mutually exclusive, rules of morphological Case licensing is but rules of lexical insertion.

⁷ '*' indicates more than zero occurrence; '#' indicates domain boundary.

⁸ For example like (1), in which the object NP undergoes Nom-Gen Conversion, I assume that the target of Case conversion is a clause and not the object NP of the verb itself. Following Kuroda (1965) and Endo et al. (2000), Kitagawa, I assume that the potential morpheme *-(r)e*-selects a clause headed by a phonologically null verb. Either by virtue of lacking a verbal feature in the head or by virtue of having a nominal C, the clause is subject to Case-licensing, to which the Nominative rule is applied.

⁹ See Comrie 1989 and the references cited therein. Examples of head-final languages with Nom-Gen Conversion include Turkish, Imbabura Quechua (Comrie 1989), Ancash Quechua (Cole 1987), and Hindi (Srivastav 1991).

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Implication of English Appositives for Japanese Internally Headed Constructions

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1 Introduction

This paper discusses the Japanese Counter-Equi NP (CENP) Construction given in (1), which would be a type of Internally-Headed Relative Clause (IHRC) Construction:

The CENP Construction

- (1) Keisatsu-wa [doroboo-ga nige-ru]-**tokoro**-o tsukamae-ta.
 police-TOP burglar-NOM escape-NONPST-occasion-ACC arrest-PST
 ‘The police arrested a burglar on the occasion in which s/he escaped.’

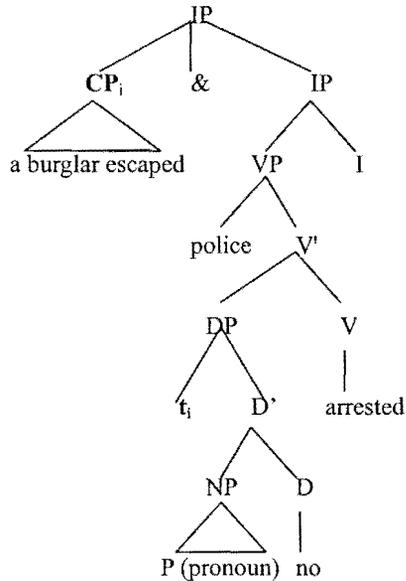
The IHRC Construction

- (2) Keisatsu-wa [doroboo-ga nige-ru]-**no**-o tsukamae-ta.
 police-TOP burglar-NOM escape-NONPST-NO-ACC arrest-PST
 ‘The police arrested a burglar who escaped.’

In the CENP Construction, an embedded NP is understood as an argument of the matrix verb, as in the IHRC Construction given in (2). In both (1) and (2), the embedded NP *doroboo* ‘burglar’ is interpreted as the Theme argument of the matrix verb *tsukamae* ‘arrest’. In this paper, I refer to the constructions in (1) and (2) as the CENP Construction and the IHRC Construction, respectively.

With regard to the IHRC Construction in (2), Shimoyama (1999) argues that, at LF, the embedded clause of the IHRC moves up and adjoins to the matrix clause IP, as illustrated in (3):

(3)



In (3), the embedded clause CP is adjoined to the matrix IP.

As discussed by Shimoyama (1999), Demirdache's (1991) analysis of English appositive relatives is quite similar to Shimoyama's analysis of the IHRC. Both of them assume that the embedded clause moves up and adjoins to the matrix clause IP or CP at LF. This analysis accounts for one similarity between the IHRC/CENP Construction and the English appositive. Even though the matrix clause is negated, an indefinite NP as the internal or external head is not understood under the scope of the negation, as shown in (4) and (5).

- (4) I didn't see a donkey, which eats too much. (Demirdache 1991)
 (*, if there exists no entity such that it was a donkey and I didn't see it.)
 (OK, if there exists a specific entity such that it was a donkey and I didn't see it.)
- (5) Keisatsu-wa [doroboo-ga nigeru]-no/tokoro-o tsukamae-nakat-ta.
 police-TOP burglar-NOM escape-NO/occasion-ACC arrest-NEG-PST
 'The police did not arrest a burglar on the occasion in which s/he escaped.'
 (*, if there exists no entity such that it was a burglar and it escaped.)
 (OK, if there exists a specific entity such that it was a burglar and it escaped.)

Shimoyama's (1999) and Demirdache's (1991) analyses correctly predict these phenomena. In (4) and (5), the embedded clauses are not under the scope of negation, because the embedded clause is moved out of the main clause and adjoined to the matrix clause at LF. If the indefinite is understood as specific, those examples are grammatical.

However, there are some differences between the CENP, which would be a type of the IHRC, and the English appositive.

First, quantifiers in the matrix clause cannot take scope over a variable within the embedded clause in the English appositive, whereas matrix quantifiers in the CENP can. As discussed in Demirdache (1991), quantifiers in the matrix clause cannot take scope over a pronoun in the appositive clause, as shown in (6).

- (6) *Every Christian_i forgives John, who warns him_i. (Demirdache 1991)

However, in contrast to the English appositive, quantifiers in the matrix clause can take scope over a variable in the CENP Construction, as shown in (7):¹

- (7) *Dono-baka_i-mo* [keikan-ga soitsu_i-o toriosae-ta]-tokoro-o
Which-fool-also policeman-NOM that guy-ACC hold down-PST-ACC
nagut-ta.
hit-PST
'Every fool_i hit a policeman_i on the occasion in which he_i held down that
guy.'

In this example, *soitsu* 'that guy' is bound by the quantified NP *dono-doroboo-mo* 'every burglar'.

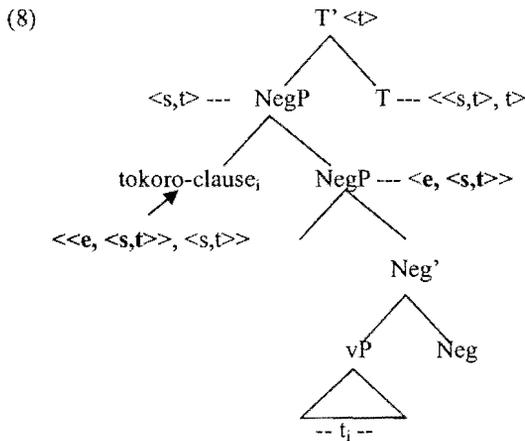
Second, tenses within appositives are like those in matrix clauses, as discussed in Demirdache (1991), whereas tenses within the *tokoro*-clause are not like those in matrix clauses. In the CENP, in spite of the matrix past tense, the embedded verb can have a non-past tense marker *-ru*, which shows that the embedded event was simultaneous with the matrix event, as shown in (1).

2 Proposal

In this paper, I provide two proposals.² First, adapting Shimoyama's (1999) analysis of the IHRC and Demirdache's (1991) analysis of the English appositive, I argue that the *tokoro*-clause of the CENP adjoins to the NegP (above vP), but below TP, as shown in (8). I refer to this first proposal as Proposal 1.

Second, in the adjoined position, the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the

embedded event, as shown in (8).³ In the adjoined position above NegP, but below TP, the position for the event argument of the matrix verb is not yet discharged. Therefore, the matrix clause can denote a relation which holds between an individual and an event, given that verbs have one extra argument position for events (Higginbotham 1985). For example, when the *tokoro*-clause combines with the matrix clause in (1), the matrix clause denotes a relation “ $\lambda x \lambda y [arrest (police, x, y)]$ ”, where y is a position for an event argument.



As a result, the relation denoted by the matrix clause also holds between an individual of the embedded event and the embedded event. Thus, the individual and the event are “shared” by the embedded clause and the matrix clause. I refer to this second proposal as Proposal 2.

3 Prediction

Proposal 1 correctly predicts the similarities and differences between the English appositive and the CENP. First, under this proposal, the *tokoro*-clause is adjoined to the matrix clause above NegP, as shown in (8). Therefore, the matrix Neg cannot c-command and take scope over an “internal head” indefinite NP within the *tokoro*-clause, like English appositives. Thus, even though the matrix clause is negated, an indefinite NP as the internal head is not understood under the scope of the negation, as shown in (5).

Second, under Proposal 1, the *tokoro*-clause is adjoined to NegP, but below TP. Furthermore, the matrix subject moves up to the Spec of TP to obtain Nominative Case. Thus, the matrix subject quantificational NP can

c-command a pronoun within the *tokoro*-clause and take scope over it unlike English appositives. This is illustrated in (7).

Third, assume that the non-past tense morpheme *-ru* in the embedded clause obtains a simultaneous reading if the embedded Tense is c-commanded (or controlled) by the matrix Tense (see Nakamura 1994).^{4,5} Under this assumption, the non-past tense morpheme *-ru* in the embedded clause obtains a simultaneous reading in the CENP Construction, as shown in (1). In the proposed structure in (8), the *tokoro*-clause is adjoined to the matrix clause below TP. Therefore, Tense within the *tokoro*-clause is c-commanded by the matrix Tense.

Proposal 2 predicts that a dual relation of entities and events should exist between the embedded clause and the matrix clause in the CENP Construction, since the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded clause and the embedded event.

The first piece of evidence for the second proposal comes from the interpretation of *takusan* 'a lot'. When the adverb *takusan* 'a lot' appears in the embedded clause, it can multiply the matrix event as well as the matrix individual, as shown in (9).

- (9) Keisatsu-wa [doroboo-ga **takusan** nigeru]-tokoro-o tsukamae-ta.
 police-TOP burglar-NOM a lot escape-occasion-ACC arrest-PST
 'The police arrested **many** burglars on one occasion in which they escaped.'
 'The police arrested burglars on **many** different occasions in which they escaped.'

The above CENP Construction, given in (9), can have either an object-related reading or an event-related reading. Under the object-related reading, there is one occasion in which many burglars escaped. Under the event-related reading, there are many different occasions on each of which at least one burglar escaped. In this case, it is also possible that the same burglar tried to escape a couple of times and he/she was arrested. The point is that, in each case, the number of occurrences of events and the actual number of burglars who were arrested in the matrix-clause and the *tokoro*-clause must be the same. Thus, the multiplication of the embedded event by the adverb *takusan* 'a lot' leads to the multiplication of the matrix event.

Proposal 2 accounts for the relation between the events of the matrix clause and the *tokoro*-clause. Under this proposal, the *tokoro*-clause of the CENP adjoins to the NegP, but below TP. In the adjoined position, the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the embedded event. In other words, the relation denoted by the matrix clause also holds between an individual of the embedded event and the embedded event. Thus, the individual and the event are "shared" by

the embedded clause and the matrix clause. As a result, the matrix event is connected with the embedded event. Therefore, the multiplication of the embedded event leads to the multiplication of the matrix event.

The second piece of evidence comes from the construction in which the Accusative Case marker *-o* attached to the *tokoro*-clause is replaced with the adverbial particle *-de*.

When we attach the locational adverbial particle *-de* to the *tokoro*-clause instead of the Accusative Case marker *-o*, there need not be an anaphoric relation between a “head” NP within the *tokoro*-clause and the understood matrix object NP. That kind of sentence is still grammatical, but it has a different meaning, as illustrated in (10):

- (10) Keisatsu-wa [gakusei_i-ga nigeta]-tokoro-**de** pro_{ij} tsukamae-ta.
 police-TOP student-NOM escaped-place-PRT arrest-PST
 ‘At the place where a student_i escaped, the police arrested pro_{ij} on one occasion.’
- (11) Keisatsu-wa [gakusei_i-ga takusan nigeta]-tokoro-**de** pro_{ij} tsukamae-ta.
 police-TOP student-NOM a lot escaped-place-PRT arrest-PST
 ‘At the place where a student_i escaped a lot, the police arrested pro_{ij} on one occasion.’

In (10), *tokoro* is used simply to express a place together with the adverbial particle *-de*. In this example, the matrix object *doroboo* ‘burglar’ is not a participant of the embedded event. The matrix object argument does not have to be a salient participant of the *tokoro*-clause in this construction. What is interesting is that, in this case, *takusan* ‘a lot’ in the embedded clause cannot multiply the matrix event, in contrast to (9), as shown in (11). Thus, the CENP Construction also loses the event relation between the matrix clause and the embedded clause when it loses an anaphoric relation between a “head” NP within the *tokoro*-clause and the understood matrix object NP.

Proposal 2 accounts for the correlation between the interpretation of the matrix object and the relation between the events of the matrix clause and the *tokoro*-clause. Under my proposal, the *tokoro*-clause of the CENP adjoins to the NegP, but below TP. In the adjoined position, the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the embedded event. When the *tokoro*-clause is used as a simple adverbial clause, the function denoted by the *tokoro*-clause cannot take the matrix verb as its semantic argument. Thus, the *tokoro*-clause loses the dual relation of individuals and events with the matrix clause.

4 The IHRC Construction

This section argues that we also need my analysis of the CENP Construction to account for some properties of the IHRC Construction.⁶

4.1 Predictions made by Proposal 1

This section discusses the predictions made by Proposal 1. First of all, in contrast to the English appositive, quantifiers in the matrix clause can take scope over a variable within the embedded clause in the IHRC Construction, as illustrated in (12):

- (12) ?Dono-baka-mo, [keikan-ga soitsu-o toriosae-ta]-no-o
 Which-fool-also policeman-NOM that guy-ACC hold down-PST-ACC
 nagurikaeshi-ta.
 hit back-PST
 'Every fool_i hit back a policeman_j on the occasion in which he_j held
 down that_i guy.'

Shimoyama's (1999) analysis incorrectly predicts that the example in (12) is ungrammatical. Under Shimoyama's analysis, the embedded clause moves up and adjoins to the matrix clause IP or CP at LF. Thus, quantifiers in the matrix clause cannot *c*-command and take scope over a pronoun in the embedded clause, in the same manner as the English appositive. However, this prediction is not borne out, as shown in (12). On the other hand, my analysis correctly predicts the phenomenon given in (12). As discussed in section 2, under my analysis of the CENP Construction, the embedded clause is adjoined to NegP, but below TP. Furthermore, the matrix subject moves up to the Spec of TP to obtain Nominative Case. Thus, the matrix subject quantificational NP can *c*-command a pronoun within the embedded-clause and take scope over it in the IHRC Construction.

Second, in contrast to the English appositive (Demirdache 1991), tenses within embedded-clauses are not like those in matrix clauses, as shown in (2), which is repeated as (13):

- (13) Keisatsu-wa [doroboo-ga nige-**ru**]-no-o tsukamae-ta.
 police-TOP burglar-NOM escape-NONPST-NO-ACC arrest-PST
 'The police arrested a burglar on the occasion in which s/he escaped.'

Under Shimoyama's analysis, Tense within the embedded-clause is not *c*-commanded by the matrix Tense. Assume that the non-past morpheme *-ru* in the embedded clause obtains a simultaneous reading if the embedded Tense is

c-commanded (or controlled) by the matrix Tense (see Nakamura 1994). Under this assumption, Shimoyama's analysis incorrectly predicts that the example in (13) cannot have a simultaneous reading. On the other hand, my analysis of the CENP Construction correctly predicts that the example in (13) can have a simultaneous reading. Under my analysis, Tense within the embedded-clause is c-commanded by the matrix Tense.

4.2 Predictions made by Proposal 2

Even though Shimoyama (1999) does not discuss the event-related phenomena discussed in section 3 of this paper, my proposal, namely, Proposal 2 correctly predicts the properties of the IHRC Construction.⁷

First, the adverb *takusan* 'a lot' in the embedded clause can multiply the matrix event, as shown in (14):

- (14) Keisatsu-wa [doroboo-ga **takusan** nigeru]-no-o tsukamae-ta.
 police-TOP burglar-NOM a lot escape-NO-ACC arrest-PST
 'The police arrested **many** burglars on one occasion in which they escaped.'
 'The police arrested burglars on **many** different occasions in which they escaped.'

In the same manner as the CENP Construction, the IHRC Construction in (14) can have an event-related reading. Under this reading, there are many different occasions on each of which at least one burglar escaped. On all those occasions, the police arrested him or her or them. Therefore, there were many events of arresting as well. Thus, the multiplication of the embedded event by the adverb *takusan* 'a lot' leads to the multiplication of the matrix event.

Proposal 2 gives a unified account of the relation between the events of the matrix clause and the embedded clause. Under this proposal, the *tokoro*-clause of the CENP adjoins to the NegP, but below TP. In the adjoined position, the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the embedded event. In other words, the relation denoted by the matrix clause also holds between an individual of the embedded event and the embedded event. As a result, the matrix event is connected with the embedded event. Therefore, the multiplication of the embedded event leads to the multiplication of the matrix event.

Second, when we attach the locational adverbial particle *-de* to the *no*-clause instead of the Accusative Case marker *-o*, the matrix object does not have to be an NP that has an obligatory anaphoric relation with an NP within the embedded clause. In this case, the simultaneity requirement between the events of the matrix clause and the embedded clause is also absent, although that kind of

sentence is still grammatical with a different meaning, as illustrated in (15):

- (15) Keisatsu-wa [hitojichi-ga takusan nigeta]-no-de doroboo-o
 police-TOP hostage-NOM a lot escaped-NO-PRT burglar-ACC
 tsukamae-ta.
 arrest-PST
 ‘Because many hostages escaped, the police arrested the burglar (on one occasion).’

In (15), *no* simply expresses a reason together with the particle *-de*. In this example, the matrix object *doroboo* ‘burglar’ is not a participant of the embedded event. What is interesting is that, in this case, *takusan* ‘a lot’ in the embedded clause cannot multiply the matrix event, in contrast to (14). Thus, the IHRC Construction also loses the event relation between the matrix clause and the embedded clause when it loses an anaphoric relation between a “head” NP within the embedded clause and the understood matrix object NP.

My proposal gives a unified account of the correlation between the interpretation of the matrix object and the relation between the events of the matrix clause and the *no*-clause. Under my proposal, the *no*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the embedded event after it adjoins to the NegP. When the *no*-clause is used as a simple adverbial clause, the function denoted by the *no*-clause cannot take the matrix verb as its semantic argument. Thus, the *no*-clause loses the dual relation of individuals and events with the matrix clause.

5 Conclusion

This paper discusses a type of Japanese IHRC Construction, namely, CENP Construction, considering Shimoyama’s (1999) analysis of the IHRC Construction and Demirdache’s (1991) analysis of the English appositive. As discussed in section 1, there are similarities and differences between the CENP Construction and the English appositive. Shimoyama’s analysis cannot capture the differences as it stands, since it assumes that the embedded clause of the IHRC moves up and adjoins to the matrix CP or IP in the same manner as Demirdache’s (1991) analysis of the English appositive.

In order to capture the properties of the CENP Construction, I argue that the *tokoro*-clause of the CENP Construction adjoins to the NegP (above vP), but below TP. This adjunction position of the *tokoro*-clause accounts for differences as well as similarities between the CENP Construction and the English appositive.

Furthermore, I propose that, in the adjoined position, the *tokoro*-clause takes the matrix clause as a relation which holds between an individual of the embedded event and the embedded event. This proposal also makes some

correct predictions concerning the properties of the CENP Construction, as discussed in section 3.

With regard to the IHRC Construction discussed in Shimoyama (1999), I argue that at least my analysis of the CENP Construction captures some properties of the IHRC Construction, which Shimoyama does not discuss at all.

Following Shimoyama (1999), this paper has proposed that the embedded clause moves up and adjoins to somewhere in the matrix clause, though the adjunction position under my analysis of the CENP Construction is different from that under Shimoyama's analysis of the IHRC Construction. The data which I have discussed in this paper would support this analysis. What is interesting is that Demirdache's (1991) analysis of the English appositive, which is discussed in this paper, and Srivastav's (1991) analysis of the correlatives also assume this kind of adjunction of the "relative clause" to the matrix clause. Furthermore, the "relative-clause" parts seem to have an interpretation analogous to a definite description (see Shimoyama 1999 and Srivastav 1991). I speculate that, as suggested by Srivastav (1991) concerning the IHRC in addition to the correlative, the "relative clauses" of the above four constructions might be a definite quantifier, though I need further research on this issue.

Notes

¹ As discussed by Saito and Hoji (1983), Hoji (1991) and others, the Japanese personal pronoun *kare* 'he' is not construed as a variable. On the other hand, the expression *sore* 'that guy' can be construed as a bound variable (Hoji 1990 among others).

² This analysis of the CENP Construction would be similar to Kuroda's (1978) analysis of the CENP Construction in that the object *tokoro*-clause moves up and adjoins to the matrix VP. To be specific, he claims that the *tokoro*-clause is base-generated within the direct object as a modifier. The *tokoro*-clause later moves up to a higher empty circumstantial adverbial node generated as a clause mate of the matrix verb.

³ I discussed my semantic analysis of the *tokoro*-clause in Hosoi (2003).

⁴ The simultaneous reading expresses a simultaneity between the matrix event and the embedded event, as shown in (1).

⁵ Nakamura (1994) analyzes the tense system of Japanese under Stowell's (1993) theory of tense. I cannot discuss the details of this theory of Tense in this paper because of lack of space. However, roughly speaking, the c-command relation between the matrix Tense and the embedded Tense is crucial for the simultaneous reading under this theory. In this paper, I am not following all the details of Stowell's theory. However, the c-command requirement for the simultaneous reading would be still valid even under my analysis of the CENP Construction.

⁶ However, I am not against Shimoyama's analysis of the IHRC Construction. In fact, I argue in Hosoi (2003) that we need both my analysis of the CENP Construction and Shimoyama's analysis of the IHRC Construction to account for the properties of the IHRC Construction.

⁷ Shimoyama (1999) assumes that the IHRC, namely, the *no*-clause in (2) denotes an individual.

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Realize-Morpheme: One Constraint, or a Family?*

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0. Introduction

Research on the morphology-phonology interface in the framework of Optimality Theory (Prince and Smolensky 1993) has long acknowledged the existence of a constraint that militates for morpheme realization (see Samek-Lodovici 1993, Gnanadesikan 1997, Walker 2000, Kurisu 2001 and others). Although considerable work has been devoted to defining and implementing the constraint, not all its consequences and theoretical implications have been duly discussed and understood.

In this paper I review some of the current definitions of *REALIZE-MORPHEME*, a constraint that requires the realization of phonological material in relation with morphological structure. I argue for the necessity of category-specific versions of the constraint, therefore for the existence of a family of constraints, as opposed to a single, category-neutral version of the constraint. Viewed as a family of constraints, *REALIZE-MORPHEME* helps make the correct empirical predictions for the phonology of Romanian nominals. From a cross-linguistic perspective, I show that category-specific versions of *REALIZE-MORPHEME* can be brought to bear on markedness hierarchies proposed in linguistic typology starting with Greenberg (1966).

The paper is organized as follows. In Section 1 I discuss previously proposed statements of *REALIZE-MORPHEME* and spell out the argument in favor of a definition in terms of correspondence between morphological and phonological structure in outputs. In Section 2 I spell out the details of the proposal and present the case of Romanian nominals, as evidence for the necessity of indexing *REALIZE-MORPHEME* for morpho-syntactic categories. Finally, Section 3 states the conclusion and outstanding questions raised by the paper.

1. Defining REALIZE-MORPHEME

In defining REALIZE-MORPHEME it is important to make it applicable to a wide range of morphological processes, such as affixation, reduplication and nonconcatenative morphology (stem-internal variation and truncation). Given this requirement, it is clear that a definition based on Input-Output correspondence cannot capture the whole gamut of inflectional morphology, because there is no input phonological material that can represent the expression of reduplication or nonconcatenative morphology.

Let us first examine the definition proposed by Kurisu (2001), which has the ambition of covering all the dimensions of morphological variation mentioned above. The proposal seems to represent an instance of Output-Output correspondence and is stated in (1):

- (1) Let α be a morphological form, β be a morphosyntactic category, and $F(\alpha)$ be the phonological form from which $F(\alpha+\beta)$ is derived to express a morphosyntactic category β . Then RM is satisfied with respect to β iff $F(\alpha+\beta) \neq F(\alpha)$ phonologically.

To implement definition (1), Kurisu proposes that candidates be compared with the hypothetical output of the bare stem, as it would emerge according to the general hierarchy of constraints active in the language:

(2)



A first point that can be made with respect to (1) regards the type of correspondence the definition employs, which is not a canonical case of Output-Output (O-O) correspondence in the sense of Benua (1997), where this type of correspondence is between actual outputs.

Secondly, if we allow OT constraints to be either faithfulness or markedness constraints, the ontological status of REALIZE-MORPHEME is unclear. On the one hand, as a possible type of O-O correspondence, the constraint is reminiscent of faithfulness, but on the other hand, the constraint strives to enforce a morphologically motivated phonological difference, thus behaving rather like a markedness constraint.

Thirdly, the implementation of the definition runs into implementational difficulties in languages where it is hard to establish the shape of bare stems as they emerge from the general grammar of the language. Such a problematic case

is provided by some of the Romanian masculine and neuter nominals. In Romanian, there is an absolute ban on codas rising in sonority and all nominal inputs are morphologically vowel-final, corresponding to the citation form /Stem-Singular suffix/ (Augerot 1974, Steriade 1984, Chitoran 2002). The data in (3) illustrates the behavior of masculines and neuters in Romanian:

(3) Romanian data (masculine and neuter nominals, singular)			
a. pom	'fruit-tree'	/pom-u _{Sg} /	
b. mort	'dead'	/mort-u _{Sg} /	
c. akru	'sour'	/akr-u _{Sg} /	*akr

It appears that the Singular marker -u surfaces only when its presences prevents a disallowed coda with rising sonority. The question in place is how we can assess REALIZE-MORPHEME on these nominals *à la* Kurisu (2001). In (3 a.) the hypothetical output of the bare stem /pom/ is [pom], but since the phonology of the language prohibits complex codas rising in sonority, [akr] is not a licit hypothetical output of the bare stem /akr/ in (3c.). Shall we, then, assume that the bare stem is realized as [akru]? If so, we get a contradiction, because this is no longer a bare stem, but the stem plus the Singular affix, which also does the duty of breaking the disallowed consonant cluster¹.

Finally, Kurisu (2001) defines a unique Morpheme Realization constraint, with no reference to particular morpho-syntactic categories. In this paper I argue for the necessity of a family of such constraints, indexed for specific inflectional morphemes.

The definition of REALIZE-MORPHEME I use in this paper is along the lines of Walker (2000):

- (4) REALIZE-MORPHEME ('A morpheme must have some phonological exponent in the output.')

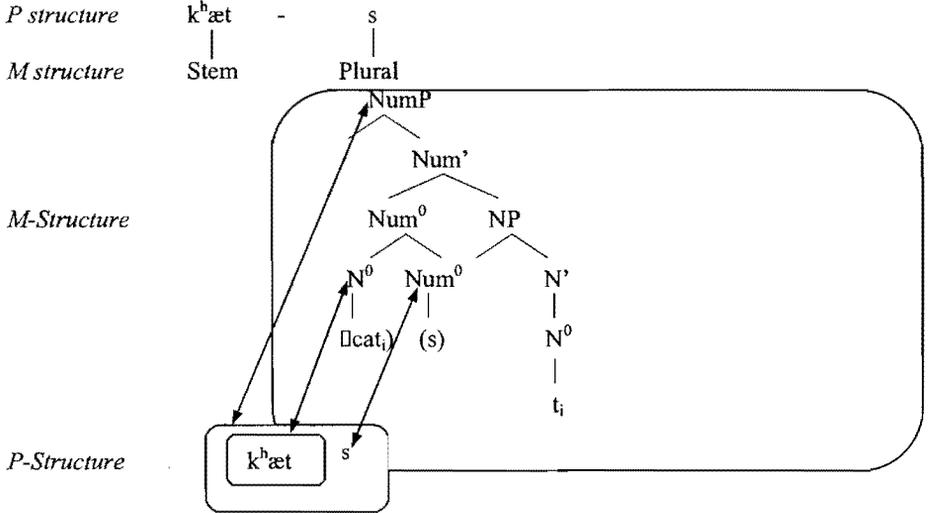
This definition states that for all elements in the morphological structure of an output, there is some element in the phonological structure of that output with which it is in correspondence. The mechanism reflected in (4) is in actuality one of correspondence between Morphological and Phonological Structure within outputs² (M - P correspondence). The advantage of this definition is that it is in a sense more parochial than (1), allowing for an evaluation of particular inflectional morphemes. While it can be argued that (4) is not particularly well-suited for subtractive morphology, which involves subtraction or stem-internal variation, the question remains open whether such processes are best accommodated by a theory of anti-faithfulness (Alderete 1999).

To get a sense of how M - P correspondence works, consider the simple case of a plural-inflected work like *cats*, that satisfies REALIZE-PLURAL (5a). This form displays correspondence between an element in the Morphological Structure

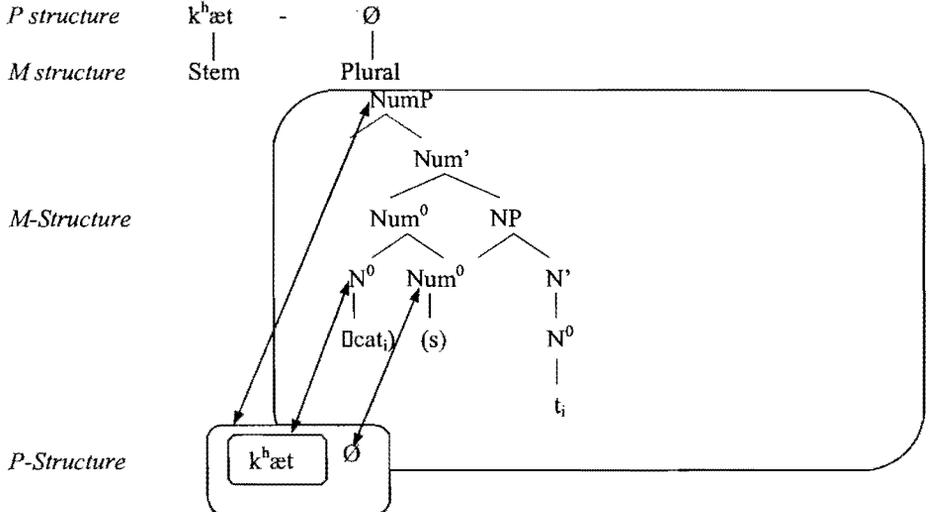
(the Number node) and one in Phonological structure (the -s Plural affix). Conversely, when Number has no phonological expression, REALIZE-PLURAL is violated (5b.):

(5) Assessing REALIZE-MORPHEME in terms of M - P correspondence

a. REALIZE-PLURAL satisfied



b. REALIZE-PLURAL violated



As an aside question, it is legitimate to ask why we need M - P correspondence and not simply I - O correspondence. It is obvious that I - O correspondence can handle instances of affixation, in which inflectional morphemes are arguably present in the input representations of morphologically-inflected forms. On the other hand, a Morpheme Realization constraint based only I - O correspondence would fail to account for the (non)realization of reduplicative morphemes, which do not have phonological substance in inputs.

In the following sections we shall see that indexing REALIZE-MORPHEME with respect to particular categories is empirically adequate and can be used to relate to hierarchies of morphological markedness.

2. In favor of a family of REALIZE-MORPHEME constraints

The proposal defended in this paper is that REALIZE-MORPHEME is indexed according to morpho-syntactic category. I argue that Morpheme Realization is a reflex of markedness hierarchies introduced in linguistic typology by Greenberg (1966). For the morphological category Number, morphological markedness translates into the hierarchy in (6), in which the members of the category are arranged in the order of decreasing markedness:

(6) Number: (Dual) > Plural > Singular

Specifically, my proposal is that given a grammatical category G-CAT (for example, Number), if G is the most marked member of G-CAT on the markedness hierarchy (Plural, for the hierarchy in (6)), one can posit Morpheme Realization constraint of the form REALIZE-G-CAT and REALIZE-G (i. e. REALIZE-NUMBER and REALIZE-PLURAL, respectively). Between these constraints there holds a stringency relation, in that violations of REALIZE-G are a subset of the violations of REALIZE-G-CAT. This relation is reflected in the assumedly universal ranking in (7):

(7) REALIZE-G » REALIZE-G-CAT

In the particular case of Number, (7) is instantiated by the ranking in (8):

(8) REALIZE-PLURAL » REALIZE-NUMBER

Cross-linguistically, language-specific patterns will emerge by interspersing parochial phonological constraints into (7) and (8). Let us examine from this perspective the case of Romanian masculine and neuter nominals that was briefly referred to in the preceding section.

Morphological variation along the dimension of Number is expressed by Morpheme Realization constraints:

(9) Morpheme realization constraints

- a. REALIZE-NUMBER ('A Number morpheme must have some phonological expression in the output.')
- b. REALIZE-PLURAL ('A Plural morpheme must have some phonological expression in the output.')

Other phonological constraints active in the language are stated in (10) below:

(10) Active phonological constraints

- a. SON-CON ('No complex codas rising in sonority')
- b. *PK/x ('The segment x is not a prominence peak')
- c. MAX-ROOT-IO ('Input segments in the root have output correspondents')
- d. UNIFORMITY-IO ('No element of the output has multiple correspondents in the input')

In Romanian, high vowels are severely restricted in word final position and, if present underlyingly, will surface only to prevent the occurrence of a coda with increasing sonority. At the same time, the high vowels /u/ and /i/ represent the phonological expression of Singular and Plural, respectively, hence the crucial interaction between *PK/i,u and Morpheme Realization. In the Singular, the Number morpheme does not surface after stems ending in a single consonant, which is indicative of the ranking *PK/i,u » REALIZE-NUMBER, illustrated in Tableau (11):

(11) Tableau for *pom* ('fruit-tree')

/pom-u _{Sg} /	*PK/i,u	REALIZE-NUMBER
a. \varnothing pom- \emptyset _{Sg}		*
b. pom-u _{Sg}	*!	

It is not possible to avoid the high final vowel by labializing the final consonant of the stem, as in the output *pom^w*, since labialized final consonants are not allowed in Romanian. This means that coalescence is disallowed between the final consonant of the stem and the Singular affix (UNIFORMITY-IO » REALIZE-NUMBER), as illustrated in Tableau (12):

(12) Tableau for *pom* ('fruit-tree')

/pom-u _{Sg} /	UNIFORMITY-IO	REALIZE-NUMBER
a. \varnothing pom- \emptyset _{Sg}		*
b. pom ^w _{Sg}	*!	

In order to establish the relative ranking of *PK/i,u and UNIFORMITY-IO we have to examine the Plural paradigm. In the plural, the former constraint is

satisfied at the expense of violating the latter (Plural is realized as palatalization on the final consonant of the stem). Tableau (13) offers a ranking argument for *PK/i,u and UNIFORMITY-IO. In the Plural, the morpheme is always realized in some way⁴, so REALIZE-PLURAL is never violated and therefore top-ranked:

(13) Tableau for *pom* ('fruit-tree', Plural)

/pom-i _{Sg} /	REALIZE-PLURAL	*PK/i,u	UNIFORMITY-IO	REALIZE-NUMBER
a. pom-Ø _{Pl}	*!			*
b. pom-i _{Pl}		*!		
c. \varnothing pom ^{iPl}			*	

To account for the nominals whose stem ends in a consonant cluster with rising sonority, consider *akr-u* ('sour', Masculine). This time the Number morphemes are realized as full vowels (u, i), in avoidance of illicit codas (SON-CON is top-ranked). Also, stems are protected from deletion aimed at satisfying SON-CON, so is in the same constraint stratum as SON-CON and REALIZE-PLURAL. Tableau (14) illustrates the formation of the Singular, and Tableau (15) the formation of the Plural:

(14) Tableau for *akru* ('sour', Singular)

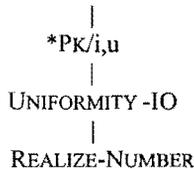
/akr-u _{Sg} /	SON-CON	MAX-RT-IO	REALIZE-PLURAL	*PK/i,u	UNIFORMITY-IO	REALIZE-NUMBER
a. \varnothing akr-u _{Sg}			N/A	*		
b. ak-Ø _{Sg}		*!	N/A			*
c. akr-Ø _{Sg}	*!		N/A			*

(15) Tableau for *akri* ('sour', Plural)

/akr-i _{Pl} /	SON-CON	MAX-RT-IO	REALIZE-PLURAL	*PK/i,u	UNIFORMITY-IO	REALIZE-NUMBER
a. \varnothing akr-i _{Pl}				*		
b. ak-Ø _{Pl}		*(!)	*(!)			*
c. akr-Ø _{Pl}	*(!)		*(!)			*
d. ak ^{iPl}	*!				*	

Tableau (15) provides a ranking argument for *PK/i,u and REALIZE-PLURAL and the rest of the constraints in the top stratum (all the losing candidates satisfy *PK/i,u but fail to satisfy at least one of the other top-ranked constraints). To conclude, morphologically-inflected Romanian nominals emerge from the constraint lattice in (16):

(16) Constraint lattice for Romanian nominals
 SON-CON, REALIZE-PLURAL, MAX-ROOT-IO



The case of Romanian nominals discussed in this section is illustrative for the necessity of indexing REALIZE-MORPHEME with respect to particular morpho-syntactic categories and their members. From the lattice in (16) it appears that using a unique Morpheme Realization constraint would lead to a ranking paradox, because one and the same constraint would appear in different places on the hierarchy. At the same time, distinguishing between Morpheme Realization constraints within the category of Number illustrates the correlation with typological markedness hierarchies mentioned in (7) and (8). The ranking in (16) is a particular case of a more general schema, which I claim to be active in shaping outputs inflected for Number in a language that marks the Singular and the Plural:

(17) Schema for Number realization
 REALIZE-PLURAL » PHONOCONSTRAINTS » REALIZE-NUMBER

What the schema in (17) predicts is that the Plural is always realized overtly once it has an exponent at the level of Morphological Structure. The Singular (which is the least marked member of Number on the markedness hierarchy) has a phonological expression only when this does not give rise to violation of higher-ranked phonotactic constraints active in the language. These predictions are empirically confirmed in the case of Romanian nominals.

3. Conclusion and outstanding issues

In this paper I argued that REALIZE-MORPHEME is best defined in terms of P-Structure - M-Structure correspondence within outputs. I also argued that there is no unique Morpheme Realization constraint that globally accounts for morphological variation, but rather a family of constraints specific to various morpho-syntactic categories and their members.

The emergence of morphologically inflected forms can be accounted for by the schema in (18):

(18) REALIZE-G » PHONOCONSTRAINTS » REALIZE-G-CAT

where G-CAT is a grammatical category (e. g. Number) and G is the most marked member of that category (e. g. Plural) on the morphological markedness hierarchy.

What remains to be investigated is the exact nature of the connection between schemata like the one in (18), whose action was exemplified on Romanian nominals inflected for number, and the markedness hierarchies proposed in typological studies. More light also needs to be shed on subtractive morphology, where morphological exponence is not instantiated by segmental or featural material in outputs.

Notes and references

¹ Epenthesis as a means of breaking illicit consonant clusters is not attested as a regular process in Romanian.

² Work on Distributed Morphology starting with Halle and Marantz (1993) suggests Morphological Structure as a level of representation.

³ These representations have been suggested to me by the work of Russell (1999).

⁴ In Romance, Number has been regarded either as a floating feature or as a latent segment (see Saltarelli 2001 for a discussion). For the purpose of the present paper, what actually matters is for the morpheme to have an unambiguous phonological expression.

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A Phrasal Movement Approach to So-called Ha- and R-constructions in Korean^{*}

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1. Introduction

This paper takes a close examination of morpho-syntax of Predicate Topic Constructions in Korean. Contrastive Topic information for nominal expressions is encoded by a morphological marker *-nun* in Korean while it is by pitch accent (B-accent or Topic accent) in English as often claimed in the literature (see Jackendoff 1972, Büring 1997, C. Lee 2001 among others). Also we can observe the similar pattern in encoding Contrastive Topic information for predicate expressions, i.e. by B-accent in English and by a morphological marker *-nun* in Korean. As shown in (1), speaker B may respond to speaker A by Topic accent (H*LH%) and in doing so it implies that there is an unexpressed proposition in contrast to the expressed one. On the contrary, Korean counterpart employs a morphological marker *-nun* instead of pitch accent. What is peculiar about Korean is that we can use seemingly two different constructions, Ha- and R(eduplicative)-constructions.¹ A clearer paradigm is shown in (2). (2a) is a simple declarative sentence, (2b) corresponds to Ha-construction and (2c) R-construction.

- (1) A: Kim is supposed to perform at 7 and it's already seven five.
Is he on the stage?
B: He arrived. (H*LH% (Pierrehumbert 1980))
(Kim-i) tochakha-ki-nun tochakhay-ss-e/hay-ss-e
K-Nom arrive-KI-Top arrive-Past-Decl/do-Past-Decl
'Kim arrived (but...)'
- (2) a. Chelswu-ka ku chayk-ul ilk-ess-ta
C-Nom the book-Acc read-Past-Decl 'Chelswu read the book'
b. Chelswu-ka ku chayk-ul *ilk*-ki-nun *hay*-ss-ta (Ha-construction)
C-Nom the book-Acc read-KI-Top do-Past-Decl
c. Chelswu-ka ku chayk-ul *ilk*-ki-nun *ilk*-ess-ta (R-construction)
C-Nom the book-Acc read-KI-Top read-Past-Decl
'Chelswu DID read the book (but...)'

- b. Yenghi-ka ppali talli-ki-nun talli-e/hay (Process)
 Y-Nom fast run-KI-Top run-Decl/do-Decl
 ‘Yeng DID run fast (but...).’
- c. Yenghi-ka tochakha-ki-nun tochakhay-ss-e/hay-ss-e (Achievement)
 Y-Nom arrive-KI-Top arrive-Past-Decl/do-Past-Decl
 ‘Yenghi DID arrive (but...).’
- d. Yenghi-ka sandwich-lul mantul-ki-nun mantul-ess-e/hay-ss-e
 Y-Nom sandwich-Acc make-KI-Top make-Past-Decl/do-Past-Decl
 ‘Yenghi DID make a sandwich (but...).’ (Accomplishment)

Y-J Kim (1990: 150-53) points out, on the basis of Ha-construction similar to (5), that “the scope of focus” with regard to *-nun* in Ha-construction can vary, suggesting that it can be any constituent such as V, V’, VP, S, NP, while what is “in focus” in R-construction is V only. However, as can be confirmed by sentences in (5), two constructions are in free variation and what is implicated is a (contextually relevant) property or proposition in contrast rather than a single syntactic constituent.

- (5) a. Chelswu-ka kulim-ul culki-ki-nun hay/culki-e
 C-Nom painting-Acc enjoy-KI-Top do-Decl/enjoy-Decl
 (kulena kuli-ci-nun anh-a)
 but draw-CI-Top not-Decl
 ‘Chelswu enjoys paintings (but does not draw them).’
- b. Chelswu-ka tongyanghwa-lul culki-ki-nun hay/culki-e
 C-Nom oriental.painting-Acc enjoy-KI-Top do-Decl/enjoy-Decl
 (kulena seyanghwa-lul culki-ci-nun anh-a)
 but western.painting-Acc enjoy-CI-Top not-Decl
 ‘Chelswu enjoys oriental paintings (doesn’t enjoy western paintings)’
- c. Chelswu-ka swul-ul masi-ki-nun hay/masi-e
 C-Nom liquor-Acc drink-KI-Top do-Decl/drink-Decl
 (kulena tampay-lul phiwu-ci-nun ahn-a)
 but cigarette-Acc smoke-CI-Top neg-Decl
 ‘Chelswu drinks alcohol (but does not smoke a cigarette).’
- d. peskkoch-i phi-ki-nun hay-ss-ta/phi-ess-ta
 cherry.blossom-Nom bloom-KI-Top do-Past-Decl/bloom-Past-Decl
 (kulena nalssi-ka acikto ssalssalhata)
 but weather-Nom still chilly
 ‘Cherry blossom has BLOOMED (but it is still chilly)’
- e. Chelswu-ka kulim-ul culki-ki-nun hay/culki-e
 C-Nom painting-Acc enjoy-KI-Top do-Decl/enjoy-Decl
 (kulena Tongswu-ka kulim-ul culki-ci-nun anh-a)
 but T-Nom painting-Acc enjoy-CI-Top not-Decl
 ‘Chelswu enjoys paintings (but Tongswu does not)’

Hence as far as semantics or discourse function is concerned, two constructions are the same, in addition to similar morpho-syntactic properties including the obligatory occurrence of an affix *-ki* and a Topic particle *-nun*. So we may want to pursue a uniform analysis of two constructions. Despite these similarities, the uniform analysis faces challenges immediately due to the morpho-syntactic differences between the two, which are addressed in section 3.

3. Different properties of Ha- and R-constructions

First difference comes from the distribution of inflectional affixes. In R-construction, the first predicate is a copy of the second predicate along with inflectional affixes up to Tense, but not Mood as shown in (6b-e), and this copy may include Tense without exclusion of intervening affix, e.g., agreement affix as in (6f). In Ha-construction, both Agr and Tense affixes may reside in the verb *ha-* as in (7a). Alternatively, Agr may occur in the first predicate and Tense occurs in the verb *ha-* as in (7b). Furthermore, both Agr and Tense affixes may occur in the first predicate with no Agr and Tense affixes attached in the verb *ha-* as in (7c). On the other hand, the occurrence of Tense in the first predicate and Agr in the verb *ha-* as shown in (7d), which is a reverse of the normal verbal affix order Agr-Tense, is ungrammatical. Some speakers allow double occurrences of Agr and Tense as shown in (7e-g) where a % symbol stands for speaker variation.

- (6) a. Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess-e
 Lee Prof-Nom song-Acc sing-Hon-Past-Decl
 'Prof. Lee sang a song'
- b. Lee kyoswunim-kkeyse nolay-lul **pwulu-ki-nun pwulu-si-ess-e**
 Lee Prof-Nom song-Acc sing-KI-Top sing-Hon-Past-Decl
- c. Lee kyoswunim-kkeyse nolay-lul **pwulu-si-ki-nun pwulu-si-ess-e**
- d. Lee kyoswunim-kkeyse nolay-lul **pwulu-si-ess-ki-nun pwulu-si-ess-e**
- e. *Lee kyoswunim-kkeyse ... **pwulu-si-ess-ta-ki-nun pwulu-si-ess-e**
- f. *Lee kyoswunim-kkeyse nolay-lul **pwul-ess-ki-nun pwulu-si-ess-e**
- g. *Lee kyoswunim-kkeyse nolay-lul **pwulu-si-ess-ki-nun pwul-ess-e**
- h. *Lee kyoswunim-kkeyse nolay-lul **pwulu-si-ki-nun pwul-ess-e**
 'Prof. Lee DID sing a song (but...)'
- (7) a. Lee kyoswunim-kkeyse nolay-lul pwulu-ki-nun ha-si-ess-e
 Lee Prof-Nom song-Acc sing-KI-Top do-Hon-Past-Decl
- b. Lee kyoswunim-kkeyse nolay-lul pwulu-si-ki-nun hay-ss-e
- c. Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess-ki-nun hay
- d. *Lee kyoswunim-kkeyse nolay-lul pwul-ess-ki-nun ha-si-e
- e. %Lee kyoswunim-kkeyse nolay-lul pwulu-si-ki-nun ha-si-ess-e
- f. %Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess-ki-nun hay-ss-e
- g. %Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess-ki-nun ha-si-ess-e

This leads to the following generalization: Agr or both Agr and Tense may be included as part of the first predicate in constructions. If included, it/they must occur in the second predicate of R-construction and may occur, depending on speakers, in the verb *ha-* of Ha-construction.

The second predicate in R-construction may include a material other than a predicate but not in Ha-construction. See (8). An adverb may be included as part of the second predicate in R-construction as in (8a') but cannot occur in front of the verb *ha-* in Ha-construction as in (8b').

- (8) a. Yenghi-ka **acwu** yeypu-ki-nun yeyp-ess-e
 Y-Nom very pretty-KI-Top pretty-Past-Decl
 a'. Yenghi-ka **acwu** yeypu-ki-nun **acwu** yeyp-ess-e
 Y-Nom very pretty-KI-Top very pretty-Past-Decl
 b. Yenghi-ka **acwu** yeypu-ki-nun hay-ss-e
 Y-Nom very pretty-KI-Top do-Past-Decl
 b'. *Yenghi-ka **acwu** yeypu-ki-nun **acwu** hay-ss-e
 Y-Nom very pretty-KI-Top very do-Past-Decl
 'Yenghi was very pretty (but...)'

Not just adverbs but also arguments may be included as part of the second predicate in R-construction. Most native speakers that I consulted with agree that sentences in (9) sound redundant but are acceptable. So I think the awkwardness, if any, found in (9) is not due to the violation of any grammatical constraint per se but simply due to the redundancy arising from repeating a material without which speakers can convey the intended meaning. To the extent that speakers tolerate this redundancy, sentences may be regarded as acceptable.

- (9) a. %Yenghi-ka yeypu-ki-nun Yenghi-ka yeyp-ess-e
 Y-Nom pretty-KI-Top Y-Nom yeyp-ess-e
 'Yenghi was pretty (but...)'
 b. %Yenghi-ka swul-ul masi-ki-nun swul-ul masi-ess-e
 Y-Nom liquor-Acc drink-KI-Top liquor-Acc drink-Past-Decl
 'Yenghi drank alcohol (but...)'

A complex predicate or a whole sequence of main predicate and auxiliary verb may be duplicated or an auxiliary verb alone may be repeated in R-construction as shown in (10b) and (10c). Alternatively, a dummy verb *ha-* can replace the second predicate including both main and auxiliary verbs, resulting in Ha-construction as shown in (10d). Just replacing the auxiliary alone by the verb *ha-* renders a sentence ungrammatical as shown in (10e).²

- (10) a. Chelswu-ka tampay-lul phiwu-e po-ass-ta
 C-Nom cigarette-Acc smoke Aux-Past-Decl
 b. Chelswu-ka tampay-lul **phiwu-e po-ki-nun phiwu-e po-ass-ta**
 C-Nom cigarette-Acc smoke Aux-KI-Top smoke Aux-Past-Decl
 c. (?)Chelswu-ka tampay-lul phiwu-e **po-ki-nun po-ass-ta**
 C-Nom cigarette-Acc smoke Aux-KI-Top Aux-Past-Decl
 d. Chelswu-ka tampay-lul phiwu-e po-ki-nun **hay-ss-ta**
 C-Nom cigarette-Acc smoke Aux-KI-Top do-Past-Decl
 e. *Chelswu-ka tampay-lul **phiwu-e po-ki-nun phiwu-e hay-ss-ta**
 C-Nom cigarette-Acc smoke Aux-KI-Top smoke do-Past-Decl
 ‘Chelswu tried/had an experience of smoking a cigarette (but...)’

Two constructions also differ with regard to the possibility of scrambling. In R-construction, Topic-marked predicate can be fronted with the same meaning retained as shown in (11b) while in Ha-construction, Topic-marked predicate cannot be fronted as shown in (11d).³

- (11) a. Yenghi-ka yeppu-ki-nun yepp-ess-ta
 Y-Nom pretty-KI-Top pretty-Past-Decl
 b. yeppu-ki-nun Yenghi-ka yepp-ess-ta
 pretty-KI-Top Y-Nom pretty-Past-Decl
 c. Yenghi-ka yeppu-ki-nun hay-ss-ta
 Y-Nom pretty-KI-Top do-Past-Decl
 d. *yeppu-ki-nun Yenghi-ka hay-ss-ta
 pretty-KI-Top Y-Nom do-Past-Decl ‘Yenghi WAS pretty (but...)’

Coordinate constituents may also occur in Ha- and R-constructions. Ha-construction shown in (12a) is involved with predicate coordination and sounds perfect. For the R-construction with the same intended interpretation, both conjuncts should be duplicated as shown in (12b). Just repeating a single conjunct as shown in (12c) results in ungrammaticality, which is reminiscent of Ross’s Coordinate Structure Constraint.

- (12) a. Yenghi-ka yeppu-ko ttokttokha-ki-nun hay-ss-ta
 Y-Nom pretty-Conj smart-KI-Top do-Past-Decl
 b. (?)Yenghi-ka yeppu-ko ttokttokha-ki-nun yeppu-ko ttokttokhay-ss-ta
 Y-Nom pretty-Conj smart-KI-Top pretty-Conj smart-Past-Decl
 c. *Yenghi-ka yeppu-ko ttokttokha-ki-nun ttokttokhay-ss-ta
 Y-Nom pretty-Conj smart-KI-Top smart-Past-Decl
 ‘Yenghi WAS pretty and smart (but...)’

In the following section, despite these differences, I propose that Ha- and R-constructions are one and the same construction as far as syntax and semantics

are concerned and that two constructions are a mere result of morphophonological variation at PF/Morphological Component.

4. Proposal: Phrasal movement at narrow syntax and PF-deletion

Before presenting my proposal, I will briefly point out some of the problems found in the most recent works on Ha- and R-constructions.

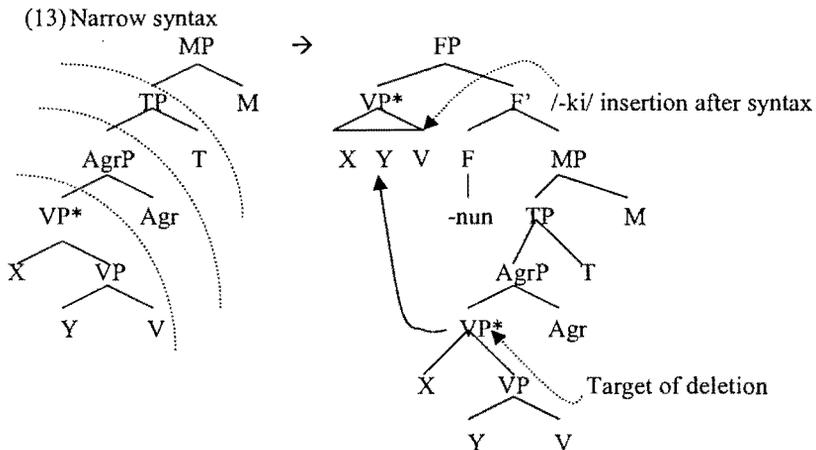
K. Choi (2000, 2001) proposes totally different analyses of the two constructions. Following are some of the problems his analyses come to face: (a) Choi has no way to capture the non-accidental similarities between Ha- and R-constructions, as they are given totally different analyses. In particular, Choi (2000) treats the affix *-ki* in Ha-construction as a base-generated noun, while Choi (2001) treats *-ki* in R-construction as a rescue affix to close off stranded bound verb. However, there is no empirical evidence that the affix *-ki* is different in the two constructions. (b) Choi (2000): the problematic generalization that an Agr can appear only before *-ki* and a Tense can only after *ha-*; (c) With regard to the obligatory occurrence of a topic marker in Ha-construction, Choi (2000) appeals to Case Filter. Case may be optionally dropped. Then the question is why a topic marker taken as a kind of Case marker cannot be dropped. In many ways, Case-based account of obligatory occurrence of a topic marker seems to be in a wrong track; (d) For R-construction, Choi (2001) proposes Head movement analysis with the assumption of copy theory of movement. The problem is that the R-construction may contain a duplicate of more than a head and the obligatory appearance of the topic marker *-nun* is not accounted for. He cannot appeal to Case Filter not only because Case is not allowed in R-construction but also because he does not treat *-ki* as a noun in R-construction; (e) His account also fails to explain relative freedom of Scrambling in R-construction, in contrast to Ha-construction.

S-Y Cho and J-B Kim (2002) proposes a lexicalist (Construction-based HPSG) approach. By setting up constructional hierarchy, they can account for semantico-pragmatic similarities between the two constructions such that the two constructions are subtypes of a supertype, in particular *contrastive-topic-phrase*. Despite this insightful account of similarities of the two constructions with regard to semantic/pragmatic functions, their analysis also faces some empirical problems: (a) The system proposed for the R-construction is not flexible enough to accommodate speaker variations; (b) Similarly to Choi, they fail to provide a uniform analysis of the appearance of *-ki* in the two constructions (one attributed to the lexical property and the other to the constructional property); (c) Complex predicate analysis of Ha-constructions faces counterexamples, in particular, it fails to account for the systematic distribution of verbal inflectional affixes including (honorific) agreement and tense affixes; (d) Lexeme identity-based approach to R-constructions runs into

some counterexamples: coordinate structures and variations in copular constructions; (e) Difference of two constructions with regard to Scrambling is not adequately accounted for.

In the remaining section, on the basis of J-M Jo (2000a, b) where I proposed phrasal movement approach to Ha-construction, I claim a uniform analysis of Ha- and R-constructions, accounting for both similarities and differences through syntax-PF/Morphology interface. Before fleshing out my analysis, I take a few theoretical assumptions widely adopted in the field. First, verbal inflectional affixes are syntactic formatives heading functional projections in Korean (J. Yoon 1994, 1997, among others). Forming a combination of verbal head and inflectional affixes is not by syntactic head movement but by Morphological Merger/PF-merger (Marantz 1988, Halle and Marantz 1993, Bobaljik 2002, Embick and Noyer 2001). I also take the view of morphology proposed in Distributed Morphology (Halle and Marantz 1993) or late lexical insertion in the sense of Jackendoff (1997). Finally I take the view of copy theory of movement and PF-deletion (Chomsky 1995) according to which a moving element leaves behind its own copy, which undergoes deletion at PF.

Given the base sentence structure depicted in the left column of (13), Ha- and R-constructions are involved with phrasal movement targeting VP*, AgrP, TP, as shown by dotted lines.⁴



For the relevant movement, I postulate a functional projection FP the head of which has an EPP (Topic) feature triggering the movement, which is in turn morphologically realized by topic marker *-nun*. Given this assumption, the appearance of an affix *-ki* can be viewed as a morphological repair strategy. That is, since topic marker *-nun* can only attach to a free form, the affix *-ki* is

inserted whenever the element preceding *-nun* is a bound form. Then Ha- and R-constructions arise as a result of optional deletion process in the lower copy at PF as shown in (14). Once everything in the lower copy is deleted, it results in stranded affixes and consequently a dummy verb *ha-* is inserted to rescue them, giving rise to Ha-construction.

(14) Variations in PF due to the deletion process in the lower copy:

- [X Y V]-ki-nun [~~X~~ Y V]-Agr-T-M
 [X Y V]-ki-nun [~~X~~ ~~Y~~ V]-Agr-T-M
 [X Y V]-ki-nun [~~X~~ ~~Y~~ ~~V~~]-Agr-T-M (*ha*-support: Ha-construction)

Since all these are just PF-variations of a single syntactic object, it is predicted they can have the same meaning. That is, all these are derived from the same syntactic object, which converges to the same logical form at LF, and hence have the same meaning. Optional deletion of X Y (i.e. ‘dependents’ of verbal head) in the lower copy in (14) is simply a property independently existent in languages like Korean. That is, given information or contextually recoverable information is more likely to undergo deletion as shown in (15-16).

(15) A: nwuka Chelswu-lul ttayli-ess-ni?

who C-Acc hit-Past-Q ‘Who hit Chelswu?’

B: Yenghi-ka Chelswu-lul ttayli-ess-e

Y-Nom C-Acc hit-Past-Decl ‘**Yenghi** hit Chelswu.’

(16) A: Yenghi-ka Chelswu-lul ettehkey hay-ss-nunthey?

Y-Nom C-Acc how do-Past-Q ‘What did Yenghi do to Chelswu?’

B: ~~Yenghi-ka Chelswu-lul~~ ttayli-ess-e

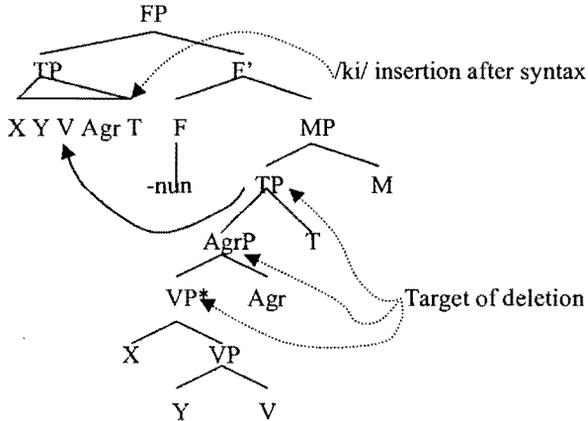
Y-Nom C-Acc hit-Past-Decl ‘Yenghi **hit** Chelswu.’

In this approach, then, Ha-construction can be viewed as a ‘usual’ effect of overt movement: total deletion of the lower copy results in stranded inflectional affixes and consequently *ha*-support follows.

The derivation depicted in (17) illustrates TP topicalization. If we only delete dependents of a verb as in (17a), we end up with R-construction, e.g. (17a’). If we choose to delete a verb root as well, we are more likely to delete Agr and T as well since the relevant Agr and T information is already expressed in the fronted constituent as in (17d). Consequently deletion of the whole lower copy (i.e. TP) results in a stranded mood affix and hence *ha-* is inserted to rescue it, giving rise to Ha-construction, e.g. (17d’). Some speakers, however, allow double occurrences of Agr and T as pointed out earlier. Under the current approach, we can account for this speaker variation such that to the extent the speakers allow redundancy, they may choose to delete either VP* including a subject or AgrP, as in (17b-c). Either way, it will end up with stranded verbal affixes, giving rise to Ha-constructions, e.g. (17b’ & c’). Since the deletion

process targets phrases by hypothesis, the deletion of the head alone in the lower copy results in ungrammaticality as in (17e-g).

(17) TP Topicalization:



PF deletion process:

- | | |
|--|-----------------|
| a. [X Y V Agr T]-ki-nun [X Y V Agr T]-M | R-construction |
| b. %[X Y V Agr T]-ki-nun [X Y V Agr T]-M | Ha-construction |
| c. %[X Y V Agr T]-ki-nun [X Y V Agr T]-M | Ha-construction |
| d. [X Y V Agr T]-ki-nun [X Y V Agr T]-M | Ha-construction |
| e. *----- [X Y V Agr T]-M | Ha-construction |
| f. *----- [X Y V Agr T]-M | R-construction |
| g. *----- [X Y V Agr T]-M | R-construction |
- a'. [Lee kyoswunim-kkeyse ... pwulu-si-ess]-ki-nun [pwulu-si-ess]-e
Lee Prof-Nom song-Acc sing-Agr-T-KI-Top
- b'. %[Lee kyoswunim-kkeyse ... pwulu-si-ess]-ki-nun *ha*-si-ess-e
- c'. %[Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess]-ki-nun *hay*-ss-e
- d'. [Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess]-ki-nun *hay*
- e'. *[Lee kyoswunim-kkeyse ... pwulu-si-ess]-ki-nun nolay-lul *ha*-si-esse
- f'. *[Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess]-ki-nun pwul-ess-e
- g'. *[Lee kyoswunim-kkeyse nolay-lul pwulu-si-ess]-ki-nun pwulu-si-e
'Prof Lee DID sing a song (but...).'

Predicative copular constructions also show similar patterns with regard to Ha- and R-constructions, as can be verified in the data given in (18-19). What is worth noting here is the lack and presence of the affix *-ki* before the topic marker *-nun* in (18b) and (18c-h), respectively, which is supporting evidence for *-ki* as a dummy affix inserted after syntax.

- (18) a. Chelswu-ka pwuca-i-ess-e
 C-Nom rich.person-Cop-Past-Decl
 ‘Chelswu was rich.’
- b. Chelswu-ka pwuca-nun pwuca-i-ess-e
 C-Nom rich.person-Top rich.person-Cop-Past-Decl
 ‘Chelswu WAS rich (but...)’
- c. Chelswu-ka pwuca-i-ki-nun pwuca-i-ess-e
 C-Nom rich.person-Cop-KI-Top rich.person-Cop-Past-Decl
- d. Chelswu-ka pwuca-i-ki-nun hay-ss-e
 C-Nom rich.person-Cop-KI-Top do-Past-Decl
- e. Chelswu-ka pwuca-i-ess-ki-nun pwuca-i-ess-e
 C-Nom rich.person-Cop-Past-KI-Top rich.person-Cop-Past-Decl
- f. *Chelswu-ka pwuca-i-ess-ki-nun pwuca-ya
 C-Nom rich.person-Cop-KI-Top rich.person-Cop-Decl
- g. Chelswu-ka pwuca-i-ess-ki-nun hay
 C-Nom rich.person-Cop-Past-KI-Top do-Decl
- h. %Chelswu-ka pwuca-i-ess-ki-nun hay-ss-e
 C-Nom rich.person-Cop-Past-KI-Top do-Past-Decl
- (19) a. Chelswu-ka pwuca-i-ki-nun hay
 C-Nom rich.person-Cop-KI-Top do-Decl
- a’. *pwuca-i-ki-nun Chelswu-ka hay
- b. Chelswu-ka pwuca-nun pwuca-i-ta
 C-Nom rich.person-Top rich.person-Cop-Decl
- b’. pwuca-nun Chelswu-ka pwuca-i-ta
- c. Chelswu-ka pwuca-i-ki-nun pwuca-i-ta
 C-Nom rich.person-Cop-KI-Top rich.person-Cop-Decl
- c’. pwuca-i-ki-nun Chelswu-ka pwuca-i-ta
 ‘Chelswu IS rich (but...).’

To account for patterns shown in predicative copular construction, I simply need to take the widely accepted view that the copula is a syntactic head selecting a Small Clause, following Heggie 1988, Moro 1997, Heycock and Kroch 1998, J. Yoon 2001, etc. Given this assumption, all the morpho-syntactic properties observed in (18-19) naturally follow from the proposal in this paper. The structure of the simple predicative copular construction can be schematically represented as in (20a). Then (20b) illustrates the topicalization of SC, leaving behind its copy, at narrow syntax. This derived syntactic object transfers to Morphology/PF component. Since the head of the topicalized SC is a noun, which is a free form, the topic marker *-nun* can directly attach to it without the affix *-ki*. The deletion of the subject argument in the lower copy results in R-construction as shown in (20c). (21a) illustrates the topicalization of TP at narrow syntax, which is involved with the same derivation as the one schematized in (17). Selective deletion process in the lower copy gives rise to

Ha- and R-constructions and speakers' judgment may vary, depending on their tolerance of redundancy, similarly to the account of speaker variation fleshed out earlier (cf. See the account given with regard to (17)).

- (20) a. $[_{MP} [_{TP} [_{VP} [_{SC} \text{Chelswu-ka pwuca}] -i] -ess] -e]$
 b. $[_{FP} [_{SC} \text{Chelswu-ka pwuca}]-nun [_{MP} [_{SC} \text{Chelswu-ka pwuca}]-i-ess-e]]$
 c. $[\text{Chelswu-ka pwuca}]-nun [\text{Chelswu-ka pwuca}]-i-ess-e (= 18b)$
- (21) a. $[_{TP} \text{Chelswu-ka pwuca-i-ess}]-(\text{ki})-nun [[_{TP} \text{Chelswu-ka pwuca-i-ess}]-e]$
 b. $[\text{Chelswu-ka pwuca-i-ess}]-\text{ki}-nun [\text{Chelswu-ka pwuca-i-ess}]-e (= 18e)$
 c. $[\text{Chelswu-ka pwuca-i-ess}]-\text{ki}-nun [\text{Chelswu-ka pwuca-i-ess}]-e (= 18g)$
 d. $\%[\text{Chelswu-ka pwuca-i-ess}]-\text{ki}-nun [\text{Chelswu-ka pwuca-i-ess}]-e (= 18h)$
 e. *----- $[\text{Chelswu-ka pwuca-i-ess}]-e (= 18f)$

5. Conclusion

In this paper, I proposed a uniform analysis of Ha- and R-constructions. That is, both Ha- and R-constructions have the same syntactic process, i.e. phrasal movement of VP including a subject and up to TP (possibly up to MP). Ha-construction and variations in R-construction arise as a result of optional deletion process in the lower copy in PF. To the extent the current proposal holds, it provides strong empirical evidence for copy theory movement and late lexical insertion along the lines of Distributed Morphology. Furthermore, it constitutes strong empirical evidence for the assumption that verbal inflections as well as verbal roots are independently projected to syntactic structure. That is, verbal inflections have a status of 'syntactic word'.

Notes

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¹ R-construction is also called 'Predicate Cleft Construction' or 'Echoed Verb Construction' in the field. Since the part of the 'copy' may be more than a verb or may be other than a verb (e.g. predicate nouns) as will be shown later, I will stick to the term 'R-construction' throughout the paper.

² As will become clear in section 4, (10c) suggests that the current PF/Morphological Merger approach is on the right track. The auxiliary verb may be sufficient to support verbal inflections and that's why it is ok with the deletion of the preceding main predicate. For some speakers, following sentence may be acceptable, in which the verb *ha-* apparently replaces the main V:

(i) ?Chelswu-ka tampay-lul phiwe po-ki-nun hay po-ass-ta
 C-Nom cigarette-Acc smoke Aux-KI-Top do Aux-Past-Decl

However, this is not an instance of the R-construction. *ha-* in (i) is not a dummy verb: first there is no reason for *ha-* to be inserted (no stranded affixes), and second, the preceding element *V-ki-nun* can be marked with accusative Case and also other materials like adverbs can intervene between the two verbs, which suggests that *ha-* here functions as a main verb (cf. J-M Jo 2000a, b).

³ In (11b), the subject argument, which is sandwiched between fronted predicate topic and final predicate, may be construed as Focus. However, this focus construal is not a result of scrambling but

due to (focus) pitch accent realized on the subject argument, which is not an instance of the R-construction (see J-M Jo in preparation). In fact, as pointed out in the main text, scrambled R-construction can have the same (contrastive topic-related) implication as the unscrambled counterpart.

⁴ Why is this sentence/clausal topicalization permitted just up to TP? Movement of MP comes to lose the distinction between complement and specifier within the projection of the same head. Second, if the whole MP is fronted, there is no reason for the dummy verb to occur since there is no stranded affix. Consequently the relevant Ha-construction would never arise. If there is another functional projection over MP, the latter may be topicalized as shown below:

- (i) Chelswu-ka swul-ul masi-ess-ta-tela
 - (ii) Chelswu-ka swul-ul masi-ess-ta-ki-nun masi-ess-ta-tela
 - (iii) Chelswu-ka swul-ul masi-ess-ta-ki-nun ha-tela
- C-Nom liquor-Acc drink-Past-Decl-K1-Top do-they.say

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Non-Scalar Indefinites in Scalar Environments

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1. Proposal

Contrary to Haspelmath's claims that certain environments give rise to scalar implicatures, we will demonstrate that such environments MAY give rise to scalar implicatures, but it is not the case that they MUST give rise to scalar implicatures. As proof, we will look to Czech. Czech lacks a (non-free choice) scalar indefinite like English *any*, but the Czech *ně-* series, a non-scalar indefinite, can appear in the "scalar" environments noted by Haspelmath.

2. Scalarity, Quick and Dirty

- | | | |
|-----|--|------------|
| (1) | a. I will vote for someone who shares my views. | Non-scalar |
| | b. I will vote for anyone who shares my views. | Scalar |

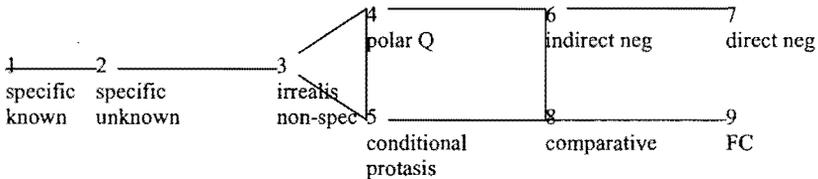
Intuitively, a scalar indefinite suggests a broader, potentially more extreme interpretation of a proposition.

3. Introduction

Haspelmath (1997) is a typological study of indefinite pronouns in 40 languages. Based upon his data, Haspelmath creates a Conceptual Mapping of the environments in which various series of indefinite pronouns may occur.

"These relations are represented geometrically on a semantic map in such a way that two uses or functions that are expressed by the same grammatical marker in at least one language are adjacent on the map...the semantic map approach not only helps us to express the relations of semantic similarity between various uses but also makes testable predictions about what a possible linguistic system is. (Haspelmath 1997: 62)"

Haspelmath's Conceptual Mapping for Indefinite Pronouns (1997: 64)



Here, “specific” environments are those in which the existence and unique identifiability of the referent is presupposed. “Direct negation” is standard sentential negation, whereas “indirect negation” represents a collection of other forms of negation, such as superordinate negation (i.e. *I don't think anyone was at the party*), the so-called “adversative” predicates like *deny*, and gerundial phrases headed by *without* and equivalents (i.e. *John left without talking to anyone*). For more detail and discussion of these environments, refer to Haspelmath(1997).

Indefinite pronouns of the Czech *ně-* series appear in the flowing environments: specific known, specific unknown, irrealis non-specific, polar question, conditional protasis, indirect negation, and part of the comparative environment, the clausal comparatives (as opposed to nominal comparatives). These are environments 1,2,3,4,5,6, and 8 on the above mapping. *Ně-* series pronouns will not appear under direct negation, free choice, and the remainder of the comparative environment.

Environments are analyzed according to features set forth in **Table A**.

Table A¹

	<u>Known</u>	<u>Specific</u>	<u>Scalar Endpoint</u>	<u>Scale Reversal</u>	<u>Scope of Neg</u>
Spec Known	+	+	-	n/a	-
Spec Unknown	-	+	-	n/a	-
Irrealis	-	-	-	n/a	-
Polar Q	-	-	+	+	-
Conditional	-	-	+	+	-
Indirect Neg	-	-	+	+	+
Direct Neg	-	-	+	+	+
Comparative	-	-	+	+	-
Free Choice	-	-	+	-	-

While Haspelmath is careful to show that scalar implicatures may only arise in those functions marked for these features, and that quantificational NPIs may only occur in functions with this feature, he implies that indefinites used in these

functions will necessarily invoke scalar endpoints and give rise to scalar implicatures.

We will see that the $n\check{e}$ -series, which does not make use of scalar endpoints or alternative worlds, may occur in these functions, and may even gain (quasi)-universal quantification, but only as a result of combination with other operators. It is better then to turn the analysis of this feature around. Rather than asserting that the licensibility of NPIs in these environments demonstrates that scalar endpoints are necessarily invoked, we may say that the option (not obligation) of invoking a scalar endpoint is what licenses polarity items.

4. Overview of Scolarity

According to Fauconnier (1975; 1975), free choice items like “any” can be treated as end points on a pragmatic scale, the evocation of which gives rise to a pragmatic scalar implicatures. Fauconnier formalizes this notion in his Scale Principle and its Corollary:

- (2) Scale Principle: if x_1 is lower than x_2 on scale S , then $R(x_1)$ implicates $R(x_2)$.

Corollary: if R holds for the lowest element on S , it holds (by implicature) for all elements on S ($R(\alpha)$ implicates $\forall xR(x)$).

Similarly, by reversing the scale via negation or similar environments (downward entailing, etc), a negative polarity item can be licensed. Thus, a sentence such as “I can’t catch any cow” can be interpreted as universal quantification over cows. I am unable to catch the individual on the low end of the scale of bovine speed, denoted by “any cow,” and therefore, by implicature, I can’t catch the other, faster cows either. Removing the negation reverses this scale, and “any” becomes the opposite end point. “I can catch any cow” implicates that since I can catch the fastest cow, I can catch all of them.

Giannakidou (1997; 1999; 2002) explains scolarity effects by proposing that certain indefinites (such as Free Choice Items) range over alternative worlds and universal quantification is achieved because the sentence is true in each of these alternative worlds. We can see how this works when we imagine the computer’s directive to “press any key to continue.” In World 1, we press the “a” key and continue, in World 2, we press the “b” key and continue, etc.

5. What is the ně- Series and How do we know that it isn't Scalar?

Czech has a series of indefinite pronouns which are created by adding the prefix ně- to question words. The ně- series is similar to the English some- series, but also occupying much of the semantic space occupied by the any- series. For example, ně + co (what) = something/anything; ně + kdo (who) = someone/anyone.

We will show that the indefinite pronouns of the ně- series can occur in those environments Haspelmath considers scalar, even though the ně- series is not scalar. We will demonstrate that the ně- series is non-scalar because we can adequately account for the truth conditions of sentences with ně- without resorting to scalarity, because they appear in clearly non-scalar environments, and because when ně- series pronouns occur in necessarily scalar environments, the results are ungrammatical, or at least pragmatically odd without giving the correct meaning.

6. A Proposed Logical Form for Indefinite Pronouns of the Ně-Series

The following examples are representative of the types of environments (per Haspelmath) in which the ně- series occur. Each is given with a sample logical form, taken from Kaiser (2002)

- (3) Specific known
 Potkal jsem se s někým dnes ráno.
 "I met with someone this morning."
 $\exists x(\text{person}(x) \ \& \ \text{met-with-this-morning}(I, x))$
- (4) Specific unknown
 Ona potkala s někým dnes ráno. (Ale nevím s kým)
 "She met with someone this morning (but I don't know with whom)."
 $\exists x(\text{person}(x) \ \& \ \text{met-with-this-morning}(\text{she}, x))$
- (5) Irrealis
 Něco koupí
 "They will buy something."
 $\text{Fut}(\exists x[\text{thing}(x) \ \& \ \text{buy}(\text{they}, x)])$

- (6) Polar Question
 Pracuje někde?
 “Does he/she work somewhere/anywhere?”
 $[p \wedge [p = \exists x(\text{place}(x) \ \& \ \text{work-at}(x, \text{s/he}) \vee \neg(\exists x(\text{place}(x) \ \& \ \text{work-at}(x, \text{s/he})))]]]$
- (7) Protasis of Conditional
 Ježeli někdo přijde, přivítáme ho.
 “If someone/anyone arrives, we’ll welcome him“
 $\forall x, w[(\text{Fut}(\text{person}(x) \ \& \ \text{arrives}(x))) \rightarrow (\text{Fut}(\text{welcome}(w, x)))]$
- (8) Indirect Negation
 Nemyslím, že někdo přišel
 I don’t think someone/anyone came.
 $\neg\text{think}(I, \exists x[\text{person}(x) \ \& \ \text{arrive}(x)])$
- (9) Clausal Comparative
 Jan je zdravější než někdo, kdo bydlí v Praze
 He is healthier than someone (some arbitrary person) who lives in Prague.
 $\text{GEN}[x] (\text{person}(x) \ \& \ \text{live-in-Prague}(x)) (\text{healthier}(\text{Jan}, x))$

The commonality of these logical forms is that each represents an indefinite which is bound either by an existential quantifier or by a generalized quantifier such as the generic or conditional operator. The indefinite pronoun is represented by the intersection of a predicate of ontological category such as “person” or “thing,” contributed by the Q-word piece of the indefinite, and the clausal predicate. It will be bound by a default existential quantifier if it’s not bound by the generic or conditional operator. We can abstract away from sentences such as 3 – 9 to get a logical form for each of the categories of the indefinite ně- series as seen in Table B.

Table B

něco	something/anything	$\lambda P(\text{thing}(x) \ \& \ P(x))$
někdo	someone/anyone	$\lambda P(\text{person}(x) \ \& \ P(x))$
někde	somewhere/anywhere	$\lambda P(\text{place}(x) \ \& \ P(x))$
někdy	sometime/anytime	$\lambda P(\text{time}(x) \ \& \ P(x))$
nějak	somehow/anyhow	$\lambda P(\text{manner}(x) \ \& \ P(x))$
nějaký	some (as determiner)	$\lambda P(\text{CN}(x) \ \& \ P(x))$
některý	some of	$\lambda P(\text{set-membership}(x) \ \& \ P(x))$

We see that it is possible to cover the semantic landscape of the ně- series with a simple form $\lambda P(\text{CAT}(x) \ \& \ P(x))$, where CAT represents the ontological category

and P is the clausal predicate. All uses of *ně-* are accounted for by means of generic, conditional or default existential operators. We don't need to appeal to scalarity in order to capture the truth conditions or implicatures of sentences containing *ně-* indefinites.

Also noted above, the *ně-* series pronouns can appear in specific known and specific unknown environments, which are not marked with the feature "scalar endpoint" (see Table A). True scalar indefinites, such as English *any* or Polish *kolwiek*, are ungrammatical when used in this environment: **I met with anyone this morning*. But the *ně-* indefinites are fine.

Lastly, we will see that *ně-* indefinites don't function properly in scalar environments. Let us look at the comparative and free choice regions of Haspelmath's map.

Of particular interest is the comparative function. The *ně-* series can appear in comparatives.

- (10) a. ??Jan je zdravější než někdo.
 ??Jan is healthier than someone (but not everyone/anyone).
 b. Jan je zdravější než někdo, kdo bydlí v Praze
 Jan is healthier than someone (some stereotypical person) who lives in Prague.

In a nominal comparative, such as 10a, we get an existential interpretation which is pragmatically odd, bordering upon ungrammatical. However, a scalar interpretation, if such were possible, would be fine, as we can see in the analogous English sentence 11.

- (11) Jan is healthier than anyone (and, therefore, everyone)

It is the lack of scalarity that makes 10a seem so odd, while a similar sentence with a scalar pronoun seems perfectly normal.

In a clausal comparative such as 10b, we get an interpretation with quasi-universal force. However, we can account for this without resorting to scalarity. Quer (1998) proposes that we can analyze relative clauses as the restrictor of a generic quantifier. If 10b is interpreted as bound by a generic quantifier, as in 12, the desired reading is realized.

- (12) GEN[x] (person(x) & live-in-Prague(x)) (healthier(Jan, x))

The expected effects associated with genericity are found with 10b. See Carlson and Pelletier (1995) for further discussion of genericity. First, it admits the presence of exceptions. Sentence 10b can be true without requiring that Jan is healthier than each and every single resident of Prague. Second, the property represented by the relative clause must somehow be “essential” to the statement. Jan is healthier than people from Prague because Prague is a big city with lots of pollution bad water, etc, and this contributes to the poor health of its residents. A *ně-* series pronoun could not be used in a sentence like “Jan is healthier than someone named Miloš” because, presumably, the property of being named Miloš does not influence one’s health or lack thereof. Thus, it appears that the quantificational force bearing upon 10b is generic.

Furthermore, we see that the *ně-*series cannot be scalar, since a reading of 10b with scalarity would lead to true universal quantification, as seen in the English analog 13, not the quasi-universal force found in the Czech sentence.

- (13) Jan is healthier than anyone (and, therefore, everyone) who lives in Prague.

Similarly, free choice readings never arise from a *ně-* series indefinite.

- (14) Někteří student může to udělat.
 ”Some (NOT any/every) student can do that.

Sentence 14 will only render a purely existential meaning, never free choice with universal force, which would require scalarity in order to generate the necessary quantification and implicatures.

Because it can appear in obligatorily non-scalar environments, because we can account for its meaning without resorting to scalarity, and because it fails to generate the proper meanings in necessarily scalar environments, we may conclude that the *ně-* series indefinite pronouns cannot be scalar, even though they sometimes appear in sentences which have universal force.

7. How is this possible?

As noted above, scalar indefinites have universal force. However, universal force can also be obtained via interaction of a non-scalar indefinite with other operators.

Indirect Negation	Negation of a non-scalar existential and negation of a scalar indefinite (along with scalar implicature) are both equivalent to universal quantification.
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Polar Question	Semantics of questions based upon set of possible answers (Karttunen(1977)), one of which is negative (discussed above). In addition, there is a minimal difference between a non-scalar and a scalar question. The former asks “is P(x) true of at least one x?” The latter asks “is P(x) true of the least likely x (and, by implication, for all x)?”
Conditional	Universal quantification provided by conditional operator.
Comparative	Quasi-universal quantification provided by GEN. True universal quantification is impossible because <i>ně-</i> is not scalar.
Direct Negation	<i>ně-</i> won't appear here, it is a positive polarity item (PPI). See Szabolcsi (2002) for discussion of PPIs.
Free Choice	<i>ně-</i> won't appear here, universal force only obtained via scalarity, not combinations of operators, and <i>ně-</i> isn't scalar/won't range over alternative worlds.

In this way we see how a plain vanilla non-scalar existential quantifier can be interpreted as having universal quantification, even though the existential itself can't contribute universality.

8. Conclusion:

Haspelmath's assertion that certain environments will give rise to scalar implicatures and generate universal quantification is too strong. It is more accurate to say that such environments MAY give rise to scalar implicatures. However, it is also possible for non-scalar pronouns, in combination with other operators, to create universal quantification.

9. Notes

1. The thorough reader will note that the Polar Question, Conditional and Comparative functions all have the same feature combinations. The reader is referred to Haspelmath 1997:121 for further discussion of disambiguation between these three items.

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4. a. IAEA-ga Iraq-de kakusisetu-o subayaku/*subayai
 -Nom -in nuclear facility-Acc rapidly/*rapid
 sasatu-o sita.
 inspection-Acc did
 '(lit.) IAEA did the inspection of the nuclear facility rapidly in Iraq.'
- b. IAEA-ga Iraq-de kakusisetu-o itiniti-de/*itiniti-de no sasatu-o
 one-day-in/one-day-in Gen
 sita.
 '(lit.) IAEA did the inspection of the nuclear facility in a day.'

Furthermore, in (1), both IAEA and *kakusisetu* 'nuclear facility' are thematically related to *sasatu* 'inspection'; i.e. IAEA is an agent and *kakusisetu* 'nuclear facility' is a theme of the event *sasatu* 'inspection'. Why do VNs seem to have theta-relations with other arguments, although they are nouns? What is the light verb *su* 'do', which is traditionally considered to have no thematic and semantic role, doing here?

2. Previous Approaches

According to Grimshaw and Mester (1988; henceforth G&M), the verb *su* 'do' is a light verb that does not have a thematic and semantic content. The thematic content is provided by the object: i.e., VNs. G&M claim that this theta-role assignment is observed in combination with the light verb *su*. This process that VNs provide the thematic content to the light verb is called argument transfer. Argument transfer takes place at DS. What the light verb does is to hold places for the thematic roles which are from the VNs, and the light verb assigns the accusative Case to its VNs. Consider the argument transfer:

5. a. keikoku (agent (goal (theme)))
 b. su (<acc>
 c. keikoku () + suru (agent (goal (theme)))<acc>
 d. Mary-wa murabito-ni ookami-ga kuru to
 -Top villagers-Dat wolves-Nom come COMP
 keekoku-o sita.
 warning-Acc did
 'Mary warned the villagers that the wolves would come.'

(5a) shows the type of theta-roles and the number of arguments that the VN *keikoku* 'warning' owns. (5b) indicates that there is no theta-role and argument in the light verb *su*. <acc> means that the light verb can assign an accusative Case to the VN. G&M claims that the light verb does not assign any theta role to the VN. (5c) shows argument transfer, and all arguments of *keikoku*

- 8.
- $$\begin{array}{c}
 \text{V1} \\
 / \quad \backslash \\
 \text{ti} \quad \text{V2} \\
 \quad / \quad \backslash \\
 \quad \text{VNi-o} \quad \text{V2}
 \end{array}$$

In (8), the VN is incorporated into V2, and the VN obtains an accusative Case.

However, in S&H, the position of the light verb is never clear. As they assume, if V2 is *su*, then what kind of verb is V1? If the light verb does not have a thematic and semantic role at all, why does it exist?

In sum, there are a few problems in the works of G&M and S&H. Both authors assume that the light verb *su* is thematically and semantically null. For G&M, the accusative Case on VN is freely given by the light verb, while S&H assume that the incorporation of the VNs to the light verb licenses the accusative Case with assuming that the light verb does not have thematic and semantic contents. Why does this peculiarity allowed in *su*? Is the light verb *su* really thematically and semantically null? Are VNs really nouns that can assign thematic roles? In addition, both G&M and S&H cannot account for why adverbs, not adjectives, appear to modify VNs. Furthermore, both approaches cannot account for the contrast between (2) and (3).

3. Distributed Morphology and VP-within-Nominalization

The aforementioned approaches did not consider the category of VNs carefully. It is generally considered that adverbs modify verbs, not nouns.

9. This is a new/*newly desk.

Thus, it is plausible to consider that VNs in (4) are verbs (here as in 10).

10. a. IAEA-ga Iraq-de kakusisetu-o subayaku/*subayai
 -Nom -in nuclear facility-Acc rapidly/*rapid
 sasatu-o sita.
 inspection-Acc did
 '(lit.) IAEA did the inspection of the nuclear facility rapidly in Iraq.'
- b. IAEA-ga Iraq-de kakusisetu-o itiniti-de/*itiniti-de no sasatu-o
 one-day-in/one-day-in Gen
 sita.
 '(lit.) IAEA did the inspection of the nuclear facility in a day.'

One may say that the aspectual and manner adverbs modify the light verb *su*, not VNs. However, if so, why can't any adverbs freely appear in LVC?

11. Hikooki-ga (*yukkuri) kyuusen-kai o sita.
 Airplane-Nom (slowly) sudden-circle did
 'The airplane sudden-circled (*slowly).'

If the manner adverb *yukkuri* 'slowly' is a modifier of the light verb *su*, why is (11) ungrammatical? Rather, the choice of the adverb seems to be determined by the VN *kyuusen-kai* 'sudden-circle'. Here is a paradox. VNs are Case-marked, which means that they are nouns, although they are modified by adverbs. How do we account for this fact? In other contexts, VNs can be modified by the adjective.

12. IAEA-ga Iraq-de kakusisetu-no *subayaku/subayai sasatu-o
 -Nom -in nuclear facility-Gen *rapidly/rapid inspection-Acc
 sita.
 did
 '(lit.) IAEA did the rapid inspection of the nuclear facility in Iraq.'

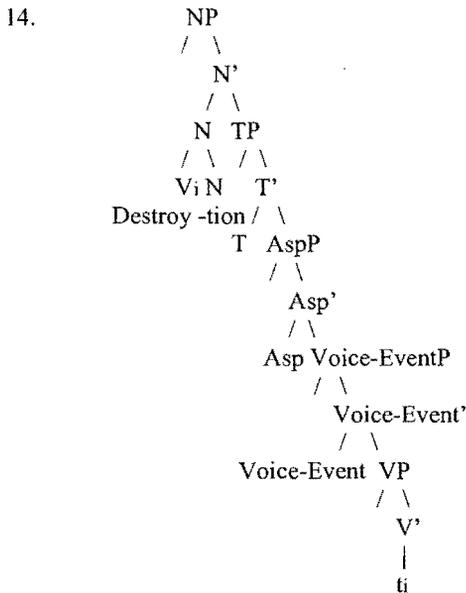
In (12), the theme-argument *kakusisetu* 'nuclear facility' appears with the genitive Case, not the accusative Case as in (10). Depending on how the theme-argument appears, modification patterns vary; i.e., adjectival vs. adverbial modification. If we are correct that adjectives modify nouns, while adverbs modify verbs, this means that the categorial status of VNs varies, depending on the context. To solve this problem, I adopt Distributed Morphology (Alexiadou 1999; Marantz 1997; Harley & Noyer 1999 among others). In Distributed Morphology (DM), the categorial status of the words is not primitive. Rather, the categorial status is determined where the relevant word appears. Alexiadou (1999) shows that the words 'destroy' and 'destruction' are not primitive, but they are listed as a root in the lexicon.

13. a.
$$\begin{array}{c} \text{vP} \\ / \quad \backslash \\ \text{DP} \quad \text{v}' \\ / \quad \backslash \\ \text{v} \quad \text{LP} \\ / \quad \backslash \\ \text{L} \rightarrow \text{V} \quad \text{DP} \\ \text{(L becomes V)} \\ \text{destroy} \end{array}$$
- b.
$$\begin{array}{c} \text{DP} \\ | \\ \text{D}' \\ / \quad \backslash \\ \text{D} \quad \text{LP} \\ / \quad \backslash \\ \text{L} \rightarrow \text{N} \quad \text{DP} \\ \text{(L become N)} \\ \text{destruction} \end{array}$$

(Alexiadou 1999: 3)

In (13a), L (=Lexical item or stem) becomes a verb since LP (Lexical Phrase) is a complement of small *v*, while in (13b) the root becomes a noun since LP is a complement of DP. I utilize (13) for Japanese VNs. That is, depending on the context, Japanese VNs can appear as a verb or noun. If so, that aspectual adverbs and manner adverbs appear does make sense. In this context, VN appears as a verb.³

However, (13a) should be stated more thoroughly. Where do aspectual adverbs and manner adverbs appear? To account for the existence of aspectual adverbs and manner adverbs, I adopt VP-within-Nominalization (van Hout and Roeper 1998). Van Hout and Roeper (VH & R) claim that derived nominals (in the sense of complex event nouns by Grimshaw 1990), are formed by a transformation. More specifically, derived nominals go through the following derivations.



(van Hout and Roeper 1998: 7)

In (14), the verb *destroy* is merged with Voice-Event, Asp, and T. The derivation reaches the point where nominal N (or nominalizer morpheme '-ion') merges with the previously formed syntactic object. As a result, the derived nominal is formed. If we assume this approach for VNs, we can answer some questions that were raised previously. First of all, VNs appear with argument structures since they are verbs. Second, VNs cannot undergo relativization,

topicalization, and scrambling since verbs do not undergo these syntactic processes. Third, aspectual adverbs and manner adverbs modify VNs since VNs are verbs and contain functional projections such as AspP or Voice-EventP. VH&R show the following examples to support their arguments.

15. a. John's explanation of the problem immediately (to the tenants)
 b. the destruction so carefully of the documents
 c. the destruction of the city *for hours/in an hour
 (van Hout and Roeper 1998: 6, 8)

In (15a, b), the manner adverbs 'immediately' and 'carefully' appear in derived nominal constructions, while the aspectual adverb appears in (15c).

However, as Alexiadou (1999) points out, if there is a TP in derived nominals, why can 'there-insertion' not take place?

16. *there's arrival
 (Alexiadou 1999: 6)

Furthermore, there is a correlation between the existence of T and nominative Case in Japanese.

17. a. *John-ga nihongo-no benkyoo
 -Nom Japanese-Gen study
 '(lit.) John's study of Japanese'
 (c.f. John-no nihongo-no benkyoo 'John's study of Japanese')
 b. John-ga nihongo-o benkyoo sita.
 -Nom Japanese-Acc study did
 'John studied Japanese.'

The nominative Case *-ga* in Japanese is licensed by T (Hasegawa 1999 among others). In (17b), *su* 'do' is inflected by the past tense *ta*. Thus, the nominative Case *-ga* as in *John-ga* is licensed. On the other hand, in (17a), there is no tense. Thus, the nominative Case is not licensed. I take this as a piece of evidence that there is no TP in nominalization.

In (14), there are AspP and Voice-EventP that are responsible for aspectual adverbs and manner adverbs respectively. Besides English and Japanese, the relevant evidence can be found in Greek and Korean derived nominals.

18. a. i katastrfi ton egrafon toso prosektika
 the destruction the-documents-Gen so carefully
 'the destruction of the documents so carefully'
 b. i eskesetasi tu Janie pi mia ora
 the examination the John-Gen for one hour
 'the examination of John for an hour'
 (Alexiadou 1999:4)

19. a. John-i 1 sikan aney polose-lul wanseng -ul ha-ess-ta.
 -Nom an hour in report-Acc completion-Acc did
 'John completed the report in an hour.'
 (Pak 2001: 114)
- b. John-i Mary ekey sopho -lul pally paytal-ul ha-ess-ta.
 -Nom to package-Acc quickly delivery-Acc did
 'John delivered the package to Mary fast.'
 (Pak 2001: 43)

In (18a), the manner adverb *prosektika* 'carefully' appears with the derived nominal *katastrofi* 'destruction'. In (18b), the aspectual adverb *epi mia ora* 'for an hour' appears with the derived nominal *eskesetasi* 'examination'. In (19a), the aspectual adverb *1 sikan aney* 'in an hour' in Korean appears with *wanseng* 'completion', while the manner adverb *pally* 'quickly' appears with *paytal* 'delivery'. These pieces of evidence from English, Greek, Japanese, and Korean support the existence of the functional projections AspP and Voice-EventP. Following a suggestion by VH & R and Pak (2001), I assume the following derivation for Japanese VNs.

- 20.
- ```

 VP
 / \
 NP V
 / \ su
 N'
 / \
 AspP N
 / \ Ø
 aspectual Asp'
 adverb / \
 Voice-P Asp
 / \
 manner Voice'
 adverb / \
 vP Voice
 / \
 IAEA-ga v'
 / \
 LP v
 / \
 DP L->V (L becomes V)
 kakusisetu-o sasatu

```

#### 4. Reconsider the status of *su* and Case-marking Patterns

If (20) is correct, the theta-relation between VNs and other arguments makes sense since VN in (20) is a verb. In addition, the appearance of manner and aspectual adverbs in (4) can be accounted for since there are some functional projections in nominalization.

Now, we have to answer two more questions. First of all, how does the accusative Case on VN be obtained? Are the two accusative Cases in (1) the same? Second, what is the verb *su*? In G&M and S&H, *su* is a light verb that does not have a thematic and semantic content, although it has the ability to assign the accusative Case. Is this really true? Let us attempt to answer the first question.

Recall that pre-VN nouns can undergo scrambling, topicalization, and relativization, while VNs cannot. Why does this happen? Longobardi (1994) hints that the difference comes from the type of nominals: DP vs. NP.

21. A nominal expression is an argument only if it is introduced by a category D.

(Longobardi 1994: 620)

Longobardi says that relativization is a test that distinguishes between DP and NP. If relativization is possible, the noun is a DP, while if not, the noun is an NP. Assuming Longobardi, this is found in (2a) and (3a). That is, pre-VN nouns are DP and VNs are NP.

Furthermore, the different type of nouns gets a different type of accusative Cases. Borer (1994) reports that there are three types of accusative Cases: structural Case, partitive Case, and inherent Case.<sup>4</sup> The difference comes from the features of the relevant nouns. The noun with [+specific][+referential] takes a structural Case, the one with [-specific][+referential] a partitive Case, and the one with [-specific][-referential] an inherent Case. While the noun with a structural Case and partitive Case are DP, the nouns with an inherent Case are NP. If Borer is correct, an NP with an inherent Case is non-specific and non-referential. Non-specific and non-referential objects are predicates like verbs. As I assume, VNs are verbs that are nominalized. The categorial status of NP and its feature specification [-specific][-referential] are matched. Following Borer, the pre-VN noun gets the structural accusative Case, while the VN gets the inherent Case.

Now, if the accusative Case on VNs is an inherent Case, then, how can it be assigned? To begin with, what is the inherent Case? Chomsky assumes that the inherent Case is assigned to an NP by a head which theta-marks it (Chomsky 1986, 1995). For instance, Chomsky shows that the following ungrammatical sentence is due to the lack of theta-relation.

22. \*my proof John to be here

(Chomsky 1995: 113)

'John' in (22) cannot obtain an inherent Case from 'proof' since it does not theta-mark 'John'. 'John' does not have any place to be assigned (or checked) Case. Due to 'Case-filter' violation, (22) is ungrammatical. If the accusative Case on VNs is an inherent Case, they have to be theta-marked. Then, the question is what theta-marks VNs. Unlike G&M and S&H, I claim that the verb *su* theta-marks VNs. More precisely, *su* is a one-argument verb. Recall that G&M and S&H assume that the light verb *su* is semantically and thematically null, although it does assign the accusative Case. However, their claim leaves a question: why does *su* have such a peculiar property? On the other hand, considering *su* as a theta-assigner is more plausible from the point of UG. There are one-argument verbs in other languages. Case in point is the English verb 'seem'.

23. It seems that John is happy.

In (23), 'it' is an expletive, while that-clause is an argument of 'seem'. That is, that-clause is a one-argument. Then, how exactly is the inherent Case assigned? To answer this question, I adopt San Martin and Uriagereka's Case-marking system (2002). In San Martin and Uriagereka (SM&U), there are three Case-values and Value specification.

24. Case Values

- a. default structural Case
- b. marked structural Case
- c. special structural Case

25. Case Value Specification

- a. assigns default structural Case value to the first DP to merge.
- b. assigns marked structural Case value to the last DP to merge.
- c. Elsewhere, assigns special structural Case value.

In SM&U, the default structural Case in nominative-accusative languages is the accusative Case, while the marked one is a nominative Case. Special Case is an inherent Case. If correct, recall (20). I claim that VNs are verbs. In (20), the agent is IAEA and the theme is *kakusisetu* 'nuclear facility'. The first DP to merge with the verb *sasatu* 'inspection' is *kakusisetu* 'nuclear facility'. According to SM&U's system, *kakusisetu* gets a (structural) accusative Case. Then, IAEA is merged with the formerly merged syntactic object (i.e., *kakusisetu o sasatu*). (25b) says that IAEA gets a nominative Case. The VN *sasatu* is nominalized by a null morpheme. Now, the nominalized VN *sasatu* gets an inherent Case through the one-argument verb *su*. This is possible since

*su* theta-marks VN. Independently, this kind of construction is found in Basque (ergative-absolutive Case language). In SM&U, there is a parameter between ergative-absolutive languages and nominative-accusative languages in Case-value specification. In ergative-absolutive languages, the default Case is the ergative Case, and the marked Case is the absolutive Case. The absolutive Case is assigned to the first DP to merge with the verb, while the ergative Case the last DP to merge.

26. Jon [ogia egiten] saiatu da.  
 Joh-A bread-Det-A make-Nom-Loc try aux  
 'Jon has tried to make bread.'

In (26), 'Jon' gets an absolutive Case. This means that 'Jon' is the first DP to merge. The square bracket is the nominalized clause. This gets an inherent Case. The Case-marking pattern between Basque and Japanese is exactly parallel. Why can this be found in two different languages? I believe that this is how UG is designed.

## 5. Conclusion

In this paper, I argued that the categorial status of VNs is determined in the context in which they appear. Precisely speaking, VNs can be a verb when they appear as a complement of *v*, while they become a noun when they are a complement of *D*. I adopted DM to account for the unspecified categorial status of VNs. The current approach also explains why manner adverbs and aspectual adverbs appear with VNs when they appear in so-called light verb constructions. Furthermore, I reconsidered the nature of the verb *su*. Against the traditional view, *su* is one-argument verb, just as 'seem' in English. It theta-marks its argument: VNs. Thus, in my approach, it is not necessary to assume the peculiar properties of *su* as in G&M or S&H. Moreover, I show that Japanese has two different types of accusative Cases: structural and inherent Cases. Like Borer, Japanese accusative Cases are also sensitive to feature specifications such as [ $\pm$ referential][ $\pm$ specific]. At last, Case-marking is done by SM&U, who claim that certain orders for Case-assignment is held across the nominative-accusative languages and ergative-absolutive languages.

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<sup>1</sup> The marginal judgment in (1) is due to double accusative constraint in Japanese:

A simple sentence cannot contain more than one o-marked phrase. (Saito and Hoshi 264: 2000)

However, the double accusatives in LVCs are acceptable (see Miyamoto 1999; Saito and Hoshi 2000 among others). I will follow their judgments in this paper.

<sup>2</sup> The original notation of VN is N in S&H (2000: 289).



Since they assume that N is VN, I simply put VN in the main text.

<sup>3</sup> In this paper, I would like to concentrate on VNs as verbs.

<sup>4</sup> I am not concerned with the partitive Case in this paper.

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# Variations in Domain-initial Strengthening and Phonological Implications

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## 1. Introduction

There has been an increasing consensus that one of the most crucial elements in understanding spoken language on a segmental level lies in understanding how prosody affects the physical realization of individual segments. Equally, it is also important to study prosodically conditioned segmental variations because they are likely to serve as cues for higher-level linguistic structure. A large body of recent experimental work has shown that such prosodically conditioned segmental alternations come primarily from segment strengthening in domain-initial positions, an effect known as domain-initial strengthening. Fujimura (1990) proposed that more forceful articulatory gestures are used in syllable-initial position as well as word and phrase initial position. Cooper (1991) showed that word-initial stops tend to have increased closure duration with greater glottal opening. Acoustic data in Pierrehumbert and Talkin (1992) suggested that the glottal articulation of /h/ in English is stronger at the beginning of an Intonation Phrase as compared to the beginning of a word. Similarly, Jun (1995) reported that VOT in Korean is longer phrase-initially than phrase-medially, and longer word-initially than word-medially. In the similar line, a series of electropalatographic studies showed that the consonants are produced in general with greater articulatory magnitude in domain-initial positions at each level than in domain-medial positions (Fougeron and Keating 1996, 1997, Fougeron 1999, Keating, Cho, Fougeon, and Hsu 1999).

There is also some evidence that the duration of word-initial vowels is longer than that of word-internal vowels in French, English (Fougeron 1999, Turk and Shattuck-Hufnagel 2000, Byrd 2000).

A number of experiments cited above show that both consonants and onsetless word-initial vowels are regularly subject to this strengthening, but it is less clear whether initial-syllable vowels with onset consonants undergo it as well.

Fougeron and Keating (1996) clearly demonstrating initial strengthening of consonants and onsetless word-initial vowel in English, found little evidence of lengthening of initial-syllable vowels with onsets. Byrd (2000) obtained similar results.

The results of these studies are furthermore puzzling in light of the typological frequency of vowel-quality neutralizations in non-initial syllables, suggesting that initial position bears some type of positional prominence. Cross linguistically, vowels of initial syllables tend to retain contrasts even when they are not actually domain initial. Progressive vowel harmony is one of such examples. From a slightly different angle, domain-initial syllables are known to be more important for lexical access, it is crucial that all contrasts be maintained there. If this is the case, why are only domain-initial consonants and onsetless vowels subject to domain-initial strengthening?

This paper attempts to answer this question by presenting the result of an experimental study of initial syllables in Hamkyeong Korean, a pitch accent dialect spoken in northern part of North Korea. The data were collected from two native speakers of Hamkyeong Korean who defected from North Korea. The remainder of the paper is organized as follows: A brief sketch of the previous literature on phonetics of initial positions will be presented in section 2. Basic facts of the sound patterns in Hamkyeong Korean will be introduced in section 3. The experimental method and the result will be addressed in sections 4 and 5, respectively. Comparisons with experimental results for English and implications of this study will be discussed in the conclusion.

## 2. Phonetic Studies on Domain-initial Strengthening

Many languages have recognized prosodically conditioned positional effects. One of the such processes is domain-final lengthening which can be defined as more extreme lengthening at the end of higher prosodic domains as compared to lower prosodic domains (Klatt 1975; Oller 1973, Edwards, Beckman and Fletcher 1991, Wightman, Shattuck-Huffnagel, Ostendorf and Price 1992). Both vowels and consonants are equally subject to the lengthening effect.

Unlike the domain-final lengthening, the process known as domain-initial strengthening manifests an asymmetry between vowels and consonants. Across a variety of consonant types, it is relatively widely attested in a number of languages. Various consonants have shown to acquire an increase in gestural magnitude (measured by linguopalatal contact or by VOT of aspirated stops) and closure duration in domain-initial positions (Fougeron 1999, Fougeron and Keating 1996, Keating, Cho, Fougeron, and Hsu 1999, Barnes 2002, Oller 1973 among others).

In comparison, domain-initial strengthening is less consistent in the case of

vowels. Although there is some evidence that absolute word-initial vowels are realized somewhat longer than word-internal vowels in French and English (Byrd 2000, Dilley, Shattuck-Hufnagel and Ostendorf 1996, Fougeron 1999, Turk and Shattuck-Hufnagel 2000), no clear evidence is found regarding whether initial-syllable vowels with onset consonants undergo it as well. A close look at the two phonetic studies of English will demonstrate this point. Fougeron and Keating (1996) found little evidence of lengthening of initial-syllable vowels with onsets. They demonstrated that vowel durations in English are strongly related with degree of opening. Byrd (2000) found the lack of domain-initial strengthening in English vowels as well. In a recent attempt to verify Byrd (2000), Barnes (2002) obtained the same results. The finding of the absence of domain-initial-strengthening muddles our understanding of sound patterns because it can support the thesis that vowels with onsets (henceforth domain-initial vowels) are no more phonetically prominent than absolutely domain-initial vowels.

If this is the case, how can we explain the widely attested sound pattern of domain-initial syllables? Regardless of the presence of the onset, domain-initial vowels tend to be more resistant to neutralization than domain-medial ones. In many languages the vowels of initial syllables present a greater variety of contrast than those of non-initial syllables regardless of the presence of syllable onset. In the following sections, I present empirical counter-evidence to the thesis of weak domain-initial vowels.

### **3. Behaviors of initial syllables in Hamkyeong Korean**

Before proceeding to discussion of the prosody and the behaviors of domain-initial syllables in Hamkyeong Korean, let us begin with a brief sketch of its tone patterns. Five basic observations should be noted. First, the pitch accent bearing unit in Hamkyeong Korean is a syllable rather than a mora. Second, it has two lexical tones and there is an asymmetry between high and low tones. It is always the high tone that undergoes tone alternations. Nothing occurs if two low toned syllables are juxtaposed. Presence and absence of low tones does not make any contribution in defining tone classes. Third, three classes of verbal stems are recognized with regard to the distribution of high tones. They are not our concern and will not be discussed here (refer Kim, 1997, 1998a, 1998b, 1999 for more detailed descriptions along with Optimality theoretic analysis of tone patterns). What is more interesting is the tonal alternations, which lead us to the fourth observation.

Fourth, Hamkyeong Korean exhibits a culminativity (Goldsmith 1976). In other words, one and only one syllable is high toned in a word in Hamkyeong Korean. Compounds are also subject to the culminativity (Ramsey 1978). Consider the tone pattern in (1).

- |     |                    |         |                                |         |          |                        |
|-----|--------------------|---------|--------------------------------|---------|----------|------------------------|
| (1) | pí                 | 'rain'  | sóli                           | 'sound' | písoli   | 'sound of rain'        |
|     | múl                | 'water' | kokí                           | 'meat'  | mulkokí  | 'fish'                 |
|     | pál                | 'foot'  | paták                          | 'sole'  | palpaták | 'the sole of the foot' |
|     | hamkyǽŋto          |         | 'Hamkyeong Province'           | mál     |          | 'words'                |
|     | hamkyǽŋto mál      |         | 'Hamkyeong dialect'            |         |          |                        |
|     | hamkyǽŋto mál      |         | 'Hamkyeong dialect'            | yǽnku   |          | 'study'                |
|     | hamkyǽŋtomal yǽnku |         | 'a study of Hamkyeong dialect' |         |          |                        |

The generalizations born out of the data in (1) are summarized in (2).

(2) The generalizations of the tone pattern in Hamkyeong Korean

- a. One and only one syllable is high-toned in a compound.
- b. If high tone-bearing syllables are adjacent, then leftmost one is high toned.
- c. If high tone-bearing syllables are not adjacent, the rightmost one is high toned.

Finally, the vowel durations in Hamkyeong Korean are positively correlated with degree of opening in isolation and thus low vowel /a/ is much longer than a high vowel /i/. In citation forms, presence of pitch accent does not affect the vowel duration if all other conditions being equal. Put differently, pitch accent in Hamkyeong Korean is not cued by vowel duration and low-tone bearing vowels do not undergo reduction. It is cued by fundamental frequency (Kim, 1999). Researchers in previous studies provide an interesting and recurring description about the behavior of the utterance initial syllables in connection with absence of vowel reduction of low-toned vowels and its duration in Hamkyeong Korean (Ramsey 1978, Cheong 1988, Cheon 1993). One of such descriptions is shown in (3).

(3) Behaviors of utterance-initial syllables

The first syllables in the utterances appear to be louder and prominent than other syllables regardless they are high pitched or not.

(Cheong Y-H 1988: 175)

Some scholars working on Hamkyeong Korean have a tendency to link this observation to the presence of intonational variations or speech style unique to Hamkyeong Korean speakers, which turns out to be misleading. A question that arises from the description is what the physical correlates of prominence mentioned in (3). It should be noted that pitch accent or high tone is not cued by vowel duration in citation forms and observations as in (3) are based on ones in utterance level.

The experimental analysis in the following sections suggests a totally different understanding of facts previously described as an intonational variation. I argue

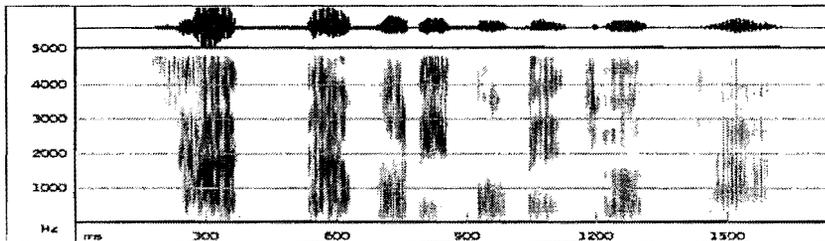
that the phenomenon is in fact a consequence of domain-initial strengthening.

#### 4. Experimental Method

The purpose of this experiment is to examine the effect of domain-initial strengthening. Previous phonetic works on strengthening of domain-initial vowels all demonstrated the lack of strengthening for initial-syllable vowels in English and it was verified in Kim (2001) as well. Due to the space limitations, I will not present my result from three native speakers of North American English here. At this point, we can say with great confidence initial-syllable vowels are exempted from the domain-initial strengthening in English. The major work presented in the paper is concerned with the experimental results for Hamkyeong Korean.

The data reported here are from two native speakers of Hamkyeong Korean speakers, a female and one male in the fifties. Speakers read the test sentences from a randomized list. Sentences were uncovered one at a time by the author to insert a short pause after each sentence. To induce a broad range of vowel duration, the speakers were asked to vary loudness and speech rate. There were two conditions with respect to loudness as used in Liberman et al. (1993): loud (as if shouting to a person in the hall), normal (as if speaking to a person next to you). With respect to speech rate, the conditions were normal and fast. In the normal condition, they were asked to speak at a normal conversation rate. In the fast condition they were asked to speak as quickly as possible while still speaking clearly. The utterances were all recorded on digital tape and they were digitized at a sampling rate of 22.5 KHz., and vowel durations were measured from spectrograms and waveforms display created using the PCquirer (Scicon) as shown in (4).

(4) [sannamúli móme cóta]  
'Wild edible greens are good for your health.'



The stimuli given in (5) were composed of words with more than three syllables. No onsetless syllables were included in the stimuli. VOT of stops in the onsets

## (5) Stimuli

|           |                     |                      |                      |
|-----------|---------------------|----------------------|----------------------|
| kamaki    | 'a crow'            | k'ek'ori             | 'a nightingale'      |
| kəməri    | 'a leech'           | parámi               | 'wind+nominative'    |
| kəmúnko   | 'Korean harp'       | pisori               | 'sound of wind'      |
| kəɾəŋbéŋi | 'a beggar'          | pəsəni               | 'socks+nominative'   |
| sokómi    | 'salt+nominative'   | p <sup>h</sup> irika | 'a flute'            |
| sannamúl  | 'wild vegetables'   | pəpəri               | 'a deaf person'      |
| sók'ori   | 'ox tail'           | t'əkaru              | 'rice flour'         |
| sulcucəŋ  | 'drunken rowdiness' | tókiaru              | 'the helve of an ax' |
| samaki    | 'a mole'            | torík'ε              | 'a flail'            |
| sont'opi  | 'nails+nominative'  | nunmúli              | 'tears+nominative'   |
| nurúki    | 'yeast+nominative'  | patáka               | 'sea+nominative'     |

of the first and second syllables were measured. Among the 22 words, 15 words have identical vowels in the first and second syllables and their durations were measured. The target vowels are indicated in boldface. Codas of the target vowels were controlled and they were all either nasals or liquids.

Each token was placed in three different frame sentences selected to place the target word in initial position in a variety of prosodic domains as in Fougeron and Keating (1996) and Jun (1995). Although a comprehensive study remained to be done, I assumed accentual phrase in Hamkyeong Korean. For present purposes, it does not matter whether Hamkyeong Korean has accentual phrases or phonological phrases. What is crucial is that it has several domains organized hierarchically. The relevant domains were Utterance, Accentual Phrase, and Phonological Word. They are shown in (6).

## (6) Frame sentences and prosodic environments

Utterance Initial: U[Phr[X is good for your health.  
[sannamuli mome cota]  
'Wild edible greens are good for your health.'

Accentual Phrase Initial: U[Phr[I think]Phr[X is good for your health.  
nəsɛŋkəkənən [sannamuli mome cota]  
'I think that wild edible greens are good for your health.'

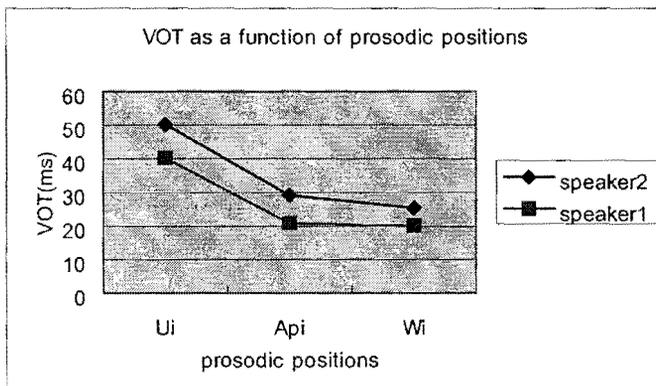
Prosodic Word Initial: U[Phr[.....X] is good for your health.  
[hamkyəŋtoəsənanun sannamuli] mome cota  
'Wild edible greens from Hamkyeong province are good for your health.'

The first measurement was VOT of stops in the first and second syllables (Syllable 1 and Syllable 2 henceforth). Another measurement was durations of the two identical vowels in Syllable 1 and Syllable 2.

## 5. Results and Discussion

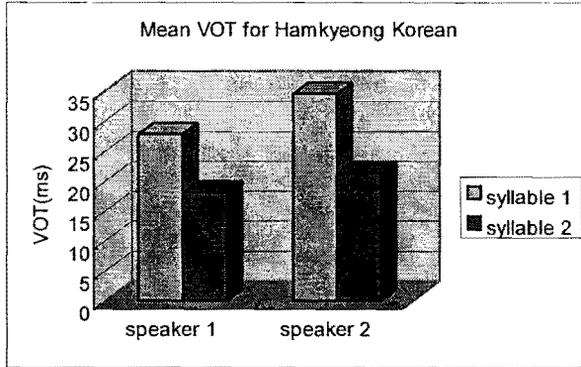
Results are summarized in (7) and (8). First, the line chart in (7) shows that VOT values of stops vary as a function of prosodic position (the higher the prosodic positions, the longer the VOT).

(7) Variations of VOT values as a function of prosodic positions.



Second, the bar charts in (8) illustrate the VOT values pooled across the prosodic positions. The left bars indicate the VOT values of Syllable 1, while the right bars represent those of Syllable 2. In short, VOT of stops in Syllable 1 is significantly longer than that of Syllable 2. This finding was supported by the results of paired t-tests ( $p < 0.05$ ).

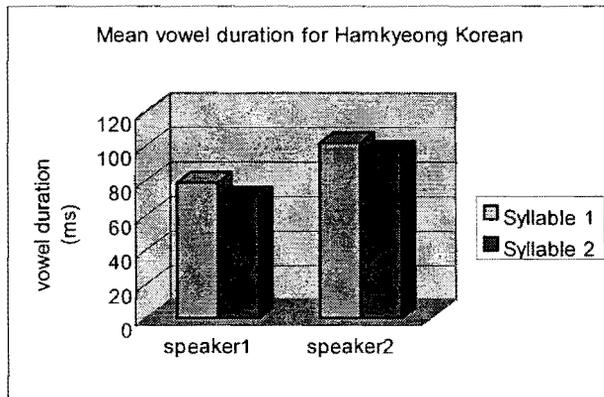
## (8) Mean VOT for Hamkyeong Korean



So far, we have shown that stops in the initial positions of prosodic domains are strengthened, which arguably serves as significant cue marking different levels of prosodic boundaries in Hamkyeong Korean.

Now, let us move on to the most important part of the experimental results: durations of the domain-initial vowels with onsets. It should be reminded that words with identical vowels in the first and second syllables were selected for this purpose in the experiment. The graphs in (9) correspond to mean vowel durations for Syllable 1 and 2 of the target vowels. Across all the speakers, mean durations of initial-syllable vowels are significantly longer than those of the vowels of second syllables as verified by paired t-test ( $p < 0.01$ ).

## (9) Mean vowel duration for Hamkyeong Korean



Putting all of these results together, we can conclude that both English and Hamkyeong Korean have the strengthening of domain-initial consonants. On the other hand, only Hamkyeong Korean exhibits a pattern of domain-initial vowel lengthening in the higher prosodic domains. Presence of domain-initial vowels lengthening in Hamkyeong Korean is important since it provides evidence that domain-initial strengthening varies depending on its language-specific phonetic implementation rules. The potentially universal phenomenon of initial strengthening is shown to be subject to language specific variations in its implementation. The results of the present study clearly support a specific model of phonology regarding the relationship of phonetics and phonology: Phonetic realization of a given phonological rule varies across languages.

Traditional position forwarded by Pierrehumbert and Beckman (1998), Keating (1990), Cohn (1993) and others are in the same line with the view. From this perspective, phonetics and phonology are distinct and the phonology-phonetics interface consists of the translation of a static representation into a dynamic one realized in both time and space. This view, however, has been called into question in some work (Kirchiner 1997, Steriade 1997 among others) in which researchers challenge the presence of language-specific phonetics. The present results show that at least part of phonetic component is no universal and belongs to the language-specific grammar. Thus, they indicate the traditional model of distinct phonetics and phonology is better equipped to account for the Hamkyeong Korean facts.

Any close reader may ask why Hamkyeong Korean displays domain-initial vowel lengthening unlike English. The answer to this question can be found in Keating, Cho, Fougeron and Hsu (1999) where the different boundary signals were revealed in English, as opposed to French and Korean. One of the primary cues for stress placement in English is vowel duration. It is no wonder that English avoids simultaneously implementation of other prosody-determined vowel-lengthening patterns. Otherwise, it would seriously confuse the accurate perception of the placement of stress. Hamkyeong Korean pitch accent is cued only by fundamental frequency (Kim 1999). It is not related to vowel durations, which may allow prosodically determined vowel durations to serve as a source of phonetic cue.

In short, English stress is cued in large by vowels durations and additional positional complication of the feature could interfere with the perception of stress, which leaves no room for positional perturbations of vowel duration. The pitch accent in Hamkyeong Korean, however, is cued only by fundamental frequency and thus vowel duration is free to vary as a boundary signal if necessary. More extensive work will be necessary for us to make any further claims concerning this matter.

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# *There*-sentences and the Definiteness Effect

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## 1. Overview

English *there*-sentences are well known for their puzzling syntactic/semantic constraints such as the definiteness effect. Milsark's (1974) familiar account was two classes of NPs/determiners are identifiable in *there*-sentences: weak NPs of *cardinality* expressions such as *a*, weak quantifiers *few/some/many*, cardinal numbers and strong NPs of *quantificational* expressions such as definite NPs *the/demonstratives/proper names/pronouns*, universal quantifiers *every/all/most*. Strong NPs, unlike weak NPs, are not allowed in *there*-sentences, as in (1b).

- (1) a. There is/are *a/three/some/many* book(s) on the table.  
 b.\* There is/are *the /that/John's/every/most* book(s) on the table.

Numerous attempts have been made to characterize this phenomenon of the definiteness effect (henceforth, DE) but what has been largely taken to be the main characteristic of *there*-sentences is *existentiality*. Most typically, taking *There be* as an existential quantifier, Milsark argues that the DE is a clash between the quantificational nature of strong NPs and non-quantificational *existential* interpretations of weak NPs. However, as many authors (Higginbotham 1987, Safir 1987 & others) pointed out, any claim that the existential interpretation comes from the expletive *there* itself runs into a problem, because the key feature is not a lexical property of the expletive which contributes to the existential reading of the sentence. Furthermore, when we consider *there*-sentences constructed with the intransitive verbs such as *arrive/come/emerge* as in (2), it does not seem to be clear how these sentences can be interpreted existentially and whether the ungrammaticality of (3) is due to the non-existentiality of postverbal DPs.

- (2) a. There arrives a man.  
 b. There emerged many locusts.  
 (3) a. \* There arrives the man.  
 b. \* There emerged every locust. (Higginbotham 1987)

Also cross-linguistic studies suggest that the existential meaning is preserved without using the expletive *there* as in the Korean example (4), which is also the case in the corresponding English non-*there*-existential counterpart.

- (4) etten namca-ka      cengwen-ey isse-yo.  
       a man-Nom        garden-at is -Dec  
       ‘A man is in the garden.’

This addresses a need for a more systematic and clearer explanation to reexamine the previous arguments about the DE and to reanalyze the main syntactic/semantic features distinguishing *there*-sentences from non-*there*-insertion counterparts.

This paper attempts to show that the DE is not a *there*-construction specific phenomenon, but rather the DE is a unified phenomenon triggered by VP information Focus whose structural domain is confined within the VP. This implies the DE observed in other constructions across languages such as head-internal relatives in Korean, as opposed to head-external relatives, needs a unified treatment along the same line, as argued in Lee (2003). With the assumption that all arguments are base-generated within the VP, I claim that *there*-sentences structurally license the VP information focus which highlights the postverbal DP in the focus position of the VP, due to which the raising of the subject argument to the canonical subject position does not take place and the postverbal subject remains in the VP. The proposed analysis based on the structural account of the discourse information focus within the Minimalist framework on INT assigned at the edge of v\*P (Chomsky 2001) is claimed to offer a unified solution not only in characterizing the nature of the DE in *there*-sentences either with the copular *be* or with non-copular intransitive verbs, but also in accounting for what allows exceptions to this constraint.

The paper is organized as follows. In section 2, I first go over the main arguments and their drawbacks of the previous analyses in syntactic, semantic and functional perspectives. In Section 3, I show that the DE should be reanalyzed as a structural constraint triggered by the VP information focus: section 3.1 explains *existentiality* and *newness* interact with discourse information focus and section 3.2 provides a new perspective to the exceptional sentences to the DE. In section 3.3, I provide a structural configuration to the DE as well as to the exceptional sentences to this constraint within the Minimalist framework. In section 3.4, I argue that other well-known constraints such as the predicate restrictions, the scope factor and unavailability of non-generic reading are also triggered in conjunction with the VP-domain specific syntactic/semantic constraints, which supports the proposed analysis in this paper.

## 2. Previous Studies

### 2.1. Syntactic/Semantic approaches

As a formal syntactic account, Safir (1987) argues that the distribution of the DE correlates with a syntactic property of Case inheritance, with the result of unbalanced  $\theta$ -chains between *there* and the postverbal NP. Indefinite NPs, according to Safir, unlike definite NPs, escape Principle C, for which he had to postulate additional stipulations such as the postverbal NP being an argument member in the chain is also a bare predicate of *event* interpretation and a predication of existence favors indefinites for the postverbal NP. Although Safir's perspective that neither functional nor lexical semantic accounts based on the property of word *there* can account for the DE is correct in principle, this analysis raises several questions such as how only indefinites escape Principle C effect, letting alone the question on the function and syntactic derivation of the unbalanced  $\theta$ -chains with regard to the DE. Higginbotham (1987:53), observing a parallel phenomenon of the DE between predicate nominals and *there*-sentences as in (5)-(6), proposes that the relation between the expletive *there* and the postverbal NP is the relation of subject to predicate and the DE is created, because predicative NPs must be indefinite.

- (5) a. John is a doctor.  
 b. \* John is the/every doctor.
- (6) a. There is a doctor.  
 b. \*There is the/every doctor.

However, as he acknowledges, this seemingly parallel effect of the existential and the DE becomes unclear with *there*-sentences with non-copular verbs. The difference between predicate nominals and *there*-sentences in (7)-(8) also suggests this similarity is a misleading one: predicative *be* is not sensitive to referentiality hence is insensitive to the weak/strong distinction per se as in (7a) & (8a) (see de Swart 1999, Safir 1987 for the same argument).

- (7) a. Mary is the chair of the department.  
 b. \* There is the chair of the department.
- (8) a. She is the youngest child in her family  
 b. \*There is the youngest child in her family.

Barwise and Cooper (1981) classify the NP whose determiner forms *D N is a N/are Ns* is either negative strong (=contradictory) or positive strong (=tautology) and is barred in *there*-sentences. Under this classification, *every* is positive strong and *neither* is negative strong therefore neither of them are allowed. But the account runs into a problem in dealing with trivial determiners

such as *either zero or else more than zero* and *either all or else not all*, because the former is allowed but the latter is not. Both sentences in (9) are tautological therefore should be ungrammatical, yet (b) is acceptable (see Keenan 1987).

- (9) a. ?? There is every student in the room.  
 b. There were either zero or else more than zero students in the room.

Also, as Zucchi (1995) points out, Barwise and Cooper's semantics makes no distinction between (a) and (b) in (10) in terms of their truth conditions, thus cannot explain the contrast between the two due to which the generalization misses the most crucial point:

- (10) a. ?? There is every student in the room.    b. Every student is in the room.

This problem on the trivial determiners is resolved in Keenan's proposal (1987:293): 'Keenan's test successfully includes *no*, because *no* has an existential function as such *no students are linguists* can be interpreted *no students that are linguists exist*, in addition to capturing the trivial determiners<sup>ii</sup>. Keenan defines NPs that occur in *there*-sentences are existential NPs, e.g., a weak NP *two* in (11a) has an existential reading (11b), whereas a strong NP *every* in (12a) cannot have the equivalent reading (12b).

- (11) a. There are two boys in the garden.  
       b. More than two boys in the yard exist.  
 (12) a. \* There is every boy in the garden.  
       b. ?? Every boy in the garden exists.

But his account misses the bigger picture on why existentiality plays a role in *there*-sentences, but not in the non-*there* counterparts. Furthermore, his analysis excludes the role of syntax by relying on the purely semantic account.

As an approach of syntax-semantics interface, Diesing (1992) argues what is disallowed in postverbal positions are the *presuppositional* strong NPs which cannot stay within the VP existential closure and have to undergo QR. However, unlike definite NPs whose presuppositionality is well agreed, the presuppositionality of strong quantifiers is controversial. So it would be hard to argue that the unacceptability of (12a), for example, is also due to the presupposition of *every*; on the contrary the opposite effect of non-existentiality seems to create a problem, as pointed out by Keenan. Similarly, it is not exactly the semantic effect of *specificity* (see Enc, 1988) that plays a major role, as specific NPs can occur as in (13) (Higginbotham, 1987: 53).

- (13) There was a certain man I know in the garden; namely, John.

## 2.2. Pragmatic/Discourse approaches

Within the pragmatic approach, the idea that topic position in *there*-sentences is empty whereas the subject has moved to the comment position for new information is not new, as some authors previously suggested what characterizes *there*-sentences might have something to do with topic-comment discourse structure. For example, Rando & Napoli (1978) propose that *there* is a dummy topic definite in form in initial position and the comment which adds new information is moved out of initial position so that it may be more strongly emphasized or focused upon and the definite NPs as a known entity in the discourse are not compatible with the comment for new information.

The imminent problem with Rando & Napoli's proposal and with other previous analyses of similar lines is the sentence-initial subject/topic position is a base-generated position from which the subject moves to the postverbal position therefore movement is downward, due to which various problems such as the binding are unexplained. Similarly, the distinction between definite and indefinite NPs in terms of their discourse information status has been the leading argument in favor of the functional approach to the DE.

What the previous analyses based on new/old information (cf. Prince 1992, Abbot 1993, Ward & Birner 1995, others) lack, however, is to view the problem as a structural phenomenon interacting with discourse information status: the matter has been taken as a purely pragmatic condition on *there*-sentences, as Abbot (1993:41), for instance, argues that the function of *there*-sentences is to draw the addressee's attention to the existence or location of the entity of the focus NP therefore it is generally anomalous to assert the existence of an entity already familiar to the hearer. Another criticism is that it does not provide a convincing explanation on how the universal quantifiers in *there*-sentences lacking referentiality, unlike definite NPs, can also be treated as old information like definite NPs (see McNally 1998 for the similar argument).

## 3. Proposed Analysis

With the assumption that VP is the thematic domain within which all arguments are base-generated and functional feature checking is done in the functional domain through argument externalization, I first claim that *there*-sentences are the structural encoding of VP information focus which highlights the postverbal NP within the VP, due to which the subject raising to [Spec, TP] does not place. The natural consequence of this claim is the structural domain of *there*-sentences is frozen in the VP hence *there*-sentences are subject to the VP-domain specific syntactic/semantic constraints such as the DE. I further argue that the semantic feature *existentiality* plus the discourse information status *newness* play a crucial role in accounting for the DE. Under Keenan's (1987) analysis which takes existentiality as the property of determiners does not

explain why the same determiners are grammatical in non-*there*-insertion sentences. But Keenan's observation that the ungrammaticality of (12a) has something to do with the non-existence of the denoted entity can be incorporated into Milsark's existentiality in terms of cardinality in that the existence of the entity is true if the class has at least one member. However, to Milsark the existential meaning comes from *There be* itself, which cannot be maintained due to the reason that the expletive does not contribute to the existential meaning, as it has been widely agreed upon. This indicates neither Milsark's nor Keenan's analysis is viable in capturing the full properties of *there*-sentences.

### 3.1. Existentiality and newness interacting with discourse information focus

I define the term *existentiality* having a non-null set of the "newly" introduced entity denoted by the postverbal NP in the discourse, and *newness* in terms of the discourse information status of the NP along lines of Heim's (1982) distinction of indefinites and definites providing new vs. old information respectively in the sentence. A question that may arise is whether *newness* alone can be sufficient, as has been claimed previously in the pragmatic approach. *Newness* accounts for the difference between definites and indefinite NPs. But does not explain the ungrammaticality created by strong quantifiers, because *newness* cannot be defined without *existentiality*. So under the proposed analysis the distinction between weak and strong is made according to the absence/presence of these two features: weak NPs possess features [+*existential*, +*new*] thus remain within the VP existential closure. On the other hand, definite NPs are classified with features [+*presuppositional*/-*existential*, -*new*] because, though the set is not null, the denoted entity is not newly introduced therefore [-*existential*], but [+*presuppositional*]: definite NPs whose entity is already *known/presupposed* thus old information have to move out of the VP such as to a Topic /subject position. Strong quantifiers *every/most* in the postverbal position whose set of the denoted entity is an empty set are defined as [-*existential*, -*new*] because of which their occurrence is excluded in *there*-sentences.

Then the natural question is why *there*-sentences require existentiality so that the set of the newly introduced NP should not be null and how this is related to the discourse notion of focus, and why only strong quantifiers in the focus position cannot introduce a non-null set of the entity into the discourse. The simple fact that the speaker cannot give a prominence to the NP by highlighting it into the discourse when the entity/entities is/are simply empty whether in reality or in the mind of the speaker seems to explain the reason that the denoted entity in the focus position cannot be null. As to the question why only strong quantifiers in focus positions cannot introduce a non-null set of the entity, this may be related to the property of strong quantifiers: the incompatibility of universal quantifiers in the focus position because they introduce a null set has

been observed by various authors such as Hergurger (1993), Zubizarreta (1998), who note that the NPs in (14a), for example, can be focus-affected which is interpreted as 'few cooks that applied were incompetent,' whereas in (14b) the NPs cannot have a focus-affected reading such as 'most cooks that applied were incompetent,' instead focus here is only contrastive and emphatic.

- (14) a. Few/many/no/some INCOMPETENT cooks applied.  
 b. Most/all/every/each INCOMPETENT cook(s) applied. (Hergurger 1993)

### 3.2. Exceptions to the definiteness effect

However, once these strong quantifiers acquire features [+existential, +new] provided by the information from the modifying phrase/clause, then they are allowed as in (15)-(16). The sentences (b) & (d) in (16), originally cited by McNally (1998:357) to support her claim that the DE is the restriction on *particulars*, should be analyzed along the same line: in (b) and (d) the sortal modifiers 'kind, sort' narrow the domain of the set enough to provide a non-null set of the DP therefore the features [+existentiality, +newness] are met, whereas in (a) and (c) no such reading of a non-null set is available.

- (15) .. there was every book that John wanted to get for his new semester.  
 (16) a. \*There was every doctor in the convention.  
 b. There was every kind of doctor in the convention.  
 c. \*There were most books in his library.  
 d. There were most sorts of books in his library.

Definite NPs behave in a similar manner: when they acquire [+existential, +new] because of the modifying clause/phrase, they are allowed (17). The descriptive content of the modifying clause enables the status of the denoted NP as if it is newly introduced although its entity is known, and the [+presuppositional] feature seems to get weaker relatively.

- (17) a. .. There were the reservations which are reflected on the chart here...  
 b. There is this cow that I see every morning (Diesing 1992)

What Rando and Napoli (1978) have termed as "List" type *there*-sentences (18) which allows both definites and indefinites NPs and also the main stress is spread on the whole list as indicated in bracket can also be explained as a feature acquisition [+existential, +new] hence remains within the VP:

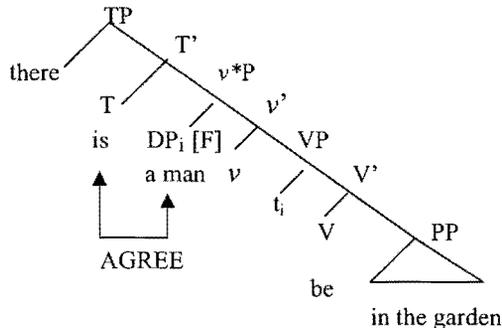
- (18) Q: What's worth visiting here?  
 A: There's [the park, a very nice restaurant, and the library ...]

### 3.3. The structural account of the DE within the Minimalist framework

I have claimed that syntax encodes the discourse information structure and English *there*-construction licenses a structurally-triggered VP information focus. Under this framework, the DE has been viewed as a restriction on the information status of the postverbal DP in the VP focus position be “new information,” for which the condition on existentiality has been defined as “a set of the newly introduced entity should not be null.”

I further propose that the DE can be captured within the Minimalist framework (Chomsky 2001). I especially adopt Chomsky’s (2001:26-27) proposal on the optional EPP feature and the assignment of INT (=interpretive complex) at the edge of  $v^*P$ . Chomsky, calling CP/ $v^*P$  phases as strong phases which are potential targets for movement and referring to the case of Icelandic Object Shift, suggests that the EPP position of  $v^*P$  is assigned INT which accommodates new information. Extending this idea to the case of English *there*-construction, I propose that the postverbal NP base-generated within the VP moves to the edge of  $v^*P$  where it checks its INT feature for the interpretation of information focus as well as its Case/agreement features of T via AGREE. I assume that all arguments are merged in VP but functional feature checking has to be done by functional projections either by MOVE or by AGREE outside VP and argument externalization is necessary for the reasons of EPP/Case/agreement, topicalization, subjectivization, focus movement or other type of A/A’-movement. Therefore, the canonical subject position in *there*-sentences is empty, because the subject raising to [Spec, TP] does not place in order to highlight the VP as a focus domain. The postverbal NP cannot check its Case/agreement via MOVE to [Spec, TP], since the structural domain of *there*-sentences cannot escape beyond the VP. But via AGREE which does not require movement but features are matched abstractly, the postverbal NP at the edge of  $v^*P$  checks the Case/agreement features, in addition to the focus feature, as illustrated below.

(19)



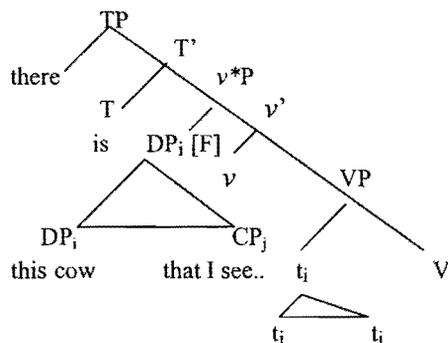
In the configuration (19), *there* is merged at [Spec, TP] to check the EPP on T and the postverbal NP moves to [Spec,  $v^*P$ ] to check its focus feature where it also check Case/agreement via AGREE with T since movement to [Spec, TP] is blocked. I assume that the verb raises to T (see Collins & Branigan 1997 for the verb raising in English Quotative Inversion). If the proposed analysis is on the right track, then the expletive *there* is base-generated at its PF position for EPP-feature requirement of T, suggesting any assumption that takes the expletive moves from inside the VP (cf. Hoekstra & Mulder 1990, de Dikken 1995) cannot be maintained.

The proposed analysis also accounts for *there*-sentences with verbs such as *arrive/come/appear/emerge* in a unified manner as a phenomenon of syntactically triggered information focus. This type of *there*-sentences has been known to be problematic in treating *there*-sentences as the existential-construction, hence has often been taken as a separate construction: e.g. McNally (1998) argues these sentences (20) are presentational *there*-sentences which are not historically related to existential *there*-sentences.

- (20) a. There followed a commotion in the street. (McNally 1998)  
 b. There grew some corns in our backyard last year.

Furthermore, the proposed account can naturally account for the exceptional sentences to the DE such as (15)-(17), which have been argued to be a crucial evidence against any syntax-based account. In the configuration below, the modifying clause is adjoined to the focus NP moved to [Spec,  $v^*P$ ] hence both forming a single constituent and being focus feature percolated get INT interpretation.

(21)



One of the supporting evidence for the single constituency of the postverbal NP and the modifying clause when both move to [Spec,  $v^*P$ ] and get the

interpretation of INT comes from Abbot (1993:44), who points out that the PP in (22a) is a separate constituent, whereas in (22b) it is the part of the focused NP in a context that (22b) is used as an answer to a question like *what can I use to prop open the door?*

- (22) a. There's a book on the table.  
b. There's the book on the table.

Under the proposed analysis, the PP *on the table* in (22a) which is not a part of the focus DP *a book* does not move and adjoin to the focus DP moved to [Spec, v\*P], whereas in (22b) the PP also moves to [Spec, v\*P] and adjoins to the focus DP at [Spec, v\*P] thus forming a single constituent both are focus-affected. This suggests that XP coda in *there*-sentences does not form a single constituent with the postverbal DP in general: Keenan (1987:87) who notes the same point cites example (23a) in which the XP coda can not be relativized (23b), which is a clear indication that the PP *in the fridge* does not form a DP constituent with *whatever*.

- (23) a. Don't worry, John will help himself to whatever there is in the fridge.  
b. \* Don't worry, John will help himself to [whatever in the fridge] there is.

### 3.4. Other VP-domain specific constraints

*There*-sentences are also subject to another well-known constraint, namely the 'predicate restrictions,' which does not allow individual-level predicates ( b ):

- (24) a. There are doctors/two men available/sick/drunk/naked.  
b. \* There are doctors/two men intelligent/tall/white.

Stage-level (SL) predicates typically correspond to temporary/transitory state/activities such as *available/destroy*, whereas individual-level (IL) predicates correspond to more or less permanent states/qualities such as *intelligent/tall/poisonous* (see Milsark 1977, Carlson 1977, Diesing 1992, Chierchia 1995). In particular, Diesing (1992), based on her tree-splitting Mapping Hypothesis,<sup>iii</sup> proposes that different properties of the subjects of the SL vs. IL predicate provide support for her hypothesis and the focus phenomena can be accounted for within this framework, because focus can project from the VP-internal subject position whereas it is blocked VP-externally as the ungrammaticality (25b) shows:

- (25) a. I only said that EGGPLANTS are available.  
b. \* I only said that EGGPLANTS are poisonous. (Diesing 1992)

With no focus effect, Diesing argues, (25a) should be derived from ‘ $\exists_x$  x is an eggplant  $\wedge$  x is available’ and (25b) from ‘Gen<sub>x</sub> [x is an egg plant] x is poisonous in general.’<sup>iv</sup> But the interaction of the focus effect on the bare plural yields the unacceptability of (25b) since the subject of the IL predicate has to be generated outside the nuclear scope, whereas Focus has to be generated VP internally and this yields the unacceptability in (25b).

Along similar lines, I claim that the contrast in grammaticality in (24) is created by the [+focus] effect on the postverbal DP: the subject of the SL predicate can be positioned either at [Spec, VP] or [Spec, IP], so it can remain at [Spec, VP] in *there*-sentences with the weak existential reading as in (24a). On the other hand, in (24b) the subject of the IL predicate cannot remain in the VP and has to raise to [Spec, TP].

This illustrates not only the DE but also the predicate restrictions are indeed triggered by the VP-information focus that encodes new information status of the argument in the structure. Also non-availability of the generic reading of the postverbal NP in *there*-sentences, as pointed by Prince (1992) who notes that *there*-sentences do not allow a generic reading, can be related to the reason that for generic interpretation the NP should necessarily move outside the VP.

In addition to the DE, the predicate restrictions, and non-availability of the generic reading, the other well-known fact that the postverbal NP in *there*-sentences does not allow a wide scope reading, unlike non-*there* counterparts which allows both a wide scope and a narrow scope reading also supports the proposed analysis of *there*-sentences licensing syntactically-triggered VP information focus. For example, as Authier & Reed (2000) point out, in (26) the postverbal DP *a cow* is under the scope of negation and does not allow a wide scope specific reading but an indefinite reading, as (26b) shows. This again supports the proposal that the postverbal DP does not escape beyond the VP existential closure.

- (26) a. There isn’t a cow in the backyard  
 b. What/\*which cow is there in the backyard. (Authier & Reed 2000)

#### 4. Concluding Remarks

In this paper I have argued that English *there*-sentences structurally license the VP information focus that highlights the postverbal NP in the VP focus position therefore the subject raising to [Spec, TP] does not take place. This naturally provides a new perspective on the structural relation of *there*-sentences with non-*there*-insertion counterparts: in non-*there*-insertion counterparts the subject argument base-generated at [Spec, VP] raises to the canonical subject position [Spec, TP] to check EPP and Case/agreement features. Therefore, under the proposed account the ungrammaticality of (a) in (27), as opposed to the grammaticality of (a), is explained as a result of the English language-specific

structural constraint on the subject raising which restrains the occurrence of a bare noun in the sentence-initial subject position.

- (27) a. \* Space is in the room.  
 b. There is space in the room. (Milsark 1974)

What this paper implies is languages do license discourse information focus syntactically and split syntactic domains CP/IP vs. VP encode different information structure. Furthermore, the suggested analysis may provide a unified solution to the DE observed in other constructions such as donkey sentences and head-internal relatives: e.g., It has been known that unbound anaphora to indefinite antecedent in (28) has something to do with the existentiality of antecedent NP (cf. Kamp 1981, Heim 1982, Higginbotham 1987). Also note the ungrammaticality of (29a), parallel to (29b).

- (28) a. If I see [ a few donkeys], I'll kick them.  
 b. \*If I see [few donkeys], I'll kick them. (Higginbotham 1987)

- (29) a. \* Every man who owns only donkeys beats them.  
 b. \* There are only donkeys in the garden. (suggested by Higginbotham)

## Notes

<sup>i</sup> "A determiner is called existential iff either it is a basic existential determiner or it is built up from basic existential determiners by Boolean combinations, composition with adjective phrases, or the exception determiner operator."

<sup>ii</sup> *Either zero or else more than zero* is existential, since it is built up from basic existential determiners, whereas *either all or else not all* is not existential therefore is excluded.

<sup>iii</sup> Mapping Hypothesis (Diesing 1992): Material from the VP is mapped into the nuclear scope. Material from the IP is mapped into a restrictive clause.

<sup>iv</sup> An abstract Generic operator binds variables to produce a generic reading.

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# Grammatical Competence Reflects Parsing Performance: The Case of Hebrew

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## 1. Introduction

One of the well-known examples of the garden path phenomenon, the one supplied by Bever (1970), can be experienced in sentence (1) below, which has already gained the status of a canonical garden path:

(1)  $\zeta$ The horse raced past the barn fell.<sup>1</sup>

Sentence (131) induces a processing difficulty and reanalysis is required in the purpose of establishing the correct structural representation. The sentence is locally ambiguous between a matrix clause reading and a relative clause reading, due to the morphological ambiguity of the verb *raced*. The reader is lead down an erroneous garden path and is consequently required to reanalyze. Reanalysis is not performed by the automatic sentence processor (or parser); rather it is transferred to the conscious mind. The severe processing breakdown and the consequent transfer to the conscious mind are two characteristics unique to the garden path phenomenon.<sup>2</sup> For this reason, garden path sentences provide a viable means of exploring human cognition and natural language processing. Although the phenomenon has received much attention in psycholinguistic research, theoretical linguists found little interest in it, since it was not clear how performance and competence were interrelated. Kimball (1973) was the first one to speculate on the mechanism of human sentence processing relying on the phenomenon. He postulated seven parsing principles, which later formed the foundation for the prominent garden path model (Frazier 1978). The garden path model incorporates two parsing principles that shall be described further on in this paper. Although initially not conceived to predict the severe processing breakdown effect, the model gained importance in accounting for phenomena related to parsing performance, providing a relatively simple account for psychological observations on human language processing.

Later down the road, Pritchett (1992) has introduced a theory that attempted to predict the occurrence of the garden path effect. The theory

demonstrated that an account for processing phenomena could be provided for within the framework of generative grammar, making the connection between parsing performance and grammatical competence explicit. This theory shall be delineated in the sections that follow. Despite the numerous examples given in Pritchett's book to support his theory, no experimental work has been carried out to examine the validity of the predictions of the grammatical theory of processing, as far as we know of until now. This is the purpose of the current study.

The judgment experiment to be described in the continuation was designed to differentiate between different predictions of the two distinct theories, in addition to another theoretical consideration. This is the consideration of obligatoriness of theta roles and it shall be described later on. It will be shown that the data obtained from garden path sentences in Hebrew provide strong support for the grammatical theory of parsing performance.

The paper is organized in the following way. The first section introduces the grammatical theory of parsing performance and its predictions; the second presents the garden path model along with its own relevant predictions. The third section discusses predictions of obligatoriness. The subsequent section describes the experiment, provides the results. Finally, a discussion about the meaning of the results is provided, including a brief discussion about the implications of the experiment over the theories of parsing performance.

## 2. The Predictions of the Grammatical Theory

Two principles that guide parsing have been suggested in Pritchett's theory:<sup>3</sup>

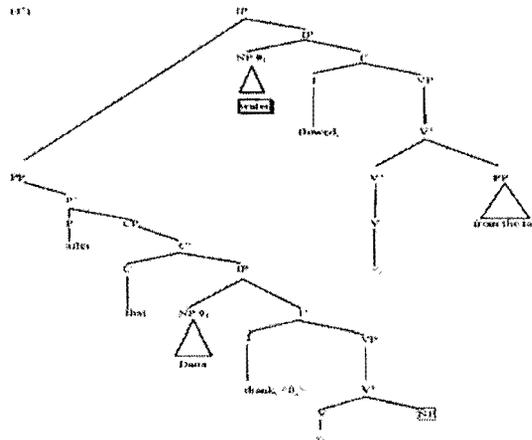
- (2) **Theta Attachment (TA):** The theta criterion attempts to be satisfied at every point during processing given the maximal theta grid.<sup>4</sup>
- (3) **On Line Locality Constraint (OLLC):** The target position assumed by a constituent must be governed by its source position; otherwise, attachment is impossible for the automatic Human Sentence Processor.<sup>5</sup>

Principle (132) characterizes the initial resolution of local structural ambiguity. Principle (3) is a constraint on possible structural reanalysis, and as such serves as a constraint on human cognition expressed in grammatical terms. Let us turn to the manner with which the principles predict the garden path effect. Consider example (4) in Hebrew, which demonstrates object-subject ambiguity:

- (4) *ʔaxarey še+dana šateta ma'yim zarmu me+ha+berez.*  
 After that+Dana drank water flowed from+the+tap.  
 'After Dana drank water flowed from the tap.'

The parser initiates the automatic processing of (4). Since attachments are motivated by principle (2), viz. attempting to satisfy the theta criterion

given the maximal theta grid of a predicate, all incoming elements devoid of thematic information are stored in a buffer, and structural attachments are executed only upon encountering V- or P-heads (following Pritchett 1988, 1991, 1992; Altmann 1999; Reinhart Tanya (p.c.), Siloni Tal (p.c.); Mulders 2002).<sup>6</sup> Once *drank* is encountered, which is a theta role assigner, satisfaction of Theta Attachment must be attempted. Given its maximal theta grid, including an external and a nonobligatory internal theta role, the verb can license the NP *Dana* with the first theta role and thus an attachment is generated. At this stage, Theta Attachment might be considered to be temporarily violated since the second theta role cannot be assigned. However, this is not the case. As postulated, the parser attempts to satisfy the theta grid, but clearly, there is no NP to assume a theta role. Now *water* is admitted to the tree and assigned the internal theta role. Consequently, Theta Attachment is satisfied along with the theta criterion. In the next step, *flowed* is admitted to the parse with its own maximal theta grid,  $\langle \theta_1 \rangle$ , and it must satisfy the theta criterion through Theta Attachment. However, the human sentence processor recognizes that there is no available overt NP that can receive the external theta role of *flowed*. Processing breakdown ensues since Theta Attachment was violated. Satisfying the theta criterion through Theta Attachment means directly transferring the theta marked NP *water* from its initial position to another. This is an impossible move as constrained by the OLLC (principle 3) if the target position of the NP, the subject position of *flowed*, is not governed by its source position, i.e. the complement position of *drank*. Consequently, the parse is conveyed to the conscious mind, yielding the garden path effect. Following to that, the NP *water* is removed from its source position and is relocated in the target position. Looking at the final tree (4'), it can be observed that the target position (marked by a shaded square) of the theta marked NP is not governed by its source position (marked by a square), as the source position does not m-command the target position, and there are several maximal projections dominating the former but not the latter. This stands in clear violation of the OLLC.



Let us now analyze sentence (5), following principles (2) and (3):

- (5)  $\checkmark_i$  ha+ima kilfa la+yeled, OP<sub>i</sub> še e<sub>i</sub> axal tapuax adom.<sup>7</sup>  
 The+mother peeled to+child that ate apple red.  
 'The mother peeled a red apple for the child who was eating.'

First, the NP *the mother* is encountered and is stored in the buffer. The third element *peeled* is a theta assigner that incorporates three theta roles in its maximal theta grid. Now, attachment can be attempted to satisfy the theta criterion. The external theta role is awarded to *the mother*. The following incoming constituent *to child* is licensed by the first internal theta role of *peeled* and attached as an argument. The sixth element *that* enters the buffer, and then *ate* is admitted to the parse. The parser can create a CP at this point in time, a subject relative clause, since a theta assigner has been introduced to the parse. The verb *ate* has maximally two theta roles. Recall that Theta Attachment requires the satisfaction of the theta criterion given the maximal theta grid: the external theta role of *ate* is awarded to the trace left by the operator in the relative clause. At this stage, the parser maintains two theta roles unassigned: the second internal theta role of *peeled* and the internal theta role of *ate*. The last incoming NP (ignoring the irrelevant adjective in the following adjunct position) can be licensed by the second internal theta role of *peeled* or by the internal theta role of *ate*. This situation will be termed here "theta role surplus".

The locus of the attachment of the NP hinges on the local arbitrary decision that the human sentence processor makes. If the parser decides to discharge the second internal theta role of *peeled*, the parse will not invoke the garden path effect, as no violation of the theta criterion comes about. Alternatively, if the parser decides to issue *apple* with the second theta role of *ate*; leaving the second internal theta role of *peeled* in the buffer, the outcome will be a garden path effect. Since the second internal theta role of *peeled* must be discharged in order to yield a grammatical representation, the NP *apple* is transferred from its current position as the complement of *ate* to the complement position of *peeled*. It is exactly this move that is constrained by the OLLC, because the source position of *apple* does not govern its target position (the source position is within the embedded clause whereas the target position is within the matrix clause, hence government is impossible—there are several maximal projections intervening). The OLLC predicts that the garden path effect shall be invoked.

Consider now a similar case, where an NP immediately following the embedded verb must be interpreted as its complement but is locally misconstructed as a matrix object:

- (6)  $\checkmark_i$  Ha+paselet natna la+itonay še+osef ciyur-ey  
 The+sculptress gave to+journalist that+collects paintings-GEN  
 ma'yim et ha+psalim.  
 water ACC the+sculptures.  
 'The sculptress gave the sculptures to the journalist that collects  
 aquarelle paintings.'

As mentioned, assume that Theta Attachment in (6) leads to the incorrect attachment of *paintings* as the complement of *gave*, rather than *collects*.<sup>8</sup> For sculptures to be interpreted as the complement of *gave*, reanalysis is required in which *paintings* is attached as the object of *collects*, but it violates the OLLC. The second complement of *gave* (the position originally occupied by *paintings*) does not govern its target position inside the relative clause modifying the complement of *collects*, since several maximal projections intervene. Alternatively, had *paintings* been initially attached as the complement of *collects*, *sculptures* could have been attached as the complement of *gave*. This is the correct analysis that does not lead to a local violation of the theta criterion, rendering the OLLC inapplicable.

It appears that individuals can either experience severe processing breakdown when reading sentences (5) and (6), or find them unproblematic. This lies upon impressions from several informal experiments (cf. Pritchett 1992, notes 12 and 111). The grammatical theory incorporates the possibility for arbitrary decision-making by the parser in accordance with these observations. An incoming NP that appears after an embedded clause could receive a theta role either from a matrix theta assigner or from an embedded theta assigner. Accordingly, a local erroneous attachment decision might lead to the invocation of the garden path effect, whereas the other one would not. The decision in which way to analyze sentences (5) and (6) at the point where the post-relative clause NP appears is arbitrary, and emanates in the sporadic occurrence of the garden path effect, unlike sentence (4) that induces difficulty in every instance of a parse. In statistical terms, sentences (5) and (6) should yield binomial chance distribution of the garden path effect, whereas sentence (4) should yield above chance distribution, i.e. the distribution will significantly differ from chance, demonstrating to have consistency in experiencing the effect.

### 3. The Predictions of the Garden Path Model

Frazier (1987) introduced the following parsing principles:

- (7) **Minimal Attachment (MA)**: Do not postulate any potentially unnecessary nodes.
- (8) **Late Closure (LC)**: If grammatically permissible, attach new items into the clause or phrase currently being processed (i.e. the phrase or clause postulated most recently).

Returning to sentence (4), principle (7) predicts that *water* will be attached as the complement of *drank*, because if *water* indicated a new clause, this would essentially introduce another unnecessary node (another CP). Apparently, the item is “closed” in accordance to principle (8), as attachment of *flowed* to the previous clause is not grammatically permissible. However, the parser finds out that *water* must be located in the subject position of *flowed*, in violation of MA, since a CP must be generated. Reanalysis is necessitated, which is not without cost. This is the

source of the garden path effect.<sup>9</sup> In establishing her principles, Frazier relies on many experiments on human sentence processing (e.g. Frazier 1978, 1983, 1988; Frazier & Rayner 1982, to mention but a few), rendering MA and LC principles that are derived from observations on sentence processing.

Note that LC incorporates a condition that is based on grammar ("if grammatically permissible"), without specifying how grammar interacts with this principle. Nevertheless, the garden path model is a prominent psycholinguistic model for explaining human sentence processing.

Next, we shall consider the analysis of sentence (5). In this sentence, the parse begins in accordance with principles (7) and (8). While in the previous section it was shown that Pritchett predicted an arbitrary decision-making as demonstrated above, when considering the garden path model, such a dilemma does not arise. The parser attaches the NP *apple* as the argument of *ate*. If this attachment decision were not preferred, attaching *apple* as the argument of *peeled* would violate LC, as it is out of the clause currently being processed.<sup>10</sup> The erroneous decision is not cost-free since it requires reanalysis and will therefore result in the invocation of the garden path effect.

Optionality in terms of making an arbitrary decision does not apply to sentence (6). When *paintings* is entered, it can be attached as either the argument of the embedded verb or the matrix verb (both are grammatically permissible). However, LC thwarts the attachment of the NP to the latter, as it is out of the window currently being parsed. The second incoming NP *sculptures* must be attached to the matrix verb. The parse as predicted here leads directly to the correct syntactic representation of the sentence, relinquishing the need for reanalysis. Whereas it is predicted by Pritchett that sentences such as (5) and (6) will have sporadic occurrence of the garden path effect, within the garden path model (5) would invoke a garden path effect at all instances of parsing and (6) will be unproblematic to process. In this sense, the two theories make separate predictions with regard to human performance.

#### 4. Considerations of Obligatoriness

The obligatoriness of theta roles presumably plays a part during parsing too, contrary to the opinion expressed by Pritchett (1992, p. 92). To test this effect, it was assumed that the parser discards obligatory theta roles first and regards nonobligatory roles to have lower priority. The predictions that follow from considerations of obligatoriness lead to different expectations in performance, which can be tested as well in this experiment. In sentence (5), the second internal theta role of the matrix verb is obligatory, and the internal theta role of the embedded verb is nonobligatory. Thus, no garden path effect is predicted to occur, since the second internal theta role of the matrix verb shall always be assigned to the NP following the embedded clause. Sentence (6) leads to a different situation: both buffered theta roles are obligatory. The distribution depends on the decision which role will be

given to the first NP immediately following the embedded clause. The parser arbitrarily chooses, resulting in binomial chance distribution.

Another type of sentences was added, which was similar to (6), but differed in the obligatoriness of the roles, e.g.:

- (9) Ha+baxur hizmin me+ha+baxura še bišla aruxat-erev of.  
 The+guy ordered from+the+girl that cooked dinner chicken.  
 ‘The guy ordered chicken from the girl that cooked dinner.’

In (9), the garden path effect is expected to occur in all cases of the parse, as the second internal theta role of the matrix verb will first be assigned to the NP following the embedded clause, leading to an ungrammaticality, and subsequent reanalysis. The following section explains how the different predictions were tested in the experiment.

## 5. The Experiment

### 5.1 Predictions

The experiment contained five types of sentences. The first type was CONTROL sentences, i.e. sentences that were analyzed without inducement of the garden path effect, for instance:

- (10) Ha+davar masar mixtav la+iša še+patxa  
 The+postman delivered letter to+woman that+opened  
 et ha+delet.  
 ACC the+door.  
 ‘The postman delivered a letter to the woman that opened the door.’

The second type was TYPE GP sentences. These incorporated the same structural ambiguity and violations as in sentence (4). CONTROL sentences contained the same number of words as TYPE GP sentences ( $\pm 1$  word) and the verbs inside CONTROL sentences did not create the ambiguities as in TYPE GP. The occurrence of the garden path effect of sentences (5) and (6) was compared to the occurrence of the garden path effect in TYPE GP and CONTROL sentences, which serve as upper and lower reference points, respectively. Sentence (5) was titled TYPE INP, sentence (6) TYPE 2NP<sub>(ObOb)</sub>, and sentence (9) TYPE 2NP<sub>(ObNon)</sub>. The predictions in statistical terms are summarized in table (5-i) below.

Table 5-i: Predictions of distributions according to parsing strategies

| <i>Type of sentence</i>     | <i>Obligatoriness</i>                          | <i>Grammatical Theory</i>              | <i>GP model</i>                                      |
|-----------------------------|------------------------------------------------|----------------------------------------|------------------------------------------------------|
| TYPE GP                     | Above chance distribution of GP effect         | Above chance distribution of GP effect | Above chance distribution of GP effect               |
| CONTROL                     | No effect                                      | No effect                              | No effect                                            |
| TYPE INP                    | No effect, like CONTROL                        | Chance distribution of GP effect       | Above chance distribution of GP effect, like TYPE GP |
| TYPE 2NP <sub>(ObOb)</sub>  | Chance distribution of GP effect <sup>11</sup> | Chance distribution of GP effect       | No GP effect, like CONTROL                           |
| TYPE 2NP <sub>(ObNon)</sub> | GP effect, like TYPE GP                        | Chance distribution of GP effect       | No GP effect, like CONTROL                           |

## 5.2 The questionnaire<sup>12</sup>

First, the subjects were asked to rate two sentences with respect to one another. Sentence A was a TYPE GP sentence and sentence B was a CONTROL sentence. The difference between the two was only in the choice of verb. TYPE GP contained a transitive verb, and the CONTROL sentence contained an intransitive verb. The subjects were asked to circle the sentence that was more difficult.<sup>13</sup> Subjects who thought sentence B was more difficult were left out of the experiment, as their results were useless—they simply did not understand the task.<sup>14</sup> Second, subjects were given a list of 60 stimulus sentences and were asked to rate the test sentences to be “as difficult as A” or “as difficult as B”. The assumption in the second task is that subjects have been trained to circle only sentences that induced a garden path effect by the first comparison task, therefore reducing any other interfering factors.

The questionnaire contained 7 CONTROL sentences, 7 TYPE GP sentences, 6 TYPE INP sentences, 7 TYPE 2NP<sub>(ObOb)</sub> sentences, 8 TYPE 2NP<sub>(ObNon)</sub>, and 25 distracter sentences. The sentences were randomly ordered, but stimulus sentences did not appear one after the other. Due to limitations of space, the list of sentences could not have been appended.

## 5.3 Results

The results rely on the frequency of the number of people that answered A, i.e. that a certain sentence was difficult. The results are based on 106

Hebrew native speakers, all students of Tel Aviv University. Twenty students were excluded because they did not pass the initial criterion.

#### 5.4 Analysis of variance: item analysis

Every sentence received a score, which was the number of subjects who had chosen A for a specific sentence in a certain sentence type. The mean value of A answers to each sentence type was then calculated and divided by the total number of subjects. Table (5-ii) reports the means and includes the standard deviations from the mean value for each sentence type that belonged to this category:

Table 5-ii: Results of analysis of variance according to sentence type

| Type of sentence            | Mean value (%) | Standard Deviation |
|-----------------------------|----------------|--------------------|
| CONTROL                     | 6.09           | 3.23               |
| TYPE GP                     | 80.05          | 9.88               |
| TYPE 1NP                    | 64.31          | 16.16              |
| TYPE 2NP <sub>(ObOb)</sub>  | 21.31          | 7.11               |
| TYPE 2NP <sub>(ObNon)</sub> | 29.09          | 4.23               |

#### 5.5 Contrasts: significance of sentence type

The calculations of contrasts (F-Value) between the types are found in table (5-iii) below. The calculations were conducted to see whether the types of sentences were significantly different from one another. Table (5-iii) also includes the value of probability of each type. Significant differences are marked with an asterisk (\*).<sup>15</sup>

Table 5-iii: Contrasts

| Contrast                                                                | F-Value | Probability (p) |
|-------------------------------------------------------------------------|---------|-----------------|
| TYPE GP vs. TYPE 1NP                                                    | 9.55    | 0.0045          |
| TYPE GP vs. TYPE 2NP <sub>(ObOb)</sub>                                  | 144.03  | 0.0001          |
| TYPE GP vs. TYPE 2NP <sub>(ObNon)</sub>                                 | 100.09  | 0.0001          |
| TYPE GP vs. TYPE 1NP, 2NP <sub>(ObOb)</sub> ,<br>2NP <sub>(ObNon)</sub> | 106.54  | 0.0001          |
| TYPE 1NP vs. TYPE 2NP <sub>(ObOb)</sub>                                 | 71.23   | 0.0001          |
| TYPE 1NP vs. TYPE 2NP <sub>(ObNon)</sub>                                | 44.39   | 0.0001          |
| TYPE 2NP <sub>(ObOb)</sub> vs. TYPE 2NP <sub>(ObNon)</sub>              | 2.33    | 0.1382*         |
| CONTROL vs. TYPE 1NP                                                    | 130.58  | 0.0001          |
| CONTROL vs. TYPE 2NP <sub>(ObOb)</sub>                                  | 9.67    | 0.0043          |
| CONTROL vs. TYPE 2NP <sub>(ObNon)</sub>                                 | 20.37   | 0.0001          |

## 6. Discussion of the Results

The results of the item analysis in section (5.4) show that TYPE GP sentences were judged the most difficult sentences because of the largest percentage of people that had indicated the sentences difficult, in

comparison to the percentages of any other sentence types, while CONTROL sentences were deemed the easiest ones under the same comparison of percentage results. These are the expected results with regard to TYPE GP and CONTROL types. TYPE INP sentences were found in between TYPE GP and CONTROL percentage results. The contrasts in section (5.5) between the different sentence types indicate that all types of sentences were significantly different, except TYPE 2NP<sub>(ObOb)</sub> and TYPE 2NP<sub>(ObNon)</sub>.

It is quite clear that the predictions of the obligatoriness hypothesis were not borne out in the results, since there is no correspondence between the predictions and the item analysis results. This renders the concept of obligatoriness irrelevant during parsing, as noted by Pritchett. We shall therefore no longer be concerned with the assumptions of obligatoriness. The results conspire to show that the difference between sentence types cannot be accounted for by Late Closure, as part of the garden path model. It cannot explain the significant difference between TYPE GP and TYPE INP sentences (since LC predicts them to produce the same percentage of the occurrence of the garden path effect), and the significant difference between CONTROL and TYPE 2NP of both kinds (ObOb and ObNon). Had LC been the principle that predicted the occurrence of the garden path effect, it would have been impossible to explain why differences between the types existed. At first sight, from the results in percentages, it might appear that TYPE INP and TYPE 2NP of both kinds do comply with the predictions of LC, as the majority of people said that TYPE INP was difficult, and that TYPE 2NP of both kinds were easy (note that TYPE INP and TYPE 2NP of both kinds are mirror images of one another in terms of their percentage results). However, the significant difference between all of the sentence types still cannot be accounted for by LC.

It is quite possible that LC is resorted to only when a surplus of theta roles is generated, being in itself a heuristic.<sup>16</sup> This means that Late Closure is one of the many ways in which a certain parser chooses to work by in an attempt to make syntactic attachments, resorting to LC only when Theta Attachment does not lead to a decision. It follows that the higher percentage in TYPE INP, the crucial sentence type, is due to a certain preference. A preference based on a heuristic shows that the underlying reason is indeed due to theta role surplus.<sup>17</sup> From a theoretical perspective, Theta Attachment in itself is a parsing heuristic that is resorted to in order to resolve local ambiguity by building a structure that maximally satisfies a particular grammatical constraint or constraints (Pritchett 1992, p. 14). In sentences that incorporate optionality, Theta Attachment is useless when theta role surplus accumulates, as it cannot be used by the parser to make the attachment decision that will lead to the maximal satisfaction of the theta criterion. It is therefore very conceivable that when surplus is encountered, the parser turns to another parsing heuristic known to it. In order to be more precise about this preference, we suggest replacing the term Late Closure with proximity,<sup>18</sup> which better reflects the tendency of the parser to attach incoming NPs to the closest verb.<sup>19</sup>

The question now becomes in what way proximity can be defined: Is it simply a general grammatical preference to locally attach light NPs to the previous phrase being constructed (note that this is not an additional strategy that is unique for sentences with theta roles surplus, but rather a general preference of the computational system), or is it a heuristic that comes into play once a problem arises which requires a solution, (i.e. surplus of theta roles). Tal Siloni (p.c.) notes that there seems to be an independent preference to have a light direct object adjacent to its theta assigner. When a light NP is distant from its theta-assigner, native speakers judge the sentence as odd or marginal. Thus, they prefer (11b) over (11a), as the direct object *na'ala'im* 'shoes' is close to its theta assigner, the verb *xilka* 'gave'. This is so despite the fact that Hebrew does allow some flexibility in the placement of direct objects (note that the embedded verb is intransitive, so (11a) presents no optionality; it is clear that the NP must be attached to the matrix verb).

- (11) a. ?Ha+mora xilka la+banot še+ohavot lirkod na'ala'im.  
 The+teacher gave to+girls that+liked dancing shoes.  
 'The teacher gave the girls that liked dancing shoes.'  
 b. Ha+mora xilka na'ala'im la+banot še+ohavot lirkod.  
 The+teacher gave shoes to+girls that+liked dancing.  
 'The teacher gave shoes to the girls that liked dancing.'

This preference is somewhat weakened when the direct object is heavier (longer), since (12a) and (12b) do not differ in their acceptability:

- (12) a. Ha+mora xilka la+banot še+ohavot lirkod na'al+ei rikud.  
 The+teacher gave to+girls that+liked dancing shoes+GEN ballet.  
 'The teacher gave the girls who liked dancing ballet shoes.'  
 b. Ha+mora xilka na'alei rikud la+banot še+ohavot lirkod.  
 The teacher gave shoes ballet to+girls that+liked dancing.  
 'The teacher gave ballet shoes to the girls who liked dancing.'

We thus suggest that proximity, although it plays a role in natural sentence processing, can obscure the random decision that is made when the mechanisms that rely on grammatical competence allow two processing paths. The question of its status (i.e. as a heuristic or as a principle) can perhaps be settled by future experiments.

## Notes

<sup>1</sup> The reverse question mark stands for a garden path sentence.

<sup>2</sup> Definitions of the garden path effect may vary. We shall stick here to Pritchett's (1992) definition as given in this paper.

<sup>3</sup> The principles were modified to fit this paper. These changes influence neither the core of the theory nor its predictions.

<sup>4</sup> Theta Criterion: Each argument  $\alpha$  appears in a chain containing a unique visible theta position P, and each theta position P is visible in a chain containing a unique argument  $\alpha$  (Chomsky 1986).

<sup>5</sup> (i) Government:  $\alpha$  governs  $\beta$  iff  $\alpha$  m-commands  $\beta$  and every  $\gamma$  dominating  $\beta$  dominates  $\alpha$ ,  $\gamma$  a maximal projection; (ii) m-command:  $\alpha$  m-commands  $\beta$  iff  $\alpha$  does not dominate  $\beta$  and every  $\gamma$  that dominates  $\alpha$  dominates  $\beta$ ,  $\gamma$  a maximal projection (Pritchett 1992, note 101).

<sup>6</sup> *After* is a theta assigner and in Hebrew it licenses a CP complement. However, since this fact is orthogonal to the explanation, it shall be disregarded.

<sup>7</sup> The sign “ $/_i$ ” indicates an optional garden path sentence according to Pritchett’s theory.

<sup>8</sup> Note that in Hebrew the NP *aquarelle paintings* can only be considered as one NP, since *paintings* contains a possessive marker. Therefore, the existence of *aquarelle* is irrelevant to the analysis here.

<sup>9</sup> It is worthwhile mentioning that the garden path model does not distinguish between different types of reanalysis. Any sentence with some anomaly is predicted to cause costly reanalysis. Garden path sentences are no different in that sense from other types of sentences that induce reanalysis, such as sentences that contain a syntactic mistake.

<sup>10</sup> Note that Minimal Attachment does not play a role in the attachment decisions of sentences (5) and (6), since both attachment decisions of the final NP, whether to the first or to the second theta assigner, introduce the same number of nodes. Therefore, the contribution of Minimal Attachment with respect to attachment decisions is irrelevant, as it does not seem to introduce any preference of any attachment decision and thus cannot account for the occurrence of the garden path effect or lack of it in these sentences.

<sup>11</sup> The distribution of the effect depends on which available role will be given to the first NP immediately following the embedded clause. The distribution of the GP effect then should be chance.

<sup>12</sup> The questionnaire design was proposed by Iris Mulders (p.c.).

<sup>13</sup> The instruction ‘in terms of time’ was added, since in a pilot experiment subjects had asked in what terms were the sentences difficult.

<sup>14</sup> It is possible to argue that subjects thought that sentence B was optional, and therefore their exclusion was unsolicited. However, this argument has no grounds. After reviewing their answers to the rest of the sentences in the questionnaire, it was observed that they had answered A to TYPE GPs, instead of circling B, and were consistent in that. For this reason, it was assumed they did not comprehend the task.

<sup>15</sup> If  $p$  is smaller than 0.05, the contrast is significant, i.e. the types of sentences are separate types.

<sup>16</sup> As suggested by Tanya Reinhart (p.c.).

<sup>17</sup> An interesting corroboration to the idea that Late Closure is a heuristic is found in some data in Spanish, taken from Cuetos and Mitchell (1988) and Gibson et al. (1996). In these experiments, local attachment was outranked by other factors. For instance, Spanish speakers demonstrated to have a preference for attaching the relative clause to the first NP in the following example:

(i) The daughter of the colonel who I met last week.

<sup>18</sup> The idea to call this preference proximity occurred to us before we were acquainted with a similar idea, if not identical, titled *predicate proximity* (Phillips 1996, Gibson et al. 1996): favor attachments as structurally close to a predicate as possible. Although we agree with this definition, what is structurally close needs to be clearly defined, as shall be demonstrated in the continuation of the main text.

<sup>19</sup> In Japanese, for instance, there is evidence for excessive cost-free use of PRO in the purpose of resolving syntactic structure, which is probably another parsing heuristic (cf. Mulders 2002).

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# Aspect is Result: Mandarin Resultative Constructions and Aspect Incorporation\*

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## 0 Introduction

Aspect and resultative constructions have been treated as distinct phenomena in the linguistic literature. Viewpoint aspect encodes ways of viewing the “internal temporal constituency of a situation;” in particular, it provides information about completion and boundedness that is superimposed on verb phrases (Comrie 1976:3). It takes place at a functional position *above* the verb phrase. A sentence with simple past tense like (1) describes an action that occurred prior to the speech time. The perfective aspect phrase *have V* in (2) emphasizes the completion and experience of this action. Aspect is therefore seen as additional information that modifies the telicity of a verb phrase.

- (1) I saw him in the park.
- (2) I have seen him in the park twice.

Resultatives on the other hand are taken as information *within* the verb phrase. They typically involve at least two events—a causative event followed by a resultative state, which is denoted by a small clause embedded under the main verb (Hoekstra 1989). For instance, the verb phrase *wipe the slate clean* involves the action of wiping and the final state of the slate’s being clean. The resultative state is embedded under the verb phrase, governed by the causative verb head.

This paper explores the possibility of an alternative account for viewpoint aspect. Instead of viewing aspect as a functional head *above* verb phrases, I attempt to associate aspect with resultative predicates and claim that (at least part of) aspect should be base generated *below* the verb phrases like resultatives. I argue that the syntactic and semantic similarities between resultative constructions and aspect suggest that viewpoint aspect in Mandarin is in fact resultative.

Section 1 of this paper introduces viewpoint aspect and how it has been treated as a functional projection above the verb. The challenges that Mandarin

aspect poses to this hypothesis will be discussed. Section 2 explores the resultative property of Mandarin aspect. I adopt Folli and Ramchand's (in press) framework to account for two Mandarin resultative constructions. I will show that the same framework can account for the selectional restrictions among different aspect markers in a sentence, and that resultative constructions and aspect are closely associated if not identical. Section 3 summarizes and concludes the paper.

## 1 Viewpoint aspect in Mandarin

Two kinds of aspect should be distinguished: situation aspect and viewpoint aspect (Smith 1991). Situation aspect is the telicity information internal to the verb phrase. It refers to the traditional Vendlerian event types (i.e. activity, achievement, accomplishment, and state) that a verb denotes which can further be modified by other elements within the verb phrase, such as the object and the adverbial adjunct. For example, as the verb *ate* in (3) is atelic, it can be modified by *for two hours*, but not by *in two hours*. A countable object in (4) delimits the action, making it a telic event (Dowty 1991, Jackendoff 1996, Tenny 1994).

- (3) a. John *ate* for two hours. [atelic]  
 b. \* John *ate* in two hours.
- (4) a. John *ate three apples* in two hours. [telic]  
 b. \*John *ate three apples* for two hours

This paper is mainly concerned with viewpoint aspect—the kind of aspect that is external to and superimposed on the verb phrase. As Smith (1991:91) defines it, aspectual viewpoints are “like the lens of a camera”; they “make visible the situation talked about in a sentence.” They encode how speakers view the internal temporal structure of verbal events, and structurally occur above the verb phrases. In European languages, the fact that viewpoint aspect predominantly precedes verb phrases suggests that aspect phrases (AspPs) are above verb phrases.

In such structure, AspPs are base generated above vPs and cast a semantic scope over the internal temporal structure denoted by the verb phrases. Such an analysis accounts for aspect in Indo-European languages such as English, German and French, as given in (5-8). The perfective or imperfective aspect in these languages predominantly makes use of an auxiliary verb *have* or *be* that occur prior to the past/present participle of the main verb.

- (5) John *has* arrived. [English perfective]  
 (6) John *is* eating an apple. [English imperfective]

- (7) Hans *ist* weggegangen. [German perfective]  
 Hans is left  
 'Hans has left.'
- (8) Paul *a* arrivé. [French perfective]  
 Paul has arrived  
 'Paul has arrived.'

However, such a generalization based on the Indo-European aspect phrases, cannot account for aspect markers which appear at a postverbal rather than preverbal position in languages such as Mandarin (as in (9) & (10)).

- (9) Wo xie *le* yi feng xin [Mandarin perfective]  
 I write ASP<sup>1</sup> one CL letter  
 'I wrote a letter.'
- (10) Ta zhan *zhe*. [Mandarin imperfective]  
 He stand ASP  
 'He's standing.'

Some Chinese linguists (e.g. Wang 1965, Chiu 1995, among others) adopt the same framework to account for Mandarin aspect, in which aspect markers are base generated at the aspect head position. In order to derive the correct word orders, two routes can be taken. The verb should adjoin to the left of the aspect head or the aspect head should be lowered to a postverbal position. The latter approach is unlikely, since lowering has not been accepted in a general syntactic theory. With regards to the first approach, adjunction of the main verb to the left of the aspectual head is not satisfactory either, since besides theoretical necessity, it received no language-internal support. Namely, the only reason why the verb has to adjoin to the left of the aspectual head is to get the correct word order in Mandarin based on the theoretical assumption that an aspect phrase has to be above the verb.

## 2 The resultativeness of viewpoint aspect

In this section, I present syntactic and semantic arguments for the hypothesis that Mandarin aspect markers are base generated below the verb like resultatives. I first provide a unified syntactic analysis for resultative constructions in Mandarin, and argue that this analysis can be extended to account for aspect in Mandarin. Such an argument suggests that aspect in Mandarin resembles resultatives, which are small clauses embedded within verbs. Aspect is therefore *below* rather than above the verb.

## 2.1 Resultative constructions in Mandarin

Mandarin has two types of resultative constructions. The first type, as illustrated in (11), is called Resultative Verb Compounds (RVCs). RVCs are constructed by compounding two verbal morphemes. The first morpheme denotes the cause; the second morpheme, the result. The second type, given in (12), is the V-DE-V construction. Again, the first verb here is the cause, and the second verb is the result. The cause and the result are separated by a functional element DE, and the second verb is a verb phrase that can appear within a clause with its own subject.

(11) **Resultative Verb Compounds (RVCs)**

V1-V2

CAUSE-RESULT

Ta jiao-xing didi  
he call-awake brother

'He called and as a result awakened his brother.'

(12) **V DE V Construction**

V1 DE ... V2

CAUSE RESULT

Wo qi de toupi fa ma  
I angry DE head-skin (scalp) get numb

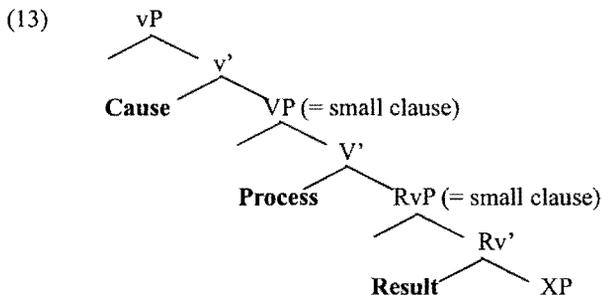
'I was angry to the point that my scalp got numb.'

These two resultative constructions have been treated as independent from each other. RVCs are compound words. The V-DE-V construction is taken as a verb phrase with a functional phrase, DE-P, embedded in it. However, the construct of DE-P as an independent functional phrase is still controversial.

Instead of treating these two resultative constructions as distinct, I argue that they are in fact different realizations of identical structures. That is, resultative constructions have the same basic structures underlyingly; it is the numeration (with or without DE), and later, movement of the resultative head that produce different word orders and thus seemingly different structures. In the following, I first introduce the framework that Folli and Ramchand (in press) proposed for resultative constructions. I will show that their analysis offers a basic framework for a unified analysis of Mandarin resultative constructions.

### 2.1.1 Folli's (2002) three-level analysis of resultatives

Folli (2002) and Folli and Ramchand (in press) argue that in resultative constructions, in addition to the causing and resultative events, there is an intermediate event denoting the *process*. Thus, a prototypical resultative construction involves three levels—the cause, the process, and the result—as is illustrated in (13).



One of the evidences that the process should be separate from the cause and the result is exemplified by (14), where the adverbial phrase modifies different parts of the event within a resultative. The adverbial *very fast* can modify the cause to mean that his action of causing the ball to roll was very fast. It can also mean that the action of the ball rolling was very fast, in which case it is modifying the rolling process of the ball before reaching the wall. Given that the cause and process of the action can be modified, it is reasonable to postulate that these three subevents should be represented separately within the syntactic structures. In the three-level analysis of resultatives, the process and resultative events are seen as small clauses embedded within the main causative event.

- (14) He rolled the ball to the wall very fast.  
 a. He very quickly rolled the ball so that it reaches the wall. (cause)  
 b. He pushed the ball so that it rolls to the wall very fast. (process)

### 2.1.2 Resultative Verb Compounds (RVCs)

RVCs are common in Chinese. They are made of two verbal morphemes  $V_1$  and  $V_2$ , which hold a causal relationship. In (15), for example, the first verbal morpheme *jiao* 'to call' denotes an event that causes the second event denoted by the morpheme *xing* 'to be awake' to happen. Note that the whole resultative event involves two participants, him and his brother. Here, *ta* 'he' is the subject of *jiao* 'call', thus the causer, and *didi* 'his brother' is both the object of *jiao* 'call' and the subject of *xing* 'to be awake', the causee.

- (15) Ta    jiao-xing    didi  
       he    call-awake    brother  
       'He called his brother awake.'

Even though the word order for RVCs goes like (16), I propose that the second verb actually moves above the object from below. That is, the base generated word order is like (17), where the first event is followed by the second

event with its own subjects and verbs. The derivation is given in (18).

- (16)  $N_1 \quad V_1-V_2 \quad N_2$   
 (17)  $N_1 \quad V_1 \quad N_2 \quad V_2$   
 (18) RVCs:  $S \quad V_1 \quad O \quad V_2 \implies S \quad V_1 V_2 \quad O \quad t$

This proposal is evidenced by relevant word orders in classical Chinese, where the causing event and the resultative event are kept apart like the base-generated structure in (17). Sentence (19) from A.D. 425 demonstrates the word order SVOV, where the second verb stays below the object. It is therefore not unreasonable to postulate that the head verb of the resultative predicate stayed in situ in classical Chinese, while it moves upwards in Modern Chinese.

- (19) Huan Jiang-lang jue!    (*Shishuoxinyu*, A.D. 425; Shi (2002))  
       call Jiang-lang awake  
       '(You) call Jiang-lang and make him awake!'

In Modern Chinese, the resultative heads are moved past the specifier of the resultative predicate to adjoin to the process V. In (15), for example, the resultative head *xing* 'awake' moves to the process head, which is empty in RVCs. This is why it appears adjacent to the causative head *jiao* 'call'.

It is also possible to have intransitive RVCs with the external DP as the subject of both verbal morphemes. In (20), for instance, *ta* 'he' is the subject of both eating and getting fat. Its structure is given in (21), where the resultative head *pang* 'fat' moves to the empty process head. As the specifiers of vP and VP co-index, the DP that is base-generated in RvP is bound by the spec of vP.

- (20) Ta        chi-pang    le  
       He        eat-fat     ASP  
       'He ate himself fat.'  
 (21)  $Ta_i \quad \text{chi} \quad \text{pang}_j \quad [\text{sc} \text{ pro}_i \quad t_j]$

In summary, RVCs are made of two verbal morphemes that are not as tightly connected (or fossilized) as commonly perceived. I propose that the resultative head moves into the empty process head, thus becoming adjacent to the causative head. Below in V-DE-V construction, I will show more convincing evidence for the existence of the intermediate process phrase in resultative constructions.

### 2.1.3 VDEV construction

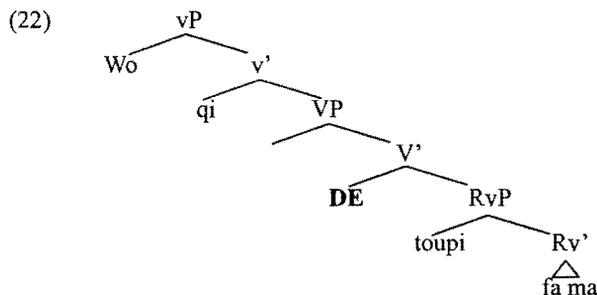
The other resultative construction in Chinese is the V-DE-V construction (also called *resultative complement constructions* by Huang 1988). DE is a peculiar lexical item in Chinese syntax. It is usually taken as a function word that heads a

predicate (e.g. J. Lin 2002); the exact nature of DE, however, remains mysterious. In this paper, I focus on the resultative function of DE, seeing it as heading the process phrase (VP). This is a reasonable hypothesis, since crosslinguistically the verbs *get* and *obtain* often grammaticalize to mean the process of change. (see Hein & Kuteva 2002: 144-145).

The fact that the process head is filled by the function word DE in Mandarin keeps the resultative head from moving as in RVCs. DE can therefore be seen as intermediate between the cause and the more salient resultative predicate that follows it. As a process, it can be seen as a result of  $V_{\text{cause}}$ , and further leading to  $V_{\text{result}}$ . Sentence (12), repeated below, is a typical V-DE-V resultative. In this sentence, the fact that I was angry got to the extent that my scalp became numb. DE indicates a process between my anger and the physical reactions. The tree diagram in (22) shows that the process head is filled by DE and every word stays in situ. In (23) where the subjects of the causative and resultative clauses are identical, the pro at the spec of RvP is bound by the pronoun at the spec of vP.

- (12) Wo qi de toupi fa ma  
 I angry DE head-skin (scalp) get numb  
 'I was angry to the point that my scalp got numb.'

In summary, in the V-DE-V construction, the first verb serves as the cause and the second verb, the result. The existence of DE is strong evidence supporting the claim that there is an intermediate process between the cause and the result. This process head DE keeps resultative heads from moving upwards as those of RVCs do.

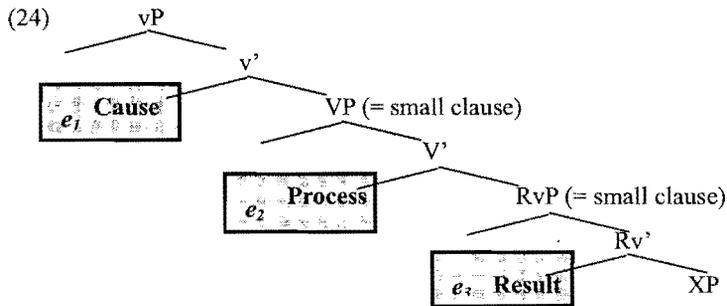


Wo qi de toupi fa ma  
 I angry DE head-skin (scalp) get numb  
 'I was angry to the extent that my head got numb.'

- (23) Ta gaoxing de he bu long zui  
 He happy DE close not tight mouth  
 'He was so happy that he cannot close his mouth.'

#### 2.1.4 The semantics of resultative constructions

An advantage of this analysis using the multiple resultative embeddings and small clauses is that the eventive semantics of the resultative constructions can be directly read from the syntactic structure. The structure in (13) can be labeled with three subevents  $e_1$ ,  $e_2$ , and  $e_3$  as given in (24).



The semantics of (11), *Ta jiaoxing didi* 'he called and as a result awakened his brother,' can be represented as (25), where the causative interpretation is derived from the temporal relationship BEFORE ( $e_1$ ,  $e_2$ ) and BEFORE ( $e_2$ ,  $e_3$ ), and the three subevents correspond to the three-level clauses. The process head holds the temporal function between the preceding event ( $e_1$ ) and the resultative event ( $e_3$ ).

- (25)  $\exists e_1 e_2 e_3$ [called (he, his brother,  $e_1$ ) & PROCEED ( $e_1$ ,  $e_2$ ) & awake (his brother,  $e_3$ ) & BEFORE ( $e_1$ ,  $e_2$ ) & BEFORE ( $e_2$ ,  $e_3$ )]

The semantics for (20) *ta chipang (le)* 'He ate himself fat' is represented as (26):

- (26)  $\exists e_1 e_2 e_3$ [ate (he,  $e_1$ ) & PROCEED ( $e_1$ ,  $e_2$ ) & fat (he,  $e_3$ ) & BEFORE ( $e_1$ ,  $e_2$ ) & BEFORE ( $e_2$ ,  $e_3$ )]

Similarly, V-DE-V constructions have their semantics mapped out from the structure. The semantics of sentences (22) and (23) can be represented as (27) and (28):

- (27)  $\exists e_1 e_2 e_3$ [angry (I,  $e_1$ ) & PROCEED ( $e_1$ ,  $e_2$ ) & numb (head,  $e_3$ ) & BEFORE ( $e_1$ ,  $e_2$ ) & BEFORE ( $e_2$ ,  $e_3$ )]
- (28)  $\exists e_1 e_2 e_3$ [happy (he,  $e_1$ ) & PROCEED ( $e_1$ ,  $e_2$ ) &  $\neg$ close (he, mouth,  $e_3$ ) & BEFORE ( $e_1$ ,  $e_2$ ) & BEFORE ( $e_2$ ,  $e_3$ )]

## 2.2 Mandarin viewpoint aspect markers *le*, *zhe*, *guo*

Mandarin has a rich aspectual system. The elements contributing to the outer viewpoint of a verbal event (called *aspect markers*) consist of one that appears preverbally (*zai*) and three that appear postverbally (*le*, *guo*, *zhe*). In this article, I focus exclusively on the three post-verbal aspect markers *le*, *guo*, and *zhe*.<sup>2</sup>

The three aspect markers impose different telicity information on the verb. As perfective aspect markers, LE indicates the completion of an action, and GUO focuses more on the past experience of an action or state. ZHE, on the other hand, is taken as a durative aspect marker that indicates an imperfective event. In this section, I show that these Mandarin aspect markers are resultative-like. I provide three arguments for the resultativeness of these aspect markers: (A) Syntactically, the three-level analysis I used for resultative constructions in 2.1 can also accommodate the word orders for aspect markers. Similar to resultative predicates, aspect markers occur postverbally. The restrictions on the co-occurrence of more than one aspect markers also suggest that the aspect markers are taking different positions in the structure. (B) With regard to eventive semantics, aspect is also like resultatives. It unequivocally denotes an ending state of an action. (C) Historically, aspect markers used to be main verbs that can serve as resultative predicates below the verbs. Even though they are highly grammaticalized in Modern Chinese, the semantic and syntactic residuals are still very salient. In the following, I provide further evidence for these arguments.

The perfective marker LE highlights a change of state, profiling the boundaries of an event either at the starting point or at the endpoint. If the event itself is telic, LE profiles the endpoint of the event. In (29), where the main verb is already a resultative compound, LE imposes an endpoint to the event, stressing the completion of the event. When LE follows an atelic static verb, such as in (30), it profiles the inception of a state, and is therefore taken as an inchoative. With either usage, LE co-occurs with verbs that involve a change of state, where the old event has reached an end, while the new event is being initiated.

- (29) Wo xie-wan **le** yi feng xin (completive)  
 I write-complete LE one CL letter  
 'I completed a letter.' [I am no longer writing.]
- (30) Ta bing **le** (inchoative)  
 he sick LE  
 'He's sick. (He has become sick.)' [He is still sick.]

As shown above, LE is resultative semantically, given that it indicates a change of state—whether it ends a previous state, or initiates another state. The fact that it follows the main verb strongly suggests that it is a resultative

predicate embedded under the main event. LE heads a resultative predicate (a small clause) that is base generated below all other small clauses.

The semantics of sentence (20) *ta chipang le* 'he ate himself fat' can be represented as (31), where *le* refers to the bounded/completive portion of the preceding verbal event.

- (31)  $\exists e_1 e_2 e_3 e_4$  [eat (he,  $e_1$ ) & PROCEED ( $e_1, e_2$ ) & fat (he,  $e_3$ ) & BOUNDED ( $e_3, e_4$ ) & BEFORE ( $e_1, e_2$ ) & BEFORE ( $e_2, e_3$ ) & BEFORE ( $e_3, e_4$ )]

The historical development of LE also suggests that LE should be a resultative predicate that is base-generated below the verb. LE is phonetically reduced from the verb LIAO, which means "to complete" in (32).<sup>3</sup> The serial verb construction of "Verb Object LIAO" in (33) became so common that LIAO got reanalyzed as an aspect marker meaning the completion of an action. It got moved to the position right after the verb. This suggests that LE should be taken as a verb-like element generated below, not above, the main verb.

- (32) Ta caocao **liao** shi  
he sketchily finish business  
'He finished business without paying much attention.'
- (33) Tian se wei **liao**. (*Lushan yuangong hua*, A.D.800; Shi 2002)  
fill color not complete  
'(Someone) has bit completely filled in the color.'

The other perfective verbal suffix, *-guo*, indicates that an action has been experienced and completed. While *le* highlights the boundary of an action (initiation of the action *going* in 70), *guo* packs the whole action as a past experience with absolute completion. Syntactically, *guo* serves as the process head, the reason being that LE and GUO can co-occur in a sentence with restricted word orders (34)-(35). That GUO always has to precede LE suggests that it should be a process head, which occurs at a higher position than LE.

- (34) Wo chi **guo le** wufan  
I eat GUO LE lunch  
'I have had lunch.'
- (35) \*Wo chi **le guo** wufan  
I eat LE GUO lunch  
'I have had lunch.'

The semantics of (34) is given in (36), where *guo* as a process head indicates the experiencing of an event, and *le* as a resultative head indicates the boundary of another event.

- (36)  $\exists e_1 e_2 e_3$  [eat (I, lunch,  $e_1$ ) & EXPERIENCED ( $e_1, e_2$ ) & BOUNDED ( $e_2, e_3$ ) & BEFORE ( $e_1, e_2$ ) & BEFORE ( $e_2, e_3$ )]

Analyzing GUO as a process head can also be motivated by the fact that as a content word, GUO means 'to cross, to go past' in (37) and 'to experience' in (38). It is thus reasonable for *guo* to be extended (grammaticalized) to indicate a state of having experienced and having gone through an event.<sup>4</sup>

- (37) **Guo** he chai qiao [idiom]  
 Cross river tear bridge  
 'Tear the bridge after crossing the river. (not being grateful)'
- (38) Renzhen **guo** rizi  
 Serious live day  
 'Live your days seriously.'

Semantically, *V-guo* is like a resultative as well. It indicates that the action denoted by the verb has arrived at a state where that action is not only completed but also fully experienced in the past. This section shows that GUO is not only a resultative predicate embedded under the main verb, but more precisely, a process head, that appears above the resultative head, LE.

The last aspect marker is the durative *zhe*. It denotes the continuous state of an imperfective event. Klein, Li, and Hendricks (2000: p. 726) describe it as marking the "background" information by focusing on the "enduring, or continuing" state. In (39) and (40), ZHE as a verbal suffix directs attention to the durative state of the main verb.

- (39) Men kai **zhe**  
 Door open ZHE  
 'The door is open.'
- (40) Ta chuan **zhe** xizhuang  
 He wear ZHE suit  
 'He's wearing a suit.'

Consideration of collocations among GUO, ZHE, and LE from (41) to (44) suggests that ZHE is a resultative head like LE. Since ZHE and LE are taking the same position in the structure and both add a resultative state to the verbal event, they should be considered taking the same spot.

- (41) \*Men kai **zhe** le<sup>5</sup>  
 Door open ZHE LE
- (42) \*Men kai le **zhe**  
 Door open LE ZHE

- (43) \*Men kai guo zhe  
 Door open GUO ZHE
- (44) \*Men kai zhe guo  
 Door open ZHE GUO

The semantics of sentence (39) is represented as (45):

- (45)  $\exists e_1 e_2 [\text{open}(\text{door}, e_1) \ \& \ \text{EXTENT}(e_1, e_2) \ \& \ \text{BEFORE}(e_1, e_2)]$

Seeing ZHE as a resultative may initially seem counter-intuitive. However, this is not the first time such a claim is made. Sybesma (1997: 248) also argues that ZHE like LE is a resultative predicate:

- (46) "[ZHE] stativizes the event; it halts the action and indicates that the resulting state remains. ... ZHE is a *resultative predicate*, which asserts that the action has been conducted successfully and that the state which results after the successful performance persists. [italics mine]"

Historically, ZHE used to be a main verb meaning 'to reach, to attach', pronounced as *zhuo* or *zhao* (Sun, 1998). Sentence (47) from 550 B.C. illustrates such usage. In Modern Chinese, ZHE is phonetically reduced into neutral tone and predominantly used as a postverbal aspect marker indicating "attaching to an event", and thus 'the extension of an event'.

- (47) Feng xing er zhuo yu tu. (*Zuozhuan, Zhuanggong, 550 B.C.*)  
 wind move and attach to soil  
 'Wind moves and attaches to soil.'

### 3 Final remarks

In this article, I showed that all three postverbal aspect markers, *le*, *zhe*, and *guo*, are semantically and syntactically similar to resultatives. They either denote a resultative state or a process state of an action. Semantically, *le* indicates a resultative state where an action is bounded at either the starting point or the endpoint; *guo* indicates a resultative state where an action has been finished and fully experienced; *zhe* indicates a resultative state where an action is retained and extended. Syntactically, the limitations on their relative linear order in co-occurrences motivate their situations at different event positions (process VP, or resultative RvP) in a resultative hierarchy. *Guo* is a process head; *le* and *zhe* are resultative heads. A three-level analysis for resultative constructions can accommodate aspect markers equally well. I have also shown that the eventive semantics of these so-called aspect markers can be mapped out from the

syntactic structure in the same way as resultative constructions. Historically, these aspect markers used to be full verbs that appear as the second verb in a serial verb construction. Their existence at postverbal positions in Modern Chinese suggests that their use as resultative predicates is very much retained. These evidences show close resemblances between resultative constructions and aspectuality in Mandarin. Previous analyses of these two as independent from each other may not be adequate.

## Notes

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<sup>1</sup> Abbreviations for transliterations throughout this paper: ASP = aspect marker, CL = classifier.

<sup>2</sup> The preverbal aspect marker *zai* 'at' indicates the progressive aspect. Its syntactic behaviors are more similar to those of a main verb than an aspect marker. I therefore see it as belonging to a different verb class than the postverbal aspect markers.

<sup>3</sup> The relationship between LE and LIAO is obvious in that in Modern Chinese, they are still taking the same orthographical form, even though pronounced differently. They are homographs.

<sup>4</sup> There are two GUOs in Mandarin. The first GUO is the locative/temporal comparative, meaning 'past'. Examples are *pao-guo* 'run-past', and *duo-guo* 'more than'. The second GUO is the aspect GUO that indicates the packaging of a past experience. This paper focuses on the second sense of GUO.

<sup>5</sup> This sentence is acceptable when LE is a sentential particle. However, if LE is an aspect marker, it cannot co-occur with ZHE.

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# A Pragmatic Explanation of the Stage Level/ Individual Level Contrast in Combination with Locatives

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One important difference between stage level predicates (SLPs) and individual level predicates (ILPs) is their behavior with respect to locative modifiers. It is commonly assumed that SLPs but not ILPs combine with locatives. The present study argues against a semantic account for this behavior (as advanced by e.g. Kratzer 1995, Chierchia 1995) and proposes a genuinely pragmatic explanation of the observed stage level/individual level contrast instead. The proposal is spelled out using Blutner's (1998, 2000) optimality theoretic version of the Gricean maxims. Building on the observation that the respective locatives are not event-related but frame-setting modifiers, the preference for main predicates that express temporary properties is explained as a side-effect of "synchronizing" the main predicate with the locative frame in the course of finding an optimal interpretation. By emphasizing the division of labor between grammar and pragmatics, the proposed solution takes a considerable load off of semantics.

## 1 Locatives and the SLP/ILP Distinction

One of the most prominent linguistic criteria that have been advanced in order to distinguish stage level predicates (SLPs), which are commonly understood as expressing temporary or accidental properties, and individual level predicates (ILPs), which express (more or less) permanent or inherent properties, is their behavior with respect to locative modifiers.<sup>1</sup> SLPs like *tired*, *hungry* or *nervous* can be combined with locative modifiers (1a), while ILPs like *blond*, *intelligent* or *a linguist* don't seem to accept locatives (1b); see Chierchia (1995) and Kratzer (1995) among many others.

- (1) a. Maria was tired / hungry / nervous in the car. (SLP)  
 b. \*/??Maria was blond / intelligent / a linguist in the car. (ILP)

Adherents of the stage level/individual level distinction take data like these as strong support for the claim that there is a fundamental difference between SLPs and ILPs in the ability to be located in space; see, e.g., the following quote from Fernald (2000):

»It is clear that SLPs differ from ILPs in the ability to be located in space and time.«  
Fernald (2000: 24)

The standard perspective under which these and similar contrasts concerning perception reports, *when*-conditionals, subject effects, the distribution of the Spanish copula forms *ser* and *estar* etc. have been considered is that the SLP/ILP distinction essentially amounts to a *grammatical manifestation* of a deeper *conceptual difference*.<sup>2</sup> To quote Fernald again:

»Many languages display grammatical effects due to the two kinds of predicates, suggesting that this distinction is fundamental to the way humans think about the universe.«  
Fernald (2000: 4)

In the past years, research interests have focussed almost exclusively on the apparent grammatical effects of the SLP/ILP contrast. No comparable efforts were made to uncover its conceptual foundation, although there is unanimity that a definition of SLPs and ILPs in terms of the dichotomy “temporary vs. permanent” or “accidental vs. essential” cannot be but a rough approximation. This could just be an accident, however, in which case we needn’t worry because sooner or later someone would come up with an interesting story about the conceptual side of the SLP/ILP contrast that fits with the observed grammatical effects. But on the other hand, it might not be an accident at all but a hint that something is wrong with the overall perspective on the stage level/individual level distinction as a genuinely grammatical distinction that reflects an underlying conceptual opposition. The present study will explore the latter option. More specifically, I will argue that the sentences in (1) show no grammatical difference, nor do they reflect some fundamental conceptual split but rather display a genuine pragmatic contrast.

The paper is organized as follows: Section 2 gives a brief summary of Kratzer’s (1995) and Chierchia’s (1995) semantic accounts, both providing event-based explanations for the difference illustrated in (1). Section 3 presents arguments against event-based analyses of copular sentences suggesting that the difference at stake in (1) is not an issue of event semantics. Section 4 develops a pragmatic explanation of what I will call the “temporariness effect” in (1). My proposal will be laid out in the framework of bidirectional optimality theory (Blutner 1998, 2000). Finally, section 5 offers a summary and some concluding remarks.<sup>3</sup>

## 2 Semantic Explanations

There are basically two semantic explanations that have been proposed to account for the SLP/ILP contrast in (1).

According to the influential proposal by Kratzer (1995), who synthesized the stage level/individual level distinction with Davidsonian event semantics<sup>4</sup>, SLPs and ILPs differ in argument structure. SLPs have an extra event argument. This

is the reason why they combine with locative modifiers. That is, SLPs can be located in space. ILPs lack such an extra event argument. Therefore, there is no entity whose location could be expressed by a locative modifier. This is illustrated in (2)-(4). The lexical entries for a SLP like *tired* and an ILP like *blond* are given in (2). While combining a SLP with a locative modifier would yield a semantic representation like (3b), any attempt to add a locative to an ILP must necessarily fail; cf. (4b).

- (2) a. tired:  $\lambda x \lambda e$  [TIRED (x, e)]  
 b. blond:  $\lambda x$  [BLOND (x)]
- (3) a. Maria was tired in the car.  
 b.  $\exists e$  [TIRED (maria, e) & LOC(e, IN (def-car))]
- (4) a. \*/??Maria was blond in the car.  
 b. [BLOND (maria) & LOC(????, IN (def-car))]

According to this view, SLPs and ILPs indeed differ in their ability to be located in space and this difference is traced back to the presence resp. absence of an event argument.

Chierchia (1995) takes a somewhat different tack. He adopts the neo-Davidsonian view (e.g., Higginbotham 1985, 2000; Parsons 1990, 2000) according to which *all* predicates introduce event arguments. Thus, SLPs and ILPs do not differ in this respect. In order to account for the SLP/ILP contrast in combination with locatives, Chierchia then introduces a distinction between two kinds of events: SLPs refer to *location dependent events* whereas ILPs refer to *location independent events*; see also McNally (1998). The observed behavior wrt locatives follows under the assumption that only location dependent events can be located in space. In Chierchia's own words:

»Intuitively, it is as if ILP were, so to speak, unlocated. If one is intelligent, one is intelligent nowhere in particular. SLP, on the other hand, are located in space.«

Chierchia (1995: 178)

What is significant for our present purposes are not so much the differences between Kratzer's and Chierchia's approach but their commonalities. Both consider the SLP/ILP contrast in (1) as a grammatical effect. That is, sentences like (1b) won't receive a compositional semantic representation; they are grammatically ill-formed. Kratzer and Chierchia furthermore share the general intuition that SLPs (and they only) can be located in space. This is what the difference in (1) is taken to show. And, finally, both analyses rely crucially on the idea that at least SLPs, possibly all predicates, introduce Davidsonian event arguments. The next section will cast doubts on each of these assumptions.

### 3 Objections to Event-Based Explanations

I have two main objections to a semantic treatment of the SLP/ILP contrast in combination with locatives along the lines of Kratzer (1995) or Chierchia (1995). One concerns the analysis of the locatives in (1) as event-related modifiers. The other relates to the neo-Davidsonian assumption that all predicates introduce event arguments. Due to limitations of space I will sketch these arguments only very briefly; but see Maienborn (2001, 2003a,b,d) for details and further justification.

#### 3.1 Event-related vs. frame-setting locatives

First and most importantly, the locatives in (1) arguably do not belong to the class of event-related VP-modifiers but are frame-setting modifiers according to the classification proposed in Maienborn (2001).

Frame-setting modifiers tend to surface in sentence-initial position, but they are base-generated at a lower position within the functional shell of VP.<sup>5</sup> (Event-related modifiers are base-generated VP-internally.) As for their semantics, frame-setting modifiers do not add an additional predicate to the VP's event argument – this is what event-related modifiers do – but restrict the overall proposition. What exactly is being restricted is a matter of semantic underspecification. Maienborn (2001) provides a series of independent syntactic, semantic, and prosodic criteria for determining the status of a modifier as event-related or frame-setting; see also Frey (2003).

Let us have a look at the possible interpretations of the frame-setting locative in (5). Notice first, that I am only interested in the analysis of (5) as a copular sentence. We may neglect the fact that (5) can also be analyzed as a passive sentence. (In the latter case the locative would be event-related, expressing that an event of marrying which Maradona was subject to took place in Italy.)

(5) Maradona was married in Italy.

There are several ways in which we could make sense of the idea that the locative frame *in Italy* restricts the claim that Maradona was married. A speaker may use the locative frame to restrict the time for which he makes his claim; see Klein's (1994) notion of *topic time*. This gives us a temporal reading of the locative frame as illustrated by the paraphrase in (5'a). The locative may also be used to restrict the juridical background for the main predicate as indicated by (5'b). And, given the appropriate contextual support, a locative frame may always be interpreted epistemically as in (5'c). That is, sentence (5) could refer, e.g., to a situation where the yellow press in Italy propagates that Maradona was married (while people in his home country Argentina knew that he wasn't). And there might be further ways of interpreting the semantically underspecified locative frame.

- (5') a. When he was in Italy, Maradona was married. *temporal reading*  
 b. According to the laws in Italy, Maradona was married.  
 c. According to the belief of the people in Italy, Maradona was married. *epistemic reading*  
 d. etc.

Thus, due to their semantic underspecification, frame-setting modifiers always give rise to several potential utterance meanings. Now we can make more precise what is going on in sentences like (1). The SLP/ILP contrast that we want to explain apparently concerns *the availability of the temporal reading of a frame-setting locative*. Take, e.g., (6). Unlike the corresponding temporal reading of (6a), which is perfectly fine, under normal circumstances sentence (6b) has no interpretation saying that when she was at the disco, Maria was a smart linguist. Yet, this does not mean that (6b) is ungrammatical. The locative frame might well receive, e.g., an epistemic reading. Sentence (7) provides a natural context for such a reading.

- (6) a. At the disco, Maria was drunk  
 b. ??At the disco, Maria was a smart linguist. *temporal reading*
- (7) At the disco, Maria was a really smart linguist who was, unfortunately, a terrible dancer. At the institute, though, she was a terrible linguist who was, at least, a great dancer. *epistemic reading*

A locative frame like *in the car* in (1) is not particularly well suited for an epistemic interpretation because it cannot serve to single out a group of people who could be assigned a certain stable belief. But with sufficient contextual support an epistemic reading may be construed even here. Assume, e.g., that Peter, while driving home with his father, describes his new girlfriend Maria as having blond hair. Later in the evening Peter claims that she is a brunette. This context would favour an epistemic reading for (1'b). Notice that the SLP-variant (1'a) can be given an epistemic interpretation, too. Let only the context be Peter giving two different explanations why Maria behaved so strangely at the party. (Hence, frame-setting locatives do not support any logically valid inference as to the location of the subject referent. The locative *in the car* does not locate Maria but the source of belief in (1').)

- (1') a. In the car, Maria was tired. *epistemic reading*  
 b. In the car, Maria was blond. *epistemic reading*

In sum, the difference at stake in (1) and (6) is not an issue of *grammaticality* but concerns the *acceptability* of these sentences under a temporal reading of the locative frame. It is only under this reading that we observe a preference for temporary predicates. I will refer to this preference as *temporariness effect*.

### 3.2 Neo-Davidsonian approaches to copular sentences

In recent years it has become popular to assume that every predicate, no matter whether SLP or ILP, introduces a Davidsonian event argument; see in particular Higginbotham (1985, 2000), Parsons (1990, 2000) and subsequent work. I have argued in Maienborn (2003a-d) that this is inadequate for copular sentences (and true stative verbs). My results concerning German *sein* as well as Spanish *ser/estar* show that copular SLPs and ILPs pattern alike in failing all standard tests for Davidsonian events.

Davidsonian events are generally considered to be spatiotemporal entities with functionally integrated participants. Common linguistic diagnostics for the presence of underlying event arguments are the combination with locative modifiers, perception reports, the combination with manner adverbials etc.; see Maienborn (2003a-d) for further tests. If these diagnostics are applied carefully to copular sentences, SLPs and ILPs show no properties of event expressions at all.

As seen above, the locatives in sentences like (1) are not event-related but frame-setting. So they do not provide a reliable event diagnostic. Checking for unmistakably event-related modifiers reveals that even SLPs do not tolerate them. This is illustrated in (8) with data from German. (The temporal adverbials make sure that the locative is a VP-modifier and therefore event-related.)

- (8) *Combination with event-related locatives:*
- a. \*Das Kleid ist auf der Wäscheleine nass. (SLP)  
The dress is on the clothesline wet.
  - b. \*Paul war (zu dieser Zeit) unter der Straßenlaterne betrunken.  
Paul was (at this time) under the street lamp drunk.
  - c. \*Der Sekt ist (immer noch) im Wohnzimmer warm.  
The champagne is (still) in.the living room warm.
  - d. \*Maria ist (gerade) im Auto müde.  
Maria is (at the moment) in.the car tired.
  - e. \*Maria war (die ganze Zeit) vor dem Spiegel blond/eitel/intelligent(ILP)  
Maria was (the whole time) in-front-of the mirror blond/vain/intelligent.

If at least copular SLPs introduced an event argument, we would expect a locative modifier expressing the location of this event to be possible. That is, a sentence like (8a) should be able to indicate that there is a state of the dress being wet and that this state is located on the clothesline. Yet there is no such interpretation for (8a). Even more, (8a) as well as (8b-e) are clearly ungrammatical. That is, contrary to common wisdom (see above) SLPs and ILPs do *not* differ in their ability to be located in space; they both *resist* spatial location.

The other diagnostics show the same result. This is illustrated in (9) and (10). Copula constructions do not show up as infinitival complements of perception verbs. (This has already been observed by Carlson 1977). And they do not com-

bine with manner adverbials, comitatives and the like; see Maienborn (2003d) for a discussion of apparent counter-examples.

(9) *Infinitival complements of perception verbs:*

- a. \*Ich sah Maria müde sein.  
I saw Maria tired be.
- b. \*Ich hörte die Callas heiser sein.  
I heard the Callas coarse be.

(10) *Combination with manner adverbials and the like:*

- a. \*Maria war unruhig durstig.  
Maria was restlessly thirsty.
- b. \*Paul war friedlich / mit seinem Teddy / ohne Schnuller müde.  
Paul was calmly / with his teddy / without dummy tired.

This is not the place to discuss these issues with the necessary scrutiny. I just want to stress that if we take the Davidsonian approach seriously then there are good reasons to conclude that copular sentences do *not* introduce an event argument, no matter whether they express a temporary or a permanent property.

This means that an explanation of the temporariness effect in (1) cannot rely on events.

#### 4 Pragmatic Explanation for the Temporariness Effect

In the following I want to propose a purely pragmatic explanation of the observed temporariness effect based on Blutner's (1998, 2000) optimality theoretic version of the Gricean maxims. The basic idea is that the preference for temporary properties results from an optimal interpretation of a semantically underspecified sentence.

Let us take a sentence like (11) as an illustration and we may concentrate on the temporal reading of the locative frame because, as shown in section 3.1, it is only here that the temporariness effect shows up.

(11) In Italy, Maria was rich.

Under the temporal reading, the locative modifier serves to restrict the topic time of the sentence; see Klein (1994). Hence, the grammatically determined meaning can be rendered as: there is a topic time  $t^*$ , when Maria was in Italy, and Maria is rich at  $t^*$ ; see Maienborn (2003a: chap. 5) for a compositional DRT-account.

The grammatically determined meaning is underspecified in several respects. The grammar leaves open whether:

- (i) Maria was also rich before and/or after  $t^*$ ,
- (ii) being rich is a temporary or permanent property of Maria,
- (iii) being located in Italy is a temporary or permanent property of Maria.

That is, there are several potential specifications for sentence (11) given a temporal reading of the locative frame. These interpretations are presented schematically in (12). (Bold brackets indicate the topic time,  $t^*$ ; “\$\$” refers to the time of the main predicate,  $t^P$ ; and the dotted line represents Maria’s life time,  $t^L$ .)

(12) *Candidates for the temporal reading of (11):*

|          |                                                                                |                                    |
|----------|--------------------------------------------------------------------------------|------------------------------------|
| a. Int1: | ----- [\$\$\$\$\$\$\$] -----                                                   | $t^* = t^P, t^P \subset t^L$       |
| b. Int2: | ----- \$\$\$[\$\$\$\$\$\$\$]\$\$\$\$ -----                                     | $t^* \subset t^P, t^P \subset t^L$ |
| c. Int3: | \$\$\$\$\$\$\$\$\$\$\$[\$\$\$\$\$\$\$\$\$\$\$]\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$ | $t^* \subset t^P, t^P = t^L$       |
| d. Int4: | [\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$]     | $t^* = t^P, t^P = t^L$             |

Interpretation Int1 refers to the case in which Maria stayed in Italy for a delimited time and she was rich at exactly that time. Int2 covers all those cases where Maria is rich also before and/or after her stay in Italy. According to Int3, Maria stayed in Italy only for some delimited time but she was rich during her whole life; and Int4 refers to Maria staying in Italy and being rich all her life.

Whereas the grammar remains neutral wrt Int1 – Int4, pragmatic strengthening will yield Int1 as optimal interpretation for sentence (11) (under a temporal reading of the locative frame). This kind of interpretive optimization can be formulated within Blutner’s (1998, 2000) framework of a *bidirectional optimality theory* which aims at formalizing conversational implicatures on the basis of two competing economy principles (Zipf 1949; Atlas & Levinson 1981; Horn 1984; Levinson 2000). The *Q-principle* is hearer-oriented. It requires you to tell the hearer as much as you can. The *I-principle* (in Horn’s terminology: *R-principle*) is speaker-oriented. It invites the speaker to produce the minimal output that suffices to achieve his communicative goals. Both tendencies to minimize efforts are to be balanced in order to produce an optimal pairing of form and meaning; see the formulation of Horn (1984: 13) in (13); Blutner’s OT-reconstruction is given in (14); see also Jäger (2000: 48). (“ $\alpha < \beta$ ” is to be read: The form-meaning pair  $\alpha$  is less costly/more harmonic than the pair  $\beta$  under a set of (possibly weighted) constraints.)

- (13) a. *Q-principle* (hearer-oriented): Say as much as you can (given I).  
 b. *I-principle* (speaker-oriented): Say no more than you must (given Q).

(14) *Bidirectional OT*:

A form-meaning pair  $\langle F, \text{Int} \rangle$  is optimal<sup>6</sup> iff:

Q: there is no other optimal pair  $\langle F', \text{Int} \rangle$  such that:  $\langle F', \text{Int} \rangle < \langle F, \text{Int} \rangle$

I: there is no other optimal pair  $\langle F, \text{Int}' \rangle$  such that:  $\langle F, \text{Int}' \rangle < \langle F, \text{Int} \rangle$ .

The basic idea is that pragmatic strengthening involves *blocking* of interpretations as well as *preferring* certain interpretations. The Q-principle compares different forms with the same meaning and blocks those form-meaning pairs for

which there exist better alternative forms. The I-principle compares form-meaning pairs which all have the same form but differ in meaning and it prefers those pairs with the most simple/straightforward interpretation. An optimal pair must fulfil both principles.

Let us see which of our form-meaning pairs for sentence (11) are optimal in the sense of the definition given in (14).

(15) *Form-meaning pairs for (11):*

- |                                     |                                     |               |
|-------------------------------------|-------------------------------------|---------------|
| a. $\langle F, \text{Int1} \rangle$ | c. $\langle F, \text{Int3} \rangle$ | with F = (11) |
| b. $\langle F, \text{Int2} \rangle$ | d. $\langle F, \text{Int4} \rangle$ |               |

Take first the pairing in (15d). The locative frame refers to a permanent property of Maria here. Hence, it does not narrow down the topic time. There are alternative forms for expressing this meaning, see (16).

- (16) a. Maria was always rich.  
 b. During her whole life, Maria was rich.

The advantage of the forms in (16) is that they have no other interpretations apart from Int4. Therefore, they will be preferred by a Constraint like "Avoid Ambiguity" in (17), which states that, given identical interpretations, form-meaning pairs with less ambiguous forms are to be preferred. This leads to the preference in (18). (For the sake of simplicity (16a,b) are considered together.)

(17) *Constraint: Avoid Ambiguity!*

$\langle F', \text{Int} \rangle < \langle F, \text{Int} \rangle$  iff F' is less ambiguous than F.

- (18)  $\langle F', \text{Int4} \rangle < \langle F, \text{Int4} \rangle$  with F' = (16)

To keep things simple, let us assume that the pairing  $\langle F', \text{Int4} \rangle$  is indeed optimal. Our pair in (15d) is ruled out as non-optimal then, because it violates the Q-principle. That is, we can draw the *Q-based implicature* that being located in Italy must be a temporary property of Maria ( $t^* \subset t^{\downarrow}$ ). The temporal interpretation of frame-setting modifiers is pragmatically licensed only if the topic time is properly restricted by the modifier.

Let us assume that the three remaining pairs (15a-c) fulfill the Q-principle. That is, there are no better alternative expressions for the interpretations Int1-3. If they are compared with each other, (15a) will be preferred by the constraint "Be strong" in (19) because Int1 is implied by Int2 and Int3; i.e., Int1 is the most restrictive interpretation. The respective preferences are given in (20).

(19) *Constraint Be strong!* (cf. Blutner 2000)

$\langle F, \text{Int}' \rangle < \langle F, \text{Int} \rangle$  iff Int' is more restrictive than Int.

- (20) a.  $\langle F, \text{Int1} \rangle < \langle F, \text{Int2} \rangle$

b.  $\langle F, \text{Int1} \rangle < \langle F, \text{Int3} \rangle$ 

Hence, the pairings in (15b) and (15c) are non-optimal because they violate the I-Principle. The most simple way of interpreting the underspecified temporal relation between the topic time and the predication time is equating them ( $t^* = t^P$ ). This is an *I-based implicature*: The looser meaning that Maria was rich during her stay in Italy is pragmatically strengthened to the claim that she was rich at exactly that time.<sup>7</sup>

Thus, we end up with (15a) as an optimal form-meaning pair. Only the pair  $\langle F, \text{Int1} \rangle$  fulfills both the Q-principle and the I-principle. The relevant steps in deriving the temporariness effect are summarized in (21): Starting with the topic time being improperly included in Maria's life time as well as in the time of Maria being rich (21a), the Q-based implicature leads to a proper inclusion of the topic time in Maria's life time (21b); and the I-based implicature equates topic time and predication time (21c).

(21) *Temporariness effect*:

- a. Semantic underspecification:  $t^* \subseteq t^L \ \& \ t^* \subseteq t^P$   
 b. Q-based implicature:  $t^* \subset t^L$   
 c. I-based implicature:  $t^* = t^P$

Notice that the temporariness effect on the main predicate emerges rather indirectly, mediated by the temporariness of the frame-setting modifier. If a locative frame is pragmatically required to hold temporarily, and if, for independent reasons the temporal extension of the main predicate must be coextensive with the topic time, it follows that the main predicate is also interpreted as expressing a temporary property. What we find is a *synchronization of two properties*. Basically, it is the locative frame that is required to hold temporarily and as a kind of side effect this carries over to the main predicate.

The acceptability differences in (1) reflect the plausibility of such a synchronization in view of context and world knowledge about possible or typical temporal extensions of properties. Our world knowledge tells us that the average time of staying in a car and of being tired fit together quite easily, whereas being blond normally lasts for a longer period – unless the context provides some magic shampoo that turns people blond just for an hour or so. In this case the sentence would be fine. If we change our locative frame as in (22) acceptability judgements are reversed.

- (22) a. ?In Italy, Maria was tired. *temporal reading*  
 b. In Italy, Maria was blond. *temporal reading*

While it is quite easy to derive the temporal reading for (22b), i.e., to synchronize Maria's staying in Italy and her being blond, we would need some additional support from the context in order to accept an analogous reading for

the SLP-variant (22b). We could either assume that Maria stayed in Italy only for a very short time, so that it could be possible for her to be tired throughout that time. Or we could infer that she was repeatedly tired during her stay in Italy. This is just to illustrate that the relevant judgements do not simply rely on the distinction of temporary vs. permanent properties but take into account our rich conceptual knowledge about possible or typical temporal extensions of properties and how they can be adjusted.

## 5 Conclusion

To sum up, I have proposed a pragmatic explanation of the temporariness effect displayed in (1) that is based on very general pragmatic economy principles plus world knowledge concerning the possible or typical temporal extension of properties. No specific assumptions were needed in order to account for the apparent SLP/ILP contrast in combination with locatives.

On the contrary, compared to the semantic approaches of Kratzer (1995) and Chierchia (1995), the pragmatic account advocated here is more parsimonious wrt the lexicon, the grammar and ontology.

First, there is no need for postulating a “fundamental cognitive division of the world” (corresponding roughly to temporary vs. permanent properties) that is reflected in the lexicon by some type of marking SLPs and ILPs.

Secondly, contrary to first appearances the grammar is not sensitive to the temporariness effect either. In particular, predicates do not behave differently wrt locative modifiers.

And thirdly, there is also no need to stipulate ontological distinctions like Chierchia’s location dependent vs. location independent events. Within the proposal developed here the locative frame is not used to locate a property in space but to single out the topic time. The only link between the locative and the main predicate is their *temporal location*. If this account of the temporariness effect is on the right track, this is a quite straightforward application of bidirectional OT which nevertheless takes a considerable load off of the grammar and leads to a more balanced division of labour between grammar and pragmatics.

## Notes

<sup>1</sup> The SLP/ILP distinction goes back to Milsark (1974, 1977) and Carlson (1977).

<sup>2</sup> See Higginbotham & Ramchand (1997), Fernald (2000), Jäger (2001), Maienborn (2003a: chap. 2.3) for commented overviews of SLP/ILP diagnostics that have been discussed in the literature.

<sup>3</sup> This study is exclusively concerned with the SLP/ILP contrast showing up in combination with locative modifiers. See Maienborn (2003c) for a discourse-based account of the distribution of Spanish *ser/estar*.

<sup>4</sup> Throughout this paper, I use the term “event” as a cover term for events proper, processes and (certain) states; cf. Bach’s (1986) notion “eventuality”. Other labels that can be found in the literature for an additional Davidsonian event argument include “spatiotemporal location” (e.g. Kratzer 1995) and “Davidsonian argument” (e.g. Chierchia 1995). See Maienborn (2003a,b,d) for qualifications concerning the borderline category of states.

<sup>5</sup> Due to limitations of space I will ignore the information structural impact of fronting frame-setting modifiers and analyze them on a par with their post-verbal variants.

<sup>6</sup> In Blutner's terminology "super-optimal".

<sup>7</sup> This is a temporal variant of "conditional perfection", i.e., the pragmatic strengthening of a conditional statement into a biconditional; see Geis & Zwicky 1971, van der Auwera (1997).

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# The Head-Dependence Effect in Mohawk and Selayarese\*

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## 1 Introduction

Many languages exploit mechanisms to avoid stressing syllables which contain epenthetic vowels. In the recent Optimality Theoretic (Prince and Smolensky 1993) literature, such phenomena have been analysed in terms of positional faithfulness (Beckman 1998), and in particular by means of the constraint in 0).

- (1) HEAD-DEPENDENCE (HEAD-DEP: Alderete 1999; Broselow 1999)

Nonlexical vowels are not allowed in prosodic heads.

To illustrate, consider Yimas (Foley 1991), a Papuan language with canonical initial stress and secondary stress on the third syllable of longer words. Under certain conditions, canonical primary stress is displaced rightward away from an epenthetic vowel. Relevant data are given in 0) and 0) below.<sup>1</sup>

- (2) Yimas canonical stress

- a. kúlanəŋ 'walk'  
b. mámantàkarman 'land crab'

- (3) Yimas initial epenthesis

- a. /kcakk/ kǰcákək 'cut'  
b. /klwa/ Kǰlǰwa 'flower'

- (4) HEAD-DEP correctly predicts stress displacement

| Input: /kcakk/ | HEAD-DEP | ALIGN-L |
|----------------|----------|---------|
| a. (kǰ.ca) kǰk | *!       |         |
| b. ⌀ kǰ(cǰ.kǰ) |          | *       |

- (5) HEAD-DEP correctly predicts no stress displacement

| Input: /klwa/  | HEAD-DEP | ALIGN-L |
|----------------|----------|---------|
| a. ⌀ (kǰ.lǰ)wa | *        |         |
| b. kǰ(kǰ.wa)   | *        | *!      |

When HEAD-DEP is ranked above ALIGN-L, the stress foot is generally shifted rightward in the case of initial epenthesis as illustrated in 0b), in order to avoid

parsing an epenthetic vowel into the foot-head in violation of HEAD-DEP as in the ungrammatical 0a). If, however, both the initial syllable and the second syllable contain epenthetic vowels, then stress shift is correctly predicted not to apply. This is because the two candidates incur offsetting violations of HEAD-DEP, leaving ALIGN-L as the decisive constraint, as illustrated in 0).

The present paper advocates a different view, arguing that stress displacement under epenthesis is best understood as a consequence of *general* faithfulness in conjunction with independently-motivated structural well-formedness requirements. These constraints conspire to produce a *HEAD-DEPENDENCE Effect*, whereby epenthetic vowels are indeed dispreferred stress-bearers cross-linguistically, but HEAD-DEPENDENCE itself is shown to be unnecessary. The paper takes as its empirical focus two unrelated languages, Mohawk (Lake-Iroquoian, Quebec: Michelson 1988, 1989; Piggott 1995, 1998; Mellander 2003a, b) and Selayarese (Makassar, South Sulawesi, Indonesia: Mithun and Basri 1986; Goldsmith 1990; Broselow 1999; Basri 1999; Piggott 2001; Mellander 2003a, b), both of which exhibit stress sensitivity to epenthesis.

## 2 Data

The Mohawk data reproduced in this paper are taken from Michelson (1988) and Piggott (1995), while the Selayarese data are from Mithun and Basri (1986) and from Broselow (1999), who does not mark vowel length. Both languages have canonical primary stress on the penultimate syllable and no secondary stress<sup>2</sup>, as well as processes of phonological augmentation which apply in stressed syllables under certain conditions (see Mellander 2003a, b for discussion).

Patterns of stress-epenthesis interaction in the two languages are similar but not identical, and can be compared in four contexts according to the location of epenthetic vowels. These four contexts are given in 0).

(6) Four contexts for stress-epenthesis interaction in Mohawk and Selayarese

*Context I: no epenthesis*

*Context II: penultimate epenthesis*

*Context III: final epenthesis*

*Context IV: antepenultimate and final epenthesis*

As we will see below, the two systems exhibit parallel patterning in contexts I and III, while diverging from one another in contexts II and IV.

### 2.1 Mohawk

The relationship between stress and epenthesis in Mohawk is a complex one. In the absence of epenthesis, canonical stress in Mohawk falls on the penultimate syllable, as shown in 0). If the penult is open, stress is accompanied by V-augmentation (vowel lengthening, schematized in 0)), e.g. 0a, b).

## (7) Mohawk context I: no epenthesis

- |    |                         |                  |                         |
|----|-------------------------|------------------|-------------------------|
| a. | /wak-haratat-u/         | wakharatá:tu     | 'I am holding it up'    |
| b. | /ʌ-k-atirut-ʌʔ/         | ʌkatirú:tʌʔ      | 'I will pull'           |
| c. | /wak-haratat-u-hatyé-Ø/ | wakharatatuhátye | 'I go along lifting up' |
| d. | /k-atirut-ha/           | katirútha        | 'I pull'                |

## (8) V-augmentation

$$CV]_{\sigma} \rightarrow CVV]_{\sigma}$$

In Mohawk words where the penultimate vowel is epenthetic /e/<sup>3</sup>, stress falls on the antepenult, as illustrated in 0) below. In contrast to context I, stressed open antepenults do not undergo augmentation when they precede epenthetic /e/.

## (9) Mohawk context II: penultimate epenthesis

- |    |              |          |                                  |
|----|--------------|----------|----------------------------------|
| a. | /ʌ-k-r-ʌʔ/   | ʌkerʌʔ   | 'I will put it into a container' |
| b. | /te-k-rik-s/ | tékeriks | 'I put them next to each other'  |

## (10) Mohawk context III: final epenthesis

- |        |              |           |                         |
|--------|--------------|-----------|-------------------------|
| a.     | /ʌ-wak-ok-ʔ/ | ʌwá:kokeʔ | 'I will have a blister' |
| b.     | /ka-hur-ʔ/   | ká:hureʔ  | 'gun'                   |
| cf. c. | /yo-nake-ʔ/  | oná:keʔ   | 'canoe'                 |

The situation is somewhat different in the case of final-syllable epenthetic /e/ in Mohawk. As in context II, stress falls on the antepenult; unlike context II, stressed open antepenults undergo augmentation. This is exemplified in 0).

Finally, in Mohawk words containing epenthetic /e/ in both the antepenultimate and final syllables, stress falls on the pre-antepenult. As in context II, augmentation is absent even if the stressed syllable is open, as illustrated in 0) below.

## (11) Mohawk context IV: antepenultimate and final epenthesis

- |    |               |           |                                    |
|----|---------------|-----------|------------------------------------|
| a. | /t-ʌ-k-rik-ʔ/ | tʌkerikeʔ | 'I will put together side by side' |
| b. | /o-nraht-ʔ/   | ónerahteʔ | 'leaf'                             |

A generalisation which can be made with respect to V-augmentation in Mohawk is that it applies when the vowel in the following syllable is lexical (contexts I and III), but not when this vowel is epenthetic /e/ (contexts II and IV).

## 2.2 Selayarese

As in Mohawk, canonical stress in Selayarese falls on the penultimate syllable, and stressed open penults are augmented, as shown in 0).

Selayarese words with penultimate epenthesis are stressed on the penult as shown in 0). While V-augmentation does not occur, the stressed syllable is closed, either through gemination of a following voiceless obstruent or through glottal stop insertion elsewhere. This process, which we will refer to as C-augmentation is schematized in 0).

## (12) Selayarese context I: no epenthesis

|              |         |            |
|--------------|---------|------------|
| a. /golo/    | gó:lo   | 'ball'     |
| b. /golo-ku/ | goló:ku | 'my ball'  |
| c. /ruppa/   | rúppa   | 'face'     |
| d. /ruppa-i/ | ruppá:i | 'confront' |

## (13) Selayarese context II: penultimate epenthesis

|               |           |                       |
|---------------|-----------|-----------------------|
| a. /sahal-ku/ | sahalákku | 'my benefit'          |
| b. /sahal-mu/ | sahaláʔnu | 'your (fam.) benefit' |

(14) C-augmentation  
CV]σ → CV'C]σ

Parallel to Mohawk, in cases of final epenthesis Selayarese words receive antepenultimate stress accompanied by V-augmentation, as shown in 0).

## (15) Selayarese context III: final epenthesis

|                 |         |                |
|-----------------|---------|----------------|
| a. /lamber/     | lámberə | 'long'         |
| b. /sahal/      | sá:hala | 'benefit'      |
| cf. c. /sahala/ | sahá:la | 'sea cucumber' |

## (16) Selayarese context IV: antepenultimate and final epenthesis

|             |           |             |
|-------------|-----------|-------------|
| a. /solder/ | solodé:re | 'weld'      |
| b. /tarpal/ | tarapá:la | 'tarpaulin' |

Finally, Selayarese words with epenthetic vowels in both antepenultimate and final syllables receive penultimate stress with V-augmentation, as shown in 0). Unlike Mohawk, stress in Selayarese never shifts further leftward than the antepenult and is always accompanied by some form of augmentation.

### 3 Analysis

The patterning of stress, epenthesis and augmentation in the four comparable contexts for Mohawk and Selayarese are summarized in the following table.

## (17) The interaction of epenthesis, stress and augmentation

| <i>Context</i>                                      | <i>Mohawk</i>                                  | <i>Selayarese</i>                         |
|-----------------------------------------------------|------------------------------------------------|-------------------------------------------|
| <i>I. no epenthesis</i>                             | penultimate stress,<br>V-augmentation          | penultimate stress,<br>V-augmentation     |
| <i>II. penultimate epenthesis</i>                   | antepenultimate stress,<br>no augmentation     | penultimate stress,<br>C-augmentation     |
| <i>III. final epenthesis</i>                        | antepenultimate stress,<br>V-augmentation      | antepenultimate stress,<br>V-augmentation |
| <i>IV. antepenultimate and<br/>final epenthesis</i> | pre-antepenultimate stress,<br>no augmentation | penultimate stress,<br>V-augmentation     |

We first address the issue of augmentation, and then motivate an analysis for

stress-epenthesis interaction which does not require HEAD-DEP.

### 3.1 Augmentation

Following Piggott (1998) and Mellander (2003a, b), we interpret augmentation in both systems as a shift in phonological quantity in response to a requirement that stressed syllables be heavy. Leaving aside for the moment the cases in Mohawk where V-augmentation does not apply, this approach provides a straightforward explanation for certain distributional facts about augmentation.

Recall that in both languages V-augmentation is restricted to open syllables. The failure of V-augmentation to apply in closed syllables follows from a requirement of stressed syllable heaviness in conjunction with Weight-by-Position (e.g. Hayes 1989): if a coda consonant is associated to a mora then the syllable is heavy, rendering vowel lengthening unnecessary. Accordingly, V-augmentation is motivated in open syllables only, where it is necessary in order to achieve heaviness. With respect to C-augmentation, we observe that this phenomenon is restricted to Selayarese context II. Since this also happens to be the only context where the stressed vowel is epenthetic, C-augmentation is understood as an alternative to V-augmentation in response to a ban on lengthening in epenthetic vowels. Through obstruent-gemination or glottal stop insertion into a coda position, the syllable is made heavy without resorting to phonological vowel lengthening.<sup>4</sup>

Augmentation is formalized by means of the constraint in 0). Prominence refers here to phonological quantity or moraicity, where heavy/bimoraic syllables are more prominent than light/monomoraic syllables, which are in turn more prominent than weightless/nonmoraic syllables: schematically H >> L >> Ø. Since prominence is a relative notion, HD-PROM requires that the head syllable of a foot be quantitatively greater than the dependent syllable, i.e. quantitatively uneven (HL) and (LØ) feet satisfy HD-PROM, while quantitatively even (HH) and (LL) feet do not.<sup>5</sup> When HD-PROM is ranked above DEP-μ-IO, the first of two light syllables will be undergo augmentation when parsed into a trochaic foot, as shown in 0).

(18) HEAD PROMINENCE (HD-PROM: Piggott 1998, Mellander 2003a, b)

The head of a foot is phonologically prominent.

(19) HD-PROM correctly predicts augmentation

| Input: | /LL/   | HD-PROM | DEP-μ-IO |
|--------|--------|---------|----------|
| a.     | (LL)   | *!      |          |
| b.     | ☞ (HL) |         | *        |

By contrast, no augmentation is predicted to occur when a sequence of one light syllable and one weightless syllable are parsed into a trochaic foot, as shown in 0). This is because candidate 0a) already satisfies HD-PROM, cf. 0a), and as a consequence mora insertion is unmotivated.

## (20) HD-PROM correctly predicts no augmentation

| Input: /LØ/         | HD-PROM | DEP- $\mu$ -IO |
|---------------------|---------|----------------|
| a. $\emptyset$ (LØ) |         |                |
| b. (HØ)             |         | *!             |

In Mohawk, V-augmentation systematically fails to apply in contexts II and IV, and it is precisely these contexts where the post-tonic vowel is epenthetic /e/. Thus, if epenthetic /e/ is assumed to be weightless in Mohawk (Michelson 1989; Piggott 1995, 1998), then the absence of V-augmentation in the preceding syllables is a straightforward consequence of HD-PROM. As it turns out, nonmoraic epenthetic vowels are actually a predicted result in OT, following from the optimization of faithfulness to the input. This is demonstrated in 0) below, where output candidates whose first syllable contains a monomoraic and nonmoraic epenthetic vowel, respectively, are each evaluated against constraints on segmental and moraic faithfulness.

## (21) Nonmoraic epenthesis

| Input: $\mu$<br>/ n t a /           | DEPSEG-IO | DEP- $\mu$ -IO |
|-------------------------------------|-----------|----------------|
| a. $\mu$ $\mu$<br>[ n i t a ]       | *         | *!             |
| b. $\emptyset$ $\mu$<br>[ n i t a ] | *         |                |

Notice that, irrespective of constraint ranking, the weightless epenthetic vowel in 0b) emerges as optimal because it is more faithful to the input than its monomoraic counterpart in 0a). Since epenthetic vowels by definition are not present in lexical representations, it is necessarily more costly with respect to faithfulness to specify them in outputs as moraic than as nonmoraic.

## 3.2 The distribution of weightless syllables

Recall that in contrast to Mohawk, stress in Selayarese is always accompanied by some form of augmentation (C-augmentation or V-augmentation), even in cases where the post-tonic vowel is epenthetic, as in Selayarese context IV (see example 0) above). Assuming trochaic footing, augmentation under HD-PROM demands that the post-tonic vowel be analysed as monomoraic. Since, as discussed above, epenthetic vowels are expected *ceteris paribus* to surface as weightless, there must be a constraint which forces mora insertion in Selayarese post-tonic epenthetic vowels.

To flesh out this constraint, let us return briefly to Yimas. In this language, canonical third-syllable secondary stress (see example 0b)) is displaced to the fourth syllable in cases where the vowel in the third syllable is epenthetic. This

is illustrated in the data in 0) below, also taken from Foley (1991).

(22) Yimas third-syllable epenthesis

- a. /tɨkmpɲawa/      tɨk ɲmpɲàwa      'wild fowl'  
 b. /kntkcki/      kɲt kɲki      'bird (sp)'

Superficially, it seems that these data can be accounted for straightforwardly under HEAD-DEP, analogously to the analysis of primary stress displacement given in the introduction. Alderete (1999) does just this, analysing example 0a) where stress displacement forestalls a (second) violation of HEAD-DEP at the cost of foot misalignment, as shown in 0) below. While Foley (1991) unfortunately does not provide any additional relevant data, Alderete's analysis is inadequate to account for example 0b), as demonstrated in 0).

(23) HEAD-DEP correctly predicts stress displacement

| Input: | /tɨkmpɲawa/         | HEAD-DEP | ALLFEET-L |
|--------|---------------------|----------|-----------|
| a.     | (tɨ.kɲn)(pɲ.na)wa   | **!      | **        |
| b.     | ɹ (tɨ.kɲn)pi(nà.wa) | *        | ***       |

(24) HEAD-DEP incorrectly predicts stress displacement

| Input: | /kntkcki/          | HEAD-DEP | ALLFEET-L |
|--------|--------------------|----------|-----------|
| a.     | ɹ (kɲ.tɨ)(kɲ.cɨ)ki | **       | **        |
| b.     | (kɲ.tɨ)ki(cɨ.ki)   | **       | ***!      |

Examples 0b) and 0a) differ crucially with respect to the status of the vowel in the fourth syllable. When this vowel is epenthetic, as in 0b), stress displacement yields no gain with respect to satisfaction of HEAD-DEP, since in both 0a) and 0b) the secondary stress foot is headed by a syllable containing an epenthetic vowel. The fact that both candidates incur the same number of violations of HEAD-DEP (one for each foot) means that these violations offset one another (cf. tableau 0)), yielding the canonical pattern of third-syllable secondary stress. This is the wrong result, however; the HEAD-DEP analysis selects the ungrammatical candidate 0a) instead of the grammatical candidate 0b). Clearly an additional constraint is needed.

Noting that in both 0a) and 0b) stress displacement has the effect of reducing the overall number of epenthetic vowels in the foot, it seems reasonable to suppose that the required constraint discriminates against *footed* epenthetic vowels, irrespective of whether they occur in head or dependent position. This is reminiscent of the foot-level extension of HEAD-DEP, also proposed by Alderete (1999), militating against epenthetic material in the *head-foot of the prosodic word*.<sup>6</sup> Such a constraint is insufficient here, however, as the foot in question is crucially a *secondary* stress foot and not the prosodic word head. Indeed, the fact that stress-avoiding behaviour is observable in non-head feet seems to undermine the very spirit of HEAD-DEP by disassociating stress displacement

from the notion of prosodic head.

Suppose, however, that epenthetic vowels are phonologically weightless in Yimas and that stress placement is affected by a constraint on the distribution of weightless syllables banning their occurrence within feet. We formulate the constraint in terms of prosodic licensing as in 0). LIC-Ø militates against the parsing of weightless syllables into feet, and differs only slightly from MORAI-C-V (Rosenthal and Van der Hulst 1999) which bans weightless syllables in all positions.<sup>7</sup> If LIC-Ø is ranked above ALLFEET-L, stress displacement is correctly predicted for both words in 0), as shown in 0) and 0).

(25) LICENSE-Ø (LIC-Ø)

A weightless syllable must be parsed as an immediate constituent of the prosodic word.

(26) LIC-Ø correctly predicts stress displacement (fourth syllable underlying)

| Input: /tŋkmpnawa/             | LIC-Ø | ALLFEET-L |
|--------------------------------|-------|-----------|
| a. (tŋ.kám)(pí.na)wa           | ***!  | **        |
| b. $\sigma$ (tŋ.kám)pí (ná.wa) | **    | ***       |

(27) LIC-Ø correctly predicts stress displacement (fourth syllable epenthetic)

| Input: /kntkcki/               | LIC-Ø | ALLFEET-L |
|--------------------------------|-------|-----------|
| a. (kám.tí)(kí.cí)ki           | ****! | **        |
| b. $\sigma$ (kám.tí)kí (cí.ki) | ***   | ***       |

In both cases, stress displacement is motivated under LIC-Ø by the desire to minimize the total number of weightless syllables parsed into feet. We are now in a position to understand the interaction of stress placement and epenthesis in Mohawk and Selayarese.

### 3.3 Stress-epenthesis interaction

Stress-epenthesis interaction in Mohawk and Selayarese can be expressed in OT in terms of a minimal constraint re-ranking. To account for contexts I and II we appeal to the basic rankings in 0).

(28) Constraint rankings (preliminary version)

Mohawk: HD-PROM >> DEP- $\mu$ -IO >> LICENSE-Ø >> ALIGN-R

Selayarese: HD-PROM >> LICENSE-Ø >> DEP- $\mu$ -IO >> ALIGN-R

(29) Context I: no epenthesis (Mohawk)

| Input: /LLL/       | HD-PROM | DEP- $\mu$ -IO | LIC-Ø | ALIGN-R |
|--------------------|---------|----------------|-------|---------|
| a. L (LL)          | *!      |                |       |         |
| b. $\sigma$ L (HL) |         | *              |       |         |
| c. (LL) L          | *!      |                |       | *       |
| d. (HL) L          |         | *              |       | *!      |

## (30) Context I: no epenthesis (Selayarese)

| Input: /LLL/       | HD-PROM | LIC-Ø | DEP-μ-IO | ALIGN-R |
|--------------------|---------|-------|----------|---------|
| a. L (LL)          | *!      |       |          |         |
| b. $\sigma$ L (HL) |         |       | *        |         |
| c. (LL) L          | *!      |       |          | *       |
| d. (HL) L          |         |       | *        | *!      |

In context I, the two systems converge on the same output – penultimate stress with augmentation – due to the satisfaction of HD-PROM via mora insertion and a low-ranking constraint demanding alignment of the foot with the right word-edge, as shown in 0) and 0).

In context II, the differential ranking of DEP-μ-IO and LIC-Ø yields divergent strategies for satisfying HD-PROM. In Mohawk, the stress foot is shifted leftward, parsing the weightless epenthetic syllable into the dependent position of the foot in violation of lower-ranking LIC-Ø, but avoiding mora insertion, as shown in 0d). The opposite strategy is exploited by Selayarese, where two moras are inserted into the epenthetic penult in 0c), rendering it heavy and at the same time avoiding the need to parse a weightless syllable into the foot.

(31) Context II: penultimate epenthesis (Mohawk)<sup>8</sup>

| Input: /LvL/       | HD-PROM | DEP-μ-IO | LIC-Ø | ALIGN-R |
|--------------------|---------|----------|-------|---------|
| a. L (ØL)          | *!      |          | *     |         |
| b. L (LL)          | *!      | *        |       |         |
| c. L (HL)          |         | *!*      |       |         |
| d. $\sigma$ (LØ) L |         |          | *     | *       |
| e. (HØ) L          |         | *!       | *     | *       |

## (32) Context II: penultimate epenthesis (Selayarese)

| Input: /LvL/       | HD-PROM | LIC-Ø | DEP-μ-IO | ALIGN-R |
|--------------------|---------|-------|----------|---------|
| a. L (ØL)          | *!      | *     |          |         |
| b. L (LL)          | *!      |       | *        |         |
| c. $\sigma$ L (HL) |         |       | **       |         |
| d. (LØ) L          |         | *!    |          | *       |
| e. (HØ) L          |         | *!    | *        | *       |

The analysis of contexts III and IV additionally requires the constraint in 0) below. A position-specific extension of LIC-Ø, FINAL-Ø is independently required to account for the asymmetric behaviour of final consonants in a variety of languages with respect to metrical phenomena (extrametricality). The final constraint rankings for Mohawk and Selayarese are given in 0).

## (33) LICENSE FINAL-Ø (FINAL-Ø: Piggott 1998)

A final weightless syllable must be parsed as an immediate constituent of the prosodic word.

## (34) Constraint rankings (final version)

Mohawk: FINAL-Ø, HD-PROM >> DEP-μ-IO >> LICENSE-Ø >> ALIGN-R

Selayarese: FINAL-Ø, HD-PROM >> LICENSE-Ø >> DEP-μ-IO >> ALIGN-R

In context III, the two languages again converge on a single output. In order to simultaneously satisfy FINAL-Ø and HD-PROM, the stress foot is retracted leftward where an uneven (HL) trochee can be generated through the insertion of just a single mora, as shown in 0c) and 0c). The generation of this foot type word-finally would require the insertion of two moras, as illustrated by the ungrammatical candidates 0b) and 0b).

## (35) Context III: final epenthesis (Mohawk)

| Input: /LLv/                | FINAL-Ø | HD-PROM | DEP-μ-IO | LIC-Ø | ALIGN |
|-----------------------------|---------|---------|----------|-------|-------|
| a. L ( <u>L</u> Ø)          | *!      |         |          | *     |       |
| b. L ( <u>HL</u> )          |         |         | **!      |       |       |
| c. $\sigma$ ( <u>HL</u> ) Ø |         |         | *        |       | *     |
| d. ( <u>HL</u> ) L          |         |         | **!      |       | *     |

## (36) Context III: final epenthesis (Selayarese)

| Input: /LLv/                | FINAL-Ø | HD-PROM | LIC-Ø | DEP-μ-IO | ALIGN |
|-----------------------------|---------|---------|-------|----------|-------|
| a. L ( <u>L</u> Ø)          | *!      |         | *     |          |       |
| b. L ( <u>HL</u> )          |         |         |       | **!      |       |
| c. $\sigma$ ( <u>HL</u> ) Ø |         |         |       | *        | *     |
| d. ( <u>HL</u> ) L          |         |         |       | **!      | *     |

## (37) Context IV: antepenultimate and final epenthesis (Mohawk)

| Input: /LvLv/                | FINAL-Ø | HD-PROM | DEP-μ-IO | LIC-Ø | ALIGN |
|------------------------------|---------|---------|----------|-------|-------|
| a. LØ ( <u>L</u> Ø)          | *!      |         |          | *     |       |
| b. LØ ( <u>H</u> Ø)          | *!      |         | *        | *     |       |
| c. LØ ( <u>HL</u> )          |         |         | *!*      |       |       |
| d. L ( <u>HL</u> ) Ø         |         |         | *!*      |       | *     |
| e. $\sigma$ ( <u>L</u> Ø) LØ |         |         |          | *     | **    |
| f. ( <u>H</u> Ø) LØ          |         |         | *!       | *     | **    |

## (38) Context IV: antepenultimate and final epenthesis (Selayarese)

| Input: /LvLv/                | FINAL-Ø | HD-PROM | LIC-Ø | DEP-μ-IO | ALIGN |
|------------------------------|---------|---------|-------|----------|-------|
| a. LØ ( <u>L</u> Ø)          | *!      |         | *     |          |       |
| b. LØ ( <u>H</u> Ø)          | *!      |         | *     | *        |       |
| c. $\sigma$ LØ ( <u>HL</u> ) |         |         |       | **       |       |
| d. L ( <u>HL</u> ) Ø         |         |         |       | **       | *!    |
| e. ( <u>L</u> Ø) LØ          |         |         | *!    |          | **    |
| f. ( <u>H</u> Ø) LØ          |         |         | *!    | *        | **    |

Similar to context II, the divergent outputs in context IV result from Mohawk's propensity to exploit stress retraction in satisfaction of HD-PROM on

the one hand, and Selayarese's preference for mora insertion on the other. In Mohawk, mora insertion can be avoided entirely by simply shifting stress leftward to the pre-antepenult as in 0e). This option is dispreferred in Selayarese, however, due to the higher relative ranking of LIC-Ø. Instead, an uneven (HL) trochee is generated by inserting two moras. Of the two possibilities – candidates 0c) and 0d) – candidate 0c) ultimately emerges as optimal due to better alignment with the right word-edge.

### 3.4 Discussion

In stress-epenthesis interaction, structural well-formedness requirements demanding moraic content in footed syllables (LIC-Ø, FINAL-Ø) and greater relative moraicity in foot-heads (HD-PROM) are pitted against a constraint on general faithfulness to the input (DEP-μ-IO) that militates against the insertion of moras. The *HEAD-DEPENDENCE Effect* arises from the resolution of this conflict through the displacement of canonical stress, i.e. in those grammars where constraints on stress placement (e.g. ALIGN-R) are violated in order to optimize satisfaction of faithfulness and well-formedness constraints. This is the case in both Mohawk and Selayarese, although relatively stronger enforcement of faithfulness in Mohawk results in more well-formedness violations (footed weightless syllables) and a broader range of displacement effects (pre-antepenultimate stress) than in Selayarese. Conversely, greater violability of faithfulness requirements in Selayarese results in output forms containing as many as two inserted moras (contexts II and IV), which is never the case in Mohawk. Finally, if the conflict between stress placement, structural well-formedness and faithfulness is resolved in favour of canonical stress rules, no *HEAD-DEPENDENCE Effect* is observable.

On this view, epenthetic vowels are poor stress-bearers not because they are epenthetic *per se*, but rather because in the case of epenthetic vowels the structural demands of headhood must be satisfied at the expense of faithfulness. It is simply more economical to construct feet over syllables containing *underlying vowels*, where *underlying moras* rather than inserted ones can be exploited in satisfaction of well-formedness constraints. A suitable analogy is the fact that radio transmission towers are generally constructed on hills rather than in valleys because hills offer a natural elevation advantage to maximize broadcasting range, which in a valley can only be compensated for by constructing a taller tower – at additional cost. Thus, while *HEAD-DEPENDENCE* is a genuine effect, it need not be assumed as a driving force in stress displacement under epenthesis. On the contrary, the observed effects can be accounted for straightforwardly through the interaction of other constraints.

## 4 Summary

The complex patterning of stress, epenthesis and augmentation in Mohawk and Selayarese can be captured in OT in terms of a minimal re-ranking of constraints on general faithfulness and structural well-formedness. Since greater structural complexity in prosodic heads means a higher cost to faithfulness if material must be inserted, there is a cross-linguistic tendency to shift stress away from epenthesis sites. Crucially, however, reference to HEAD-DEPENDENCE itself is unnecessary, since the dispreference for epenthetic vowels in prosodic heads emerges as an artefact of the analysis.

## 5 Notes

\* I am grateful to Glyne Piggott and to audiences at ZAS Berlin and the University of Arizona for helpful feedback. All errors and omissions are my own.

<sup>1</sup> Epenthetic segments are given in *italics*.

<sup>2</sup> Broselow (1999) exploits iterative footing in her analysis of Selayarese stress but notes (p.c.) that these feet are an artefact of the analysis and do not correlate with perceptible secondary stresses.

<sup>3</sup> With respect to Mohawk, the phenomena discussed here refer to epenthetic /e/ only. Mohawk also exhibits prothetic /l/ and the so-called 'joiner' /a/, which have different properties.

<sup>4</sup> See Goldsmith (1990) and Piggott (2001) for analyses of C-augmentation along these lines.

<sup>5</sup> This runs counter to the Iambic Trochaic Law (e.g. Hayes 1995), where quantitative unevenness is correlated with well-formedness in iambic systems only. See Mellander (2003a, b) for arguments supporting the well-formedness of uneven trochaic feet in certain systems.

<sup>6</sup> This formulation of HEAD-DEF has been used to account for leftward displacement in Selayarese context III (Alderete 1999; Broselow 1999; Mellander 2003a, b).

<sup>7</sup> In the absence of evidence for MORaic-V in unfooted syllables, the latter constraint could be eliminated in favour of LIC-Ø.

<sup>8</sup> I mark epenthesis sites here with the symbol  $\nu$ , as a shorthand for the phonological contexts which trigger epenthesis in the respective languages.

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# Complement Movement and Reconstruction

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## 1. Introduction

It is well-known that while A-movement generally resists reconstruction with respect to the application of the binding Condition C, A'-movement does not.

- (1) a. [The claim that John<sub>1</sub> was asleep]<sub>2</sub> seems to him<sub>1</sub> [ t<sub>2</sub> to be correct].  
 b. \*[Which claim that John<sub>1</sub> was asleep]<sub>2</sub> was he<sub>1</sub> willing to discuss t<sub>2</sub>?

Under the copy theory of movement (Chomsky 1995), reconstruction of the *wh*-phrase in its copy position in (1b) allegedly induces a Condition C violation, since the R-expression *John* is bound by the pronoun *he* in the relevant position. By contrast, anti-reconstruction in (1a) is often attributed to the absence of copies in A-movement (Fox 1999, 2000, Lasnik 1999).

This paper, however, argues that there are certain cases of A-movement where a copy must be retained. Based on reconstruction effects in Japanese short scrambling (*s*-scrambling) and the so-called VP-adjunction scrambling (Saito 1994), it demonstrates that copies are not left if movement occurs to check an EPP feature, whereas they are retained if an NP moves into a potential  $\theta$ -position.

Section 2 shows that as opposed to the previous views, there are good reasons to believe that *s*-scrambling and a subset of VP-adjunction scrambling do leave copies. Yet, it is also demonstrated that some instances of VP-adjunction scrambling indicate the absence of copies. This asymmetry is associated with the presence or absence of a functional projection in the embedded constituent. Section 3 aims at formalizing this generalization in terms of the distinction between EPP-motivated movement and movement into a potential  $\theta$ -position. This analysis is reinforced in section 4 by data concerning dual selection phenomena and medium scrambling (*m*-scrambling).

## 2. Types of Scrambling and Applicability of Reconstruction

### 2.1 Data and puzzles

A-movement is known to create a new binding relation as illustrated in (2), whereas A'-movement does not alter binding relations (see (3)). Japanese s-scrambling in (4) behaves similarly to A-movement in this respect.

- (2) a. \*There seemed to their<sub>1</sub> friends to be many people<sub>1</sub> in trouble.  
 b. Many people<sub>1</sub> seemed to their<sub>1</sub> friends to be in trouble.
- (3) a. ?\*His<sub>1</sub> friends criticized some boy<sub>1</sub>.  
 b. ?\*Which boy<sub>1</sub> did his<sub>1</sub> friends criticize?
- (4) a. \*John-ga [*soitu*<sub>1</sub>-no sensei]-ni [**subete-no gakusei**]<sub>1</sub>-o syookaisita.  
 J.-nom he-gen teacher-dat all-gen student-acc introduced  
 'John introduced his teacher to every student.'  
 b. John-ga [**subete-no gakusei**]<sub>1</sub>-o [*soitu*<sub>1</sub>-no sensei]-ni *t*<sub>1</sub> syookaisita.  
 J.-nom all-gen student-acc he-gen teacher-dat introduced  
 'John introduced every student to his teacher.'

Reconstruction of the moved NP is blocked both in (2b) and in (4b). Based on the anti-reconstruction of this kind, Saito (2003), for example, argues that s-scrambling, similarly to A-movement, does not leave copies.

However, the ungrammaticality of (5) seems to suggest the opposite possibility.

- (5) ??\*Sonohi, Yamada keezi-ga [tukamatta **otoko**<sub>1</sub>-no syasin]<sub>2</sub>-o  
 on that day, Y. detective-nom arrested man-gen photo-acc  
*soitu*<sub>1</sub>-ni *t*<sub>2</sub> miseta (koto)  
 he-dat showed (fact)  
 'On that day, Detective Yamada showed the arrested man's photo to him.'

Reconstruction of the scrambled NP in its base position gives rise to a Condition C violation (with the R-expression being inappropriately bound by the co-indexed pronoun). This indicates that the base copy plays a role even in the s-scrambling construction.

What makes the matter a little more complicated is the contrast between (6) and (7). These sentences exemplify the so-called VP-adjunction scrambling (Saito 1994), where an object NP is scrambled out of an infinitival complement.

- (6) ??\*Kangaegoto-o siteite, Yamada keezi-ga [tukamatta **otoko**<sub>1</sub>-no  
contemplation-acc doing Y. detective-nom arrested man-gen  
syasin]<sub>2</sub>-o ukkari *soitu*<sub>1</sub>-ni *t*<sub>2</sub> mise wasureta (koto)  
photo-acc unwittingly he-dat to.show forgot (fact)  
'Absorbed in contemplation, Detective Yamada unwittingly forgot to  
show the arrested man's photo to him.'
- (7) (?)Situkoku tanomarete, Yamada keezi-ga [tukamatta **otoko**<sub>1</sub>-no  
persistently asked Y. detective-nom arrested man-gen  
syasin]<sub>2</sub>-o sikatanaku *soitu*<sub>1</sub>-ni *t*<sub>2</sub> misete yatta (koto)  
photo-acc reluctantly he-dat to.show gave (fact)  
'Persistently asked, Detective Yamada reluctantly showed the arrested  
man's photo to him.'

The ungrammaticality of (6) is attributable to a Condition C violation resulting from reconstruction of the scrambled NP. What is puzzling, however, is that the violation seems to be mitigated (or eliminated) in (7).

## 2.2 Correlations between reconstruction and phrase structure

(6) and (7) each contain a verbal complex that consists of a tensed verb and an infinitival verb. While Japanese abounds with V+V combinations of this kind, it is known that those combinations do not form a homogeneous class but are classified into (at least) two sub-types according to the grammatical properties of the second members (Kageyama 1993, Matsumoto 1996, etc.). They are called Type A and Type B in this paper.

- (8) **Type A:** *-yaru* 'give', *-dasu* 'begin', *-sokonau* 'fail', *-sugiru* 'exceed', etc.  
**Type B:** *-wasureru* 'forget', *-naosu* 'redo', *-tukusu* 'exhaust', etc.

A major difference between these types arises in passivization. As illustrated in (9), a sentence with a passivized Type A verb does not allow movement of an embedded object. By contrast, (10) indicates that this operation is possible with a Type B verb.

- (9) \*Booru<sub>1</sub>-ga inu-ni *t*<sub>1</sub> nagete **yar-are**-ta. (Type A)  
ball-nom dog-dat to.throw give-Pass-Past  
'A ball was thrown for a dog.' (intended)

- (10) Tegami<sub>1</sub>-ga *t*<sub>1</sub> dasi **wasure-rare**-teiru. (Type B)  
 letter-nom to.send forget-Pass-Asp  
 ‘Someone has forgotten to send a letter (and it remains to be sent out).’

(9) is parallel to (11) in that an NP base-generated in the embedded object position is moved across the PRO subject, violating the minimality condition (Rizzi, 1990, Kageyama 1993, Wurmbrand 2001).

- (11) \*A ball<sub>1</sub> was tried [PRO to throw *t*<sub>1</sub> at the dog].

Since the PRO subject of a transitive verb is located in the specifier position of a functional projection, the well-formedness of (10) indicates that the embedded constituent is a bare VP without IP and *v*P. The presence of PRO in (9), then, implies that the embedded constituent at least contains *v*P. The phrase structural distinction holds for (6, 7) as well. Since they contain a Type B verb *wasureta* ‘forgot’ and a Type A verb *yatta* ‘gave’, they have structures like (12a, b) respectively.

- (12) a. ??\*...[<sub>VP</sub> NP<sub>1</sub>-acc ... [<sub>VP</sub> NP-dat *t*<sub>1</sub> V] V] (= (6): Type B)  
 b. (?)...[<sub>VP</sub> NP<sub>1</sub>-acc ... [<sub>VP</sub> PRO [<sub>VP</sub> NP-dat *t*<sub>1</sub> V] *v*] V] (= (7): Type A)

A crucial difference is that while scrambling takes place inside lexical projections in (6), the scrambled NP moves across a functional projection in (7). This difference seems to be correlated with the applicability of reconstruction. On the assumption that reconstruction makes use of copies, a possible generalization might be that while the base copy is retained in (6) as well as in (5), it is subject to deletion in (7). This is summarized below.

| (13) | examples | embedded constituent | reconstruction | base copy |
|------|----------|----------------------|----------------|-----------|
|      | (5, 6)   | VP                   | possible       | retained  |
|      | (7)      | <i>v</i> P           | not possible   | deleted   |

### 3. Interpretation of Scrambled NPs

This section aims at exploring the nature of the generalization reached at the end of the previous section. The main proposal is that s-scrambling and VP-adjunction scrambling with a Type B verb (Type B VP-adjunction

scrambling) involve movement from a (potential)  $\theta$ -position into another and that in such cases, copies are retained both in the landing site and in the base position. On the other hand, VP-adjunction scrambling with a Type A verb (Type A VP-adjunction scrambling) is not movement into a (potential)  $\theta$ -position. Rather, it involves checking of an EPP feature of a functional head  $\nu$  and a copy is retained only in the position where feature-checking takes place.

### 3.1 Selection and retention of copies

Saito (2003) argues that a copy is retained only if it is in a selected position. He considers a selected position as a position where feature-checking takes place or a selectional requirement (i.e.  $\theta$ -marking) of a head is satisfied. On the assumption that Japanese scrambling is not feature-driven, he makes the following statement: “If an NP is combined with a projection of its theta-role assigner by Merge, the position of the NP counts as a selected position” (p. 513). This means that if, for example, an object NP is scrambled and merged with a projection of V (as in the case of s-scrambling), only the landing site is qualified as a selected position and therefore the copy in the base position is deleted.

While I agree with Saito (2003) and consider that a copy is retained and interpreted in a selected position, it is not clear why only the landing site is associated with a  $\theta$ -marking (or selectional) requirement of V. Given the standard view of  $\theta$ -marking as a relation between a predicative head like V and its argument, a  $\theta$ -marking relation canonically holds between the V and its object argument when they are initially merged. Thus, it seems more appropriate to consider that initial merger of an argument with a predicative head can also satisfy the ( $\theta$ -marking) requirement of the relevant head and therefore such a position also counts as a selected position.

This leaves us with the possibility that both head and foot of a scrambling chain are retained if scrambling takes place within a projection of a predicative head. Still, Saito (2003) argues that deletion of the copy in the base position is secured by postulating the following condition.

(14) Chain interpretation makes the chain minimum.

This condition forces a scrambling chain to minimize its members. Given that an NP carries phonological features and referential features, (14) in effect means that both of these features carried by a scrambled NP should reside in the same position – either in the base position or in the landing site.

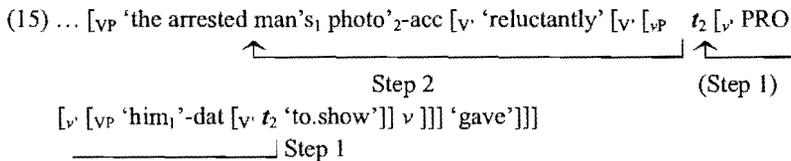
The validity of (14), however, is questionable given that (5) and (6) exhibit

reconstruction effects. In those sentences, phonological features of the scrambled NP reside in the landing site, which makes the NP pronounced in that position. On the other hand, the NP's referential features are to be retained in its base position, so that a Condition C violation arises. Therefore, in order to account for Condition C violations in (5, 6), one has to abandon (14) and postulate the circumstance where phonological features and referential features can reside in different positions.

### 3.2 (Anti-)reconstruction and selection

Contrary to (5, 6), reconstruction is blocked in (7). As discussed in section 2, the anti-reconstruction effect is attributable to deletion of the base copy. Recall that a crucial factor distinguishing between (5, 6) and (7) is the presence or absence of a functional projection  $\nu$ P. Its presence plays an important role in the deletion of the base copy. To see this point more clearly, let us examine the sentence in question.

First of all, let us assume that scrambling in (7) involves two steps, as illustrated by the partial schematic representation below.



Suppose that the accusative-marked object NP first moves into the edge of the embedded  $\nu$ P (Step 1) and then moves further to the matrix VP (Step 2). This division, particularly the first step, is motivated by the Phase Impenetrability Condition (PIC) proposed by Chomsky (2000). Since  $\nu$ P constitutes a phase, a position internal to the embedded VP is inaccessible to operation outside  $\nu$ P, according to the PIC. Thus, the object NP must move to the edge of  $\nu$ P so that it can further move into the matrix constituent.

In relation to the PIC, Chomsky (2000:109) remarks that a phase head is optionally assigned an EPP-feature in order for a category to be attracted to the edge of the phase. The optional assignment of an EPP feature seems to be applicable to the case under consideration. Thus, Step 1 in (15) takes place as a result of the EPP feature of the embedded  $\nu$  attracting the embedded object NP. The NP then undergoes further movement (Step 2). This step is not so much

EPP-driven movement as scrambling in the canonical sense. By contrast, since a scrambled NP does not cross any phase in (5, 6), scrambling is not subject to the PIC and consequently has nothing to do with the EPP.

In summary, the presence/absence of  $\nu$ P is reducible to the availability/unavailability of an EPP feature. Recall that the phrase structural difference between (5, 6) and (7) is associated with the availability of the base copy (see the table in (13)). It follows, then, that deletion of a copy takes place when the relevant step of movement is triggered by an EPP feature as exemplified by Step 1 in (15). On the other hand, if no EPP-checking is involved, a copy left behind after movement is not subject to deletion.

#### **4. $\Theta$ -Selection vs. EPP-Selection**

The remaining part of this paper elaborates on the different selection patterns in (5, 6) and (7). As discussed in the previous section, (5) and (6) instantiate scrambling from a potential  $\theta$ -position to another. In those cases, copies are retained both in the landing site and in the base position because both of the positions are selected via  $\theta$ -marking. Nonetheless, it has yet to be demonstrated that this kind of dual selection is in fact possible. This is the first task in this section.

On the other hand, scrambling in (7) involves, as its sub-part, EPP-driven movement to the edge of  $\nu$ P. Additionally, the base copy is subject to deletion, despite the fact that the relevant position is a  $\theta$ -position. Bearing in mind that a position is selected either by  $\theta$ -marking or by feature-checking, it follows that the edge of  $\nu$ P is selected due to the EPP-checking and that EPP-related selection overrides  $\theta$ -related selection. The second half of this section deals with the superiority of the EPP-related selection.

##### **4.1 Dual selection**

It is widely observed that an argument can enter into selectional relations with more than one predicate in the complex verbal construction (Baker 1989, Carrier and Randall 1992, Kageyama 1993, Nishigauchi 1993 among others). The V+V combinations involving Type B verbs also exhibit similar behavior. Consider the following examples.

- (16) a. Keesatu-ga sono otoko-o taihosita.  
 the police-nom that man-acc arrested  
 ‘The police arrested that man.’
- b. \*Keesatu-ga sono otoko-o taihosi **tukusita**.  
 the police-nom that man-acc to.arrest exhausted  
 ‘The police arrested that man completely.’ (intended)
- c. Keesatu-ga tooboosita otokotati-o taihosi **tukusita**.  
 the police-nom escaped men-acc to.arrest exhausted  
 ‘The police arrested all the men that had escaped.’

(16b) and (16c) both contain a Type B verb *tukusu* ‘exhaust’ as the matrix predicate. A comparison between them makes it clear that the ungrammaticality of (16b) results from the incompatibility between the matrix verb and a singular object in the embedded constituent. Replacement of the singular NP with a plural one in fact leads to a grammatical sentence like (16c). This means that the object NP is selected not only by the embedded verb but by the matrix verb.

A possible prediction is that since a Type B verb must enter into a selectional relation with the embedded object, it requires a transitive verb as its embedded predicate. This prediction seems to be borne out.

- (17) a. John-wa wain-o nomi { **tukusita / sugita** }.  
 J.-top wine-acc to.drink {exhausted / exceeded}  
 ‘John drank up the wine’ / ‘John drank too much wine.’
- b. John-wa warai { **\*tukusita / sugita** }.  
 J.-top to.laugh { \*exhausted / exceeded }  
 ‘\*John laughed completely.’ / ‘John laughed too much.’
- c. Kusa-ga sigeri { **\*tukusita / sugita** } niwa  
 grass-nom to.grow { \*exhausted / exceeded } garden  
 ‘\*a garden where grass has completely grown.’ / a garden where grass  
 has grown too much.’

The type B verb *tukusu* ‘exhaust’ cannot occur with an intransitive embedded predicate as illustrated in (17b, c), whereas no such restriction is imposed on Type A verbs like *sugiru* ‘exceed’.

A corollary of dual selection is that both head and foot of a chain are selected and retained. The reconstruction effects in (5, 6) exemplify the cases where the foot is retained. There are also cases indicating that the head of a chain can

also be retained. In (18a), the scrambled pronoun incorrectly binds an R-expression. The same effect is found not only in s-scrambling like (18a) but also in Type B VP-adjunction scrambling like (18b).

- (18) a. \*Mary-ga **kare<sub>1</sub>-o** [John<sub>1</sub>-no sensei]-ni **t<sub>1</sub>** syookaisita (koto)  
 M.-nom he-acc J.-gen teacher-dat introduced (fact)  
 ‘Mary introduced him<sub>1</sub> to John<sub>1</sub>’s teacher.’
- b. \*Mary-ga **kare<sub>1</sub>-o** ukkari [John<sub>1</sub>-no sensei]-ni **t<sub>1</sub>**  
 M.-nom he-acc unwittingly J.-gen teacher-dat  
 syookaisi wasureta (koto)  
 to.introduce forgot (fact)  
 ‘Mary unwittingly forgot to introduce him<sub>1</sub> to John<sub>1</sub>’s teacher.’

These sentences illustrate that the scrambled pronoun is selected in its landing site as well. A question arising in relation to (18) is why the base copy is not used in this case. If it were used, that is, if the scrambled pronoun were reconstructed in that position, a Condition C violation would not arise.

It has been argued in the literature that Condition C is a sort of negative condition, in that well-formedness of a sentence is ensured unless this condition is violated (Lebeaux 1991). In other words, once this condition is violated, its effect remains at LF. From this viewpoint, even if the lower copy does not violate Condition C, so long as there is another position where this condition is violated, the sentence remains ungrammatical. (18a, b) exemplify such a situation. On the other hand, (5, 6) manifest the opposite circumstances, that is, the Condition C violation is attributable to the base copy. Still, the same result is obtained in that the effect of the violation remains at LF.

#### 4.2 EPP-selection over $\theta$ -selection

Another characteristic aspect of selection is the superiority of the EPP-related selection over the  $\theta$ -related selection. Consider the following contrast.

- (19) a. \*[Tukamatta **otoko<sub>1</sub>-no** syasin]<sub>2</sub>-o *soitu<sub>1</sub>-ga* **t<sub>2</sub>** yabuita.  
 arrested man-gen photo-acc he-nom destroyed  
 ‘The arrested man<sub>1</sub>’s photo, he<sub>1</sub> destroyed.’

- b. ?[Tukamatta **otoko**<sub>1</sub>-no syasin]<sub>2</sub>-o Yamada keezi-ga  
 arrested man-gen photo-acc Y. detective-nom  
 wazawaza *soitu*<sub>1</sub>-ni *t*<sub>2</sub> mise naosita.  
 specially he-dat to.show re-did  
 ‘The arrested man<sub>1</sub>’s photo, Detective Yamada specially showed him<sub>1</sub>  
 again.’

(19a) and (19b) both instantiate the so-called medium scrambling (m-scrambling), whereby the object NP is moved to the clause-initial position. What is worth noting is that (19b) sounds better than (19a). Since (19b) contains a Type B verb, it is predicted that the scrambled NP would be reconstructed in the base position inducing a Condition C violation as in the case of (6), which is not the case here. Why, then, is reconstruction blocked?

A crucial difference between (6) and (19b) is that the embedded NP is scrambled via the edge of *v*P of the matrix constituent in (19b), as illustrated by the abbreviated representation (20).

- (20) ?[<sub>TP</sub> [‘the arrested man<sub>1</sub>’s photo’-acc]<sub>2</sub> [<sub>TP</sub> ... [<sub>vP</sub> *t*<sub>2</sub> [<sub>v</sub> [<sub>VP2</sub> ... [<sub>VP1</sub>  
 ↑  
 ‘him<sub>1</sub>’-dat [ *t*<sub>2</sub> ‘to.show’ ] ] ‘re-did’ ] *v* ] ] T ]].

Although the embedded constituent does not have a *v*P, the matrix constituent does. The PIC forces the scrambled NP to first move to the edge of this *v*P. Since this movement is triggered by an EPP feature of *v*, the superiority of the EPP-related selection over  $\theta$ -related selection forces the base copy to be deleted. Consequently, the scrambled NP is not reconstructed in that position, and hence Condition C is not violated.

Now, the clause-initial position in (19a, b) is not selected via  $\theta$ -marking, nor does it seem to be selected by an EPP feature. A prediction, then, is that the scrambled NP is not interpreted in the final landing site but must be reconstructed in the edge of the matrix *v*P. The ungrammaticality of (19a) indicates that this is in fact the case. Consider the representation below, which corresponds to (19a).

- (21) \*[<sub>TP</sub> [‘the arrested man<sub>1</sub>’s photo’-acc]<sub>2</sub> [<sub>TP</sub> ‘he<sub>1</sub>’-nom [<sub>vP</sub> *t*<sub>2</sub> [<sub>v</sub> [<sub>VP</sub> *t*<sub>2</sub>  
 ‘destroyed’ ] *v* ] ] T ]]

Notice that reconstruction of the scrambled NP in the edge of the matrix *v*P (i.e.

the position indicated by  $t'_2$ ) results in a Condition C violation, making (19a) ungrammatical. This in turn supports the view that a category is interpreted only in a selected position. As far as (19a, b) are concerned, only the edge of the matrix  $vP$  is qualified as such a position.

## 5. Conclusion

This paper has argued that contrary to the previous views, s-scrambling as well as a sub-set of VP-adjunction scrambling leaves a copy in the base position of the scrambled NP, though they exhibit properties like A-movement in other respects. On a descriptive level, it was shown that a copy is retained if an NP moves within (a) lexical projection(s). This generalization is associated with two different ways of selection, that is, EPP-related selection and  $\theta$ -related selection. In the latter case, copy-deletion is not applicable. It is only when movement is triggered by an EPP feature that copy-deletion takes place.

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# Can Progressive and Perfect Operators Form a Natural Semantic Class? The Case of the Japanese Aspect Marker(s) *te-i-*

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## 1 Introduction

Progressives and perfects differ in that the denoted event is incomplete and ongoing in the case of progressives, while it is complete and not ongoing in the case of perfects. Many languages such as English, French, and Chinese have distinct aspectual markers or verbal forms to mark progressives and perfects (Smith 1991). It is therefore somewhat puzzling that the Japanese aspect marker *te-i-* can receive either progressive or perfect interpretations, as seen in (1)-(3).

- (1) *Ken-ga (genzai) hashi tte-i- ru.*  
 Ken-NOM (now) run TE-I- NonPast  
 'Ken is running (now).'  
 --- a progressive reading
- (2) *Ki-ga (genzai) taore te-i- ru.*  
 Ki-NOM (now) fall TE-I- NonPast  
 'A tree has fallen down and it is lying on the ground now.'  
 --- a perfect reading (resultative perfect)
- (3) *Yoko-wa (\*genzai) ichi-do kaigai-ni i- tte-i- ru.*  
 Yoko-TOP (\*now) one-times abroad-LOC go TE-I- NonPast  
 'Yoko has been abroad once (\*now).'  
 --- a perfect reading (existential or experiential perfect)

These Japanese examples seem to suggest that progressives and perfects may not necessarily constitute distinct semantic classes. The question arises as to why and how those two seemingly different interpretations can be expressed by the same marker *te-i-* in Japanese. This paper proposes (1) that the marker *te-i-* consists of an imperfective operator *te-* and a stativizer *i-*; (2) that the difference between progressive and perfect readings stems from the vagueness of the output of the imperfective operator; and (3) that the various perfect uses are derived via pragmatic inference.

## 2 Previous Studies: Problems with Ambiguity Hypotheses

Previous studies have assumed two distinct meanings for *te-i-*: one for the progressive and resultative perfect readings in (1) and (2), and the other for the experiential perfect reading in (3) (Kudo 1995, Igarashi and Gunji 1998, Ogihara 1998, Shirai 2000), as seen in Table 1. Alternatively, some scholars have treated *te-i-* as ambiguous between three distinct meanings (Soga 1983, Yoshimoto 1998).

| verb class <sup>1</sup> | <i>te-i</i> <sub>1</sub> |    | <i>te-i</i> <sub>2</sub> |    |
|-------------------------|--------------------------|----|--------------------------|----|
|                         | <i>genzai</i> ('now')    |    | <i>genzai</i> ('now')    |    |
| Durative                | progressives             | OK | existential perfects     | NO |
| Punctual                | resultative perfects     | OK |                          |    |

Table 1: Ambiguity Hypothesis: Two entries of *te-i-*.

However, why one of *te-i-*'s meanings can express both progressive and resultative perfect interpretations in the former kind of analysis and how those interpretations compositionally arise in both kinds of analyses have not been explained successfully. Furthermore, if ambiguity is assumed among the different uses, the semantic relation between the various meanings of *te-i-* must also be explained in semantics, something which has not hitherto been done.

Co-occurrence restrictions between present and past-time adverbial phrases and the different uses of *te-i-* have been regarded as the main piece of evidence for the ambiguity of *te-i-*. However, the incompatibility of present-time adverbs with existential uses does not always hold. An existential perfect reading can co-occur with a present-time adverb *genzai* (now), as seen in (4).

- (4) *Kare-ga genzai san-kai gakkai-de happyou-shi- tte-i- ru.*  
 He-NOM now 3-time conference-at presentation-do TE-I- NonPast.  
 'He has made a presentation at conference three times now.'

Furthermore, past-time adverbs such as *kyonen* ('last year') or *senshuu* ('last week') can also co-occur with either an existential perfect or a resultative perfect reading, as seen in (5)-(6). "Lit.%" indicates that the translation is literal and is not an acceptable sentence in English.

- (5) *Kare-wa kyonen ichi-do amerika-ni i- tte-i- ru.*  
 He-TOP last year one-time America-to go TE-I- NonPast  
 'Lit.% He's been to the U.S. once last year.' (Existential reading: He is not in the US now.)

- (6) *Fuirumu-o senshuu genzo-ni dashi te-i ru.*  
 Film-ACC last week development-to submit TE-I- NonPast  
 'Lit.% (I) have sent the picture film to a developer last week.'(Resultative reading: The film is at the store.)

Thus, co-occurrence restrictions between temporal adverbials and *te-i-* are mere tendencies and cannot serve as evidence for the ambiguity of *te-i-*.

### 3 A Unified Analysis of *te-i-*

#### 3.1 Preliminaries

This paper does not assume separate entries for the multiple interpretations of *te-i-*. Instead I argue that *te-i-* consists of two morphemes, the imperfective operator *te-* and the stativizing operator *i-*, and the vagueness of the output of the first operator leads to the contrast between progressive and perfect interpretations of *te-i-*.

Take (7)-(8):

- (7) *Ken-ga ie-o tate te-i ru.*  
 Ken-NOM house-ACC build TE-I- NonPast  
 'Ken is building a house.'  
 'Ken has built a house.'

- (8) Sentence Radical: *Ken-ga ie-o tate-* (Ken-NOM house-ACC build-)

(8) is the sentence's radical for (7) (Galton 1984). A sentence radical consists of the main verb stem plus its arguments without inflectional components such as aspect, tense, or modal auxiliaries. An eventuality description ( $\Phi$ ) is denoted by a sentence radical (Smith 1991, de Swart 1998, Herweg 1991a, Herweg 1991b).

Briefly put, my analysis first claims that the imperfective operator *te-* maps a class of eventualities which satisfy  $\Phi$  onto another class of eventualities  $\Phi'$ , that are subparts (but not necessarily proper subparts) of the eventualities which satisfy  $\Phi$ . This analysis is not consistent with a widely accepted view in Japanese linguistics where *te-* historically derives from a perfective marker (Igarashi and Gunji 1998). However, analyzing *te-* as an imperfective operator is independently justified by the fact that the eventuality denoted by the sentence radical followed by *te-* plus other aspectual verbs can be interpreted either as complete or incomplete depending on its contexts, as seen in (9) or (10).

- (9) *I-kkai-bun-no kusuri-o juusu-ni tokashi-te-mi ta.*  
 One-time-dose-GEN medicine-ACC juice-LOC melt- TE-see PAST.  
 '(I) tried melting one dose of the medicine in some juice. (But it didn't melt completely. / And it melted completely.)'

- (10) *Reizooko-no gyuunyuu-ga non- de-a- ru.*  
 Refrigerator-GEN milk-GEN drink- TE-exist NonPast  
 'The milk in the refrigerator has been drunken. (Some of it is left./It's gone.)'

(9) and (10)<sup>2</sup> clearly show that *te-* can function as the imperfective operator with other aspectual verbs too. Secondly, I claim that the stativizer *i-* maps  $\Phi'$  onto a stative description  $\Phi''$ , which is related to  $\Phi'$  and overlaps with a reference time interval.

### 3.2 The function of *te-*

When the input eventuality description  $\Phi$  is unbounded, i.e., a stative or activity description as seen in (1) or (11), I assume that a bounding operator coerces it to be bounded.

- (11) *Fuji-san-ga mie te-i- ru.*  
 Mt.Fuji-NOM be-visible TE-I- NonPast  
 'Mr. Fuji is being visible.'

The bounding function is defined as the *maximality* operator (MAX) (Koenig and Muansuwan 2000, Egg 2002), which is based on Krifka's (1998) notion of telicity.

- (12) The maximality operator **MAX**:  
 For all eventuality descriptions  $\Phi$  and events  $e$ ,  
 $\text{MAX}(\Phi)(e) \leftrightarrow \Phi(e) \wedge \forall e'(e < e' \rightarrow \neg \Phi(e'))$

In (12) '<' is a part-relation, assuming Krifka's (1998) event structure. ' $a < b$ ' means ' $a$  is a proper subpart of  $b$ .' A MAX operator takes any eventuality description  $\Phi$  as its input and maps it onto an event description  $e$  such that  $e$  satisfies the description  $\Phi$  and there is no  $e'$  such that, if  $e$  is a proper subpart of  $e'$ ,  $e'$  satisfies  $\Phi$ . In what follows, I use  $e$  to refer to an eventuality that is the output of MAX.

If  $\Phi$  is a telic eventuality description, i.e., an accomplishment or achievement, MAX is equivalent to the identity function, which maps  $e$  onto itself. On the other hand, if  $\Phi$  is an atelic eventuality description, MAX is similar to a PO operator, except for the fact that a PO operator only takes unbounded eventualities as its input (Galton 1984, Herweg 1991a, Herweg 1991b). PO maps unbounded eventualities onto their bounded phases, i.e., the maximum period during which they hold.

The imperfective operator *te-* (*Impfv<sub>te</sub>*) takes the output of MAX,  $e$ , as its input and maps it onto a subpart  $e'$  of  $e$  ( $e' \leq e$ ). A subpart  $e'$  of  $e$  can be either

equivalent to  $e$  ( $e' = e$ ) or a proper subpart of  $e$  ( $e' < e$ ). The output of *te-* is thus vague: i)  $e'$  can be a proper subpart of  $e$  ( $e' < e$ ) and not include the final part of  $e$ . ii)  $e'$  can be equivalent to  $e$  ( $e' = e$ ) and include the final part of  $e$ . As discussed below, these two possibilities lead to the contrast between progressive and perfect readings of *-te-i*.

It should be also noted that *Impfv<sub>te</sub>* does not output an empty subpart of  $e$ , assuming Krifka's event structure which excludes empty subparts of events (Krifka 1998). Therefore, (14) and (15) are excluded because the event of Ken's building a house or Ken's arriving has not started. There is no nonempty subpart of the event preceding the present time (*now*) in (14)-(15).

- (14) \**Ken-wa ie-o tate te-i ru*  
 Ken-TOP house-ACC build TE-I- NonPast  
 '\*Ken is building a house.'(He has just started to look for land.)
- (15) \**Ken-wa Tokyo-ni tsui- te-i ru.*  
 Ken-TOP Tokyo-in arrive TE-I- NonPast  
 '\*Ken is arriving in Tokyo.'(He is on the way.)

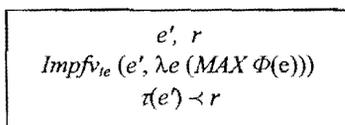
(14) cannot be interpreted as describing the building's preliminary stage and (15) cannot be interpreted as describing Ken's impending arrival, unlike English progressives.

Formally, the meaning of the imperfective marker *te-* is defined as follows:

- (16) When  $\Phi$  is an eventuality description which is either a telic event-type description or the output of a MAX operator on an atelic event-type description,  $\Phi$ -*te-* is true if and only if:
- a) there is  $e'$  such that  $e' \leq e$ ,  $\pi(e') \prec r$  ( $r$  is a reference time interval) and
  - b)  $e$  satisfies  $\Phi$  in all *inertia worlds*, i.e., in all worlds which are relevant to whether  $e$  is completed and in which  $e$  does not get interrupted (Dowty 1979, Portner 1998).

In (16)  $\pi(e')$  is the temporal trace of  $e'$  and  $\prec$  refers to a precedence relation between time intervals. Therefore,  $\pi(e') \prec r$  says that the temporal trace of  $e'$  precedes the reference time interval  $r$ . The notion *inertia worlds* originates with Dowty (1979), but I use Portner's notion of *inertia worlds*, which he defines by making use of Kratzer's (1981) modal base and ordering sources. (16b) is the informal paraphrase of Portner's sense of *inertia worlds*.

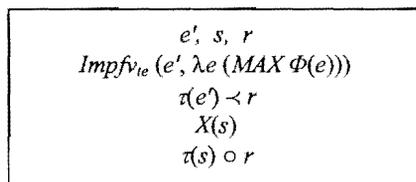
Following Kamp and Reyle (1993) or de Swart's (1998) version of Discourse Representation Theory (DRT), the Discourse Representation Structure (DRS) for the meaning of " $\Phi$ -*te-*" is shown in Figure 1:

Figure 1: “ $\Phi$ -*te*”

In Figure 1, the first line lists discourse referents which are introduced after an existential closure. The Imperfective operator *-te* ( $\text{Impfv}_{te}$ ) takes an eventuality description  $\Phi$  and only introduces a subpart  $e'$  of an eventuality that would satisfy  $\Phi$  in the universe of discourse.

### 3.3 The stativizing function of *-i-*

The stativizer *-i-* takes the output of *te-*, i.e.,  $e'$ , and maps it onto a state  $s$  which is related to  $e'$  and whose temporal trace overlaps  $r$ . Figure 2 shows the DRS for  $\Phi$ -*te-i-*. ‘ $\circ$ ’ represents an overlapping relation.

Figure 2: The DRS for “ $\Phi$ -*te-i-*”

Here the temporal relation between  $e'$  and  $s$  is not clear. Figure 2 excludes the possibility that  $s$  ends earlier than  $e'$ , but it does not exclude the possibility that  $s$  starts earlier than  $e'$ , as seen in (17).

- (17) *Hei-ga san-kai taore te-i ru.*  
 Fence-NOM three-times fall TE-I- NonPast  
 ‘The fence has fallen down three times. (It is not strong enough.)’

In (17) the implicated state in parenthesis is understood to start earlier than the event of the fence’s falling down. The nature of the output state  $s$  is semantically unspecified in Figure 2, where the category of  $s$  is given as the property variable  $X$ . It is not clear how  $e'$  and  $s$  are related. The relation between  $e'$  and  $s$  might be represented, using the relation ‘resulted’ (van Eijck and Kamp 1997, Koenig and Muansuwan 2000). However,  $e'$  does not necessarily result in  $s$ . For example,  $s$  is the cause of the event  $e'$  in (17). I discuss the relation between  $e'$  and  $s$  and the nature of  $s$ , as well as explain how

the different interpretations of *te-i-* can derive from the meaning of *te-i-* in the next section.

## 4 The Multiple Interpretations of *te-i-*

### 4.1 Contrast between progressive vs. perfect readings

The contrast between progressive and perfect readings derives from the fact that *te-*'s output is vague as to whether the output  $e'$  is a proper or non-proper subpart of the input eventuality. Progressive readings of *te-i-* obtain when the output of the imperfective operator *te-* is a proper subpart and does not include the final part of  $e$  ( $e' < e$ ), as seen in (18a) (=7). Perfect readings obtain when the output of the imperfective operator *te-* is equivalent to the entire event  $e$  and does include the final part of  $e$  ( $e' = e$ ) (18b).

- (18) *Ken-ga ie-o tate te-i- ru*  
 Ken-NOM house-ACC build TE-I-NonPast  
 a. ( $e' < e$ ): 'Ken is building a house.'  
 b. ( $e' = e$ ): 'Ken has built a house.'

Note that certain events (punctual change of state events) exclude progressive readings as seen in (19), because they do not have a nonempty proper subpart.

- (19) *Neko-ga shin de-i- ru.*  
 Cat-NOM die TE-I- NonPast  
 'A cat is dead.'  
 '\*A cat is dying.'

Two issues remain. First, the imperfective operator  $Impfv_{te}$  does not require that the final output of *te-i-* has a progressive interpretation when the described event is incomplete (i.e. when  $e'$  is a proper subpart of  $e$ ). In other words, nothing precludes a perfect interpretation when the event is incomplete, as seen in the form *te-*+other aspectual verbs (10) or in other languages such as Thai (Koenig and Muansuwan 2000), where the event described in a main verb+its arguments is interpreted as incomplete but not on-going. The second issue is how the different perfect readings arise and how we can represent the nature of  $s$  to ensure that  $s$  is related to  $e'$ . In both cases, I claim that the answer lies in the pragmatic inferences on the nature of a state  $s$  that speech participants draw, as I briefly discuss in the next section.

### 4.2 Pragmatic inference as a semantic constraint

While the contrast between the progressive and perfect readings of *te-i-* can be

explained by the different outputs of *te-*, the various perfect readings of *te-i* arise from various ways of pragmatically specifying the nature of *s*. Nishiyama and Koenig (in progress) suggest that the category of the perfect state *s* is semantically a free variable (*X* in Figure 2), which must be instantiated by the addressee (Kay and Zimmer 1978, Partee 1984). The presence of a free variable *X* is a semantic constraint imposed by *-i-*, but the value of *X* has to be specified via pragmatic inferences. The different interpretations of the state *s* introduced by *te-i* come from the ways of specifying a value for *X*. This inferential process can be modeled via the *Principle of Informativeness* (I-Principle) (Levinson 2000). The I-Principle consists of a speaker's maxim of minimization and a hearer's pragmatic enrichment as a corollary of the speaker's maxim. That is, a speaker may choose the less informative utterance (*q*) when the more informative one (*p*) is available (maxim of minimization). Addressees, on the other hand, enrich the less informative utterance (*q*) into the most *specific* interpretation, making use of the mutual world knowledge shared by speech participants (Clark 1992).

For example, the literal meaning of (20) is (20b) and can be formulated as (21q), while the resultative perfect interpretation of (20) is (20a) and can be formulated as in (21p). Based on the I-Principle, a speaker chooses to utter (20), whose meaning is the less informative *q* and contains an unspecified part *X*, when an utterance with the more informative content such as one corresponding to the English paraphrase in (20a) would have been possible (minimization maxim). An addressee, in turn, aware of the speaker's maxim enriches the literal interpretation's unspecified part to the most specific interpretation available in the speech situation by filling in the value of *X* (I-Implicature) (See also Horn (1984)).

(20) *Ki-ga taore te-i ru.*

Tree-NOM fall TE-I- NonPast

a. 'A tree has fallen down and it is lying on the ground.' (=p)

b. 'A tree has fallen down.' (=q)

(21) p:  $\exists e' \exists s$  [tree\_falling\_down (*e'*)  $\wedge$  tree\_lying\_on\_the\_ground (*s*)  $\wedge$   $\tau(e') \prec now \wedge \pi(s) \circ now$ ]

q:  $\exists e' \exists s$  [tree\_falling\_down (*e'*)  $\wedge X(s) \wedge \tau(e') \prec now \wedge \pi(s) \circ now$ ]

In (21p), the value of *X* is filled in as 'tree\_lying\_on\_the\_ground.' This resultative perfect interpretation is easily obtained since the resultant state is lexically entailed. Furthermore, if nothing contradicts the interpretation in the speech situation, the addressee assumes that this state still persists, following the nonmonotonic inference process called *persistence*, i.e., a fact persists until it ceases to be true (McDermott 1982). When a lexical entailment is not available or when there is evidence that this entailment does not hold at the reference time, the addressee has to fill in *X* via other conversational implicatures, for

example, as *It has been very windy* ( $s$ ) for  $X(s)$ . The various types of inferences, by which the identity of  $X$  is determined are discussed in more detail in Nishiyama and Koenig (in progress).

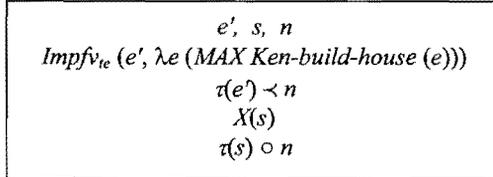


Figure 3: DRS for  
*Ken-ga ie-o tate te-i- ru*  
 (Ken-NOM house-ACC build- TE-I- NonPast)

Finally, Figure 3 shows the DRS for (18). In Figure 3, the reference time interval  $r$  is the speech time  $n$ . The category of the state  $s$  is represented as  $X$ . When the sentence receives a progressive reading,  $X$  is the category of the progressive state of Ken's building a house. When it receives a perfect reading,  $X$  is inferred pragmatically from the occurrence of the event of Ken's building a house, for example, as Ken's not having money ( $s$ ), when the speaker talks about Ken's financial situation.

## 5 Conclusion

This paper proposes a monosemous analysis of *te-i-* that unifies its progressive and perfect readings. It shows that progressives and perfects can form a natural semantic class and that they correspond to different ways of instantiating the part-of relation introduced by the imperfective operator *te-*. The different perfect readings are, in turn, explained in terms of pragmatic enrichment of a partially underspecified meaning.

## Notes

1. The classification of verbs into distinct classes on the basis of the behavior of *te-i-* goes back to Matsushita (1928) and Kindaichi (1950).
2. The aspectual marker *te-a-* illustrated in (10) is often considered to be a resultative construction (Hasegawa 1995).

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# EXPLETIVES MOVE!

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This paper develops the theory of Agree proposed by Chomsky (2000, 2001a, 2001b), showing that expletives *there* and *it* are base-generated in the Spec of vP/VP, respectively. By so doing, I argue that the residue of Spec-Head agreement can be dispensed with; hence, we eliminate the conditions on Agree specific to expletives.

## 1 AGREE

Chomsky (2000, 2001a, 2001b) proposes that instead of agreement and feature checking being instantiated by ATTRACT (Chomsky 1995), which results in the matching features moving upward to the attractor, there is simply the operation AGREE, with no movement involved at all. Under the theory of AGREE, uninterpretable features of a probe  $\alpha$  and a goal  $\beta$  are valued under the structural relation (1), subject to the conditions in (2).

- (1) AGREE (cf. Chomsky 2000, 2001a, 2001b)



AGREE ( $\alpha$ ,  $\beta$ ), where  $\alpha$  is a probe P and  $\beta$  is a matching goal G, '>' is a c-command relation and uninterpretable features of  $\alpha$  and  $\beta$  are valued.

- (2) **Conditions on AGREE** (cf. Chomsky 2000:122)
- Matching is feature identity.
  - D(P) (Probe domain) is the sister of P.
  - Locality reduces to 'closest c-command'.
  - P and G must be active (they must have uninterpretable feature(s)).

Chomsky (2001b) argues that expletive EXPL directly merges in the Spec of TP from the numeration, assuming that EXPL must delete the EPP-feature of T (in Chomsky 2001b, the occurrence (OCC) feature) and lose its own uninterpretable features (possibly structural Case, as proposed by Lasnik 1999). As we can see in (2), the condition in (2b) excludes an AGREE relation between a head H and an element in the Spec of HP if T is a probe and EXPL is its goal. Supposing

EXPL is a simple head, not formed by Merge, Chomsky claims that in Collins's (2001) label-free system EXPL is accessible without search as a probe, and can match and agree with the goal T. This means that Chomsky still needs the "Spec-Head configuration" limited to EXPL in the theory of AGREE as an exceptional condition. This looks anomalous and I will propose that it is not needed even for EXPL. One leading idea of the Minimalist Program is to eliminate individual conditions and reduce them into more general principles. In order to eliminate the conditions on AGREE specific to expletives, I would like to closely examine two types of constructions with an expletive and see if expletives need to be base-generated in the Spec of TP.

## 2 Merge over Move versus Move over Merge

Given a construction with an expletive and at least two NP-movement predicates, sometimes the NP obligatorily occurs in the lowest position as in (3) and sometimes the NP occurs in the highest position below the expletive as shown in (4).

- (3) "EXPL ... e ... NP"
- a. There<sub>i</sub> seem [<sub>TP</sub> t<sub>i</sub> to be unicorns in the garden].
  - b. \*There seem [<sub>TP</sub> unicorns<sub>j</sub> to be t<sub>j</sub> in the garden].
- (4) "EXPL ... NP ... e"
- a. [<sub>TP</sub> It seems that [<sub>TP</sub> John<sub>j</sub> was told t<sub>j</sub> that the world is round]].
  - b. \* [<sub>TP</sub> John<sub>j</sub> seems that [<sub>TP</sub> it was told t<sub>j</sub> that the world is round]].
  - c. \* [<sub>TP</sub> It was told John that the world is round].

The first pair of examples has been argued to motivate a preference for Merge over Move, the second one for Move over Merge. The second group of examples also illustrates the fact that an *it* expletive cannot occur in the passive of double-object constructions. In this section, I show arguments for Merge over Move and Move over Merge, respectively.

As described here, the examples in (3) and (4) seem to lead to mutually incompatible conclusions, given that one seems to show immediate merge of an expletive and the other to show late merge. Thus, questions in this section are: (i) Do expletives need to be base-generated in the Spec of TP? (ii) Are both expletives *there* and *it* generated in the same syntactic position? (iii) Do we need the Merge vs. Move account at all?

### 2.1 Merge over Move account

Chomsky (1995, 2000) proposes Merge over Move: Merge is preferred over Move. According to Chomsky, at the point at which the embedded clause in (3)

is built, we can either insert *there* or move *unicorns* to the embedded subject position. Chomsky argues that the former option is preferable. Under Merge over Move, if there is an expletive in the numeration then that has to get merged as soon as there is a slot for it. This easily accounts for the examples in (3). However, this account immediately faces with the problem to explain the examples in (4) since it does not allow *John* to merge into the Spec of TP and in fact forces *it* to merge into that position.

Chomsky (2000) introduces the concept of subnumeration, defined on phases (each phase (CP, v\*P) has its own subnumeration). Given that an expletive is not in subnumeration 1 where we generate an embedded sentence *that John was told that the world is round*, only *John* is the element that can merge into the Spec of TP by Move as in (5c).

- (5) a. [CP<sub>3</sub> It seems [CP<sub>2</sub> that John was told [CP<sub>1</sub> that the world is round]]]  
 NUMERATION (CP<sub>3</sub>) : {it, seems, {that, John, was, told, {that, the, world, is, round}}}  
 SUBNUMERATION 1 (CP<sub>2</sub>) : {that, John, was, told, {that, the, world, is, round}}  
 SUBNUMERATION 2 (CP<sub>1</sub>) : {that, the, world, is, round}
- b. [CP<sub>1</sub> **that the world is round**] + {it, seems, {that, John, was, told}}  
 c. [CP<sub>2</sub> **that** [TP **John<sub>j</sub> was told t<sub>j</sub>** [CP<sub>1</sub> that the world is round]]] + {it, seems}  
 d. [CP<sub>3</sub> [TP **It seems** [CP that [TP **John<sub>j</sub> was told t<sub>j</sub>** [CP that the world is round]]]]]

Thus, by introducing the notion of phases, Chomsky maintains the Merge over Move account for the two types of constructions with an expletive.

## 2.2 Remaining question for Merge over Move account

There is a remaining question for the Merge over Move account. Remember that Chomsky (2001b) assumes that an expletive directly merges in the Spec of TP from the numeration. If this is the case, we predict that (4c) is grammatical. Under Chomsky's system, T AGREES with *John* and values nominative Case to it. And then *it* is merged into the Spec of TP and the sentence should converge. Yet it is ungrammatical. Hence, this problem must be solved.<sup>1</sup>

## 2.3 Move over Merge account

There is an alternative approach which is Move over Merge: Move is preferred over Merge (cf. Shima 2000). Under this approach, (4) is straightforward but not (3). In order to account for examples like in (3), it is proposed that the expletive *there* has a Case feature, and a postcopular NP is optionally assigned "partitive"

Case by a copula and now an associate is assigned “partitive” Case, therefore it does not have any motivation to move into the Spec of TP.<sup>2,3</sup>

#### 2.4 Remaining question for Move over Merge (Partitive Case)

We have a couple of questions with respect to “partitive” Case. Let’s consider the transitive expletive constructions in Icelandic.

- (6) *fi* hafa margir jólasveinar borðað þvinginn.  
 there have many Christmas-trolls eaten the pudding  
 ‘Many Christmas trolls have eaten the pudding.’ (Jonas 1996:2)

If we extend the idea of “partitive” Case into Icelandic example like (6), it is difficult to see what the “partitive” Case assigner of *margir jólasveinar* is in (6). Moreover, in Icelandic the associates can be realized as nominative, accusative, or dative as in (7) – (9).

- (7) *fi* höfðu verið keyptir flír stólar á uppboðinu.  
 there had(3PL) been bought three chairs(NOM) at the auction  
 (Sigurðsson 1992:22)
- (8) *Vi* teljum koma marga íslendinga/\*margir íslendingar  
 we(NOM) believe(1PL) come many Icelanders(ACC/\*NOM)  
 ‘We believe there to come many Icelanders’ (Taraldsen 1995:322)
- (9) *fi* virðist einhverjum manni hestarnir vera seindir  
 there seemed(3SG) some man(DAT) the horses(NOM) be slow  
 ‘It seems to some man that the horses are slow’  
 (Holmberg and Hróarsdóttir 2002:147)

Thus, it seems that Case of the associates is not “partitive Case” in Icelandic. If the associates in English are not assigned “partitive” Case either, then the Move over Merge account does not hold. The account must capture the fact that the NP associate of the expletive bears whatever case the subject would have in a non-expletive construction.

### 3 Accounts for the Syntax of Expletives

#### 3.1 *There, it, and agreement* (McCloskey 1991)

If expletives have an uninterpretable feature (e.g. structural Case-feature), they must have a special condition on AGREE (e.g. Spec-Head agreement: no c-command relation necessary to value the Case-feature of expletives). As we have seen in section 2.2, it is wrongly predicted that (4c) is grammatical.

Moreover, McCloskey (1991) observes that *there* does not exhibit agreement with T while *it* does show agreement as exemplified in (10) and (11).

- (10) a. No solutions exist for this problem.  
 b. There exist no solutions for this problem.  
 c. \*There exists no solutions for this problem.  
 (cf. McCloskey 1991:563)
- (11) a. That he'll resign and that he'll stay in office seem at this point equally possible  
 b. \*It seem at this point equally possible that he'll resign and that he'll stay in office  
 c. It seems at this point equally possible that he'll resign and that he'll stay in office  
 (cf. McCloskey 1991:564-565)

Under Chomsky's system, *it* directly merges into the Spec of TP from the numeration. If this is the case, we predict that (11b) is grammatical but (11c) is not. In this system, T AGREES with an element that is c-commanded by T and values nominative Case to it. And then *it* is merged into the Spec of TP and the sentence should converge. This means that T does not show agreement with *it*, contrary to facts. Thus, we can conclude that *it* cannot directly merge into the Spec of TP from the numeration, contrary to what Chomsky (2000, 2001a, 2001b) assumes.

### 3.2 Proposal: Expletives move!

In this paper, I propose that expletives do not merge into the Spec of TP (contra Chomsky 2000, 2001a, 2001b). Given that, I claim that (a) *there* merges into the Spec of  $\nu$ P, (b) *it* merges into the Spec of VP. As a consequence of this proposal, we eliminate conditions on AGREE specific to expletives; hence only conditions on Agree in (2) apply and we also eliminate Merge over Move vs. Move over Merge preference issue.

### 3.3 Account for the syntax of *there*

On the assumption that *there* merges into the Spec of  $\nu$ P, the examples in (3) now have structures as in (12).

- (12) a. [<sub>TP</sub> There<sub>i</sub> [<sub>VP</sub> seem [<sub>TP</sub> t<sub>i</sub> to [<sub>VP</sub> t<sub>j</sub> be unicorns in the garden]]]]  
 b. \* [<sub>TP</sub> There [<sub>VP</sub> seem [<sub>TP</sub> unicorns<sub>j</sub> to [<sub>VP</sub> t<sub>j</sub> be t<sub>j</sub> in the garden]]]]

Thus, (12b) is ungrammatical because *there* does not merge into the Spec of  $vP$ ; hence (12b) is not derivable because the Spec of TP is not a position where *there* can merge by the assumption. (12a), on the other hand, is grammatical since *there* merges into the Spec of  $vP$  and T does not fully AGREE with *there*, but it seeks a further goal (an associate DP) and AGREES with *someone*, by the Maximization Principle (Chomsky 2001a:15): Maximize matching effects.

Now, consider the examples in (13).

- (13) a. There have been some books<sub>i</sub> put t<sub>i</sub> on the table.  
 b. \*There have been put some books on the table.

Under the Agr-less Case theory, the possible landing site of *some books* is the Spec of VP (cf. Johnson 1991). Thus, the structures of (13) should be like (14).

- (14) a. There<sub>i</sub> have [ <sub>$vP$</sub>  t<sub>i</sub> been [<sub>VP</sub> some books<sub>j</sub> put t<sub>j</sub> on the table]].  
 b. \*There<sub>i</sub> have [ <sub>$vP$</sub>  t<sub>i</sub> been [<sub>VP</sub> \_\_ put some books on the table]].

(14b) implies that an object DP moves to the Spec of VP for EPP reasons.<sup>4</sup> By the assumption that *there* merges into the Spec of  $vP$ , the only element that can go into that position here is *some books*.

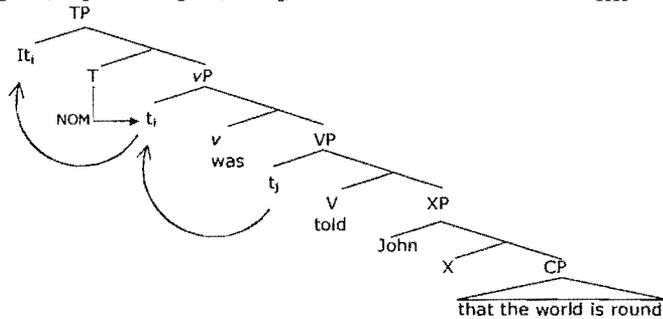
### 3.4 Account for the syntax of *it*

The account for the syntax of *it* is very straightforward.

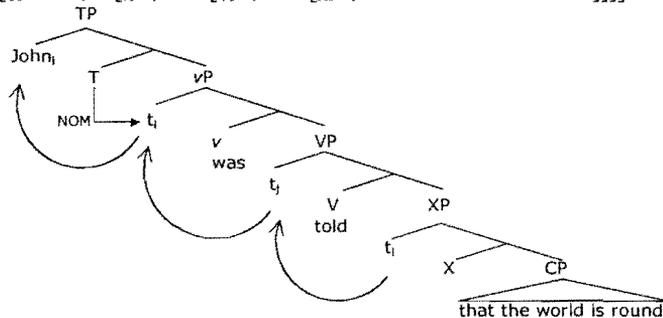
- (15) a. \*It was told John that the world is round.  
 b. John was told that the world is round.

As we have seen this contrast in (4), *it* expletive cannot occur in the passive of double-object constructions. The structures of (15) should be like (16). Here, I assume that in double object constructions, a head X assigns Case to its complement.<sup>5, 6</sup> In (16a), T fully AGREES with *it* so that *John* does not get nominative Case. Moreover, *John* cannot be assigned Case by X, assuming that X assigns Case to its c-commanding element; therefore *John* never gets Case, and hence the derivation crashes. In (16b), on the other hand, there is no *it* between T and *John*; hence *John* moves up to the Spec of  $vP$ , T *Agrees* with *John* and the derivation converges.

- (16) a. \* $[_{TP} It_i T [_{vP} t_i \text{ was } [_{VP} t_j \text{ told } [_{XP} \text{ John that the world is round}]]]]]$ .



- b.  $[_{TP} \text{John}_i T [_{vP} t_i \text{ was } [_{VP} t_j \text{ told } [_{XP} t_i \text{ that the world is round}]]]]]$ .



#### 4. Evidence: *There* in the Spec of *vP*, *It* in the Spec of *VP*

In this section, I will give a piece of evidence that *there* merges in the Spec of *vP* and *it* merges in the Spec of *VP*.

##### 4.1 Existential Constructions in English and Italian

Since Burzio (1986), it has been observed in the literature that there is a contrast between English and Italian in existential constructions as shown in (17) and (18).

- (17) a. There've been some men arrested.  
 b. \*There've been arrested some men.
- (18) a. \*Sono stati alcuni uomini arrestati.  
 are been some men arrested

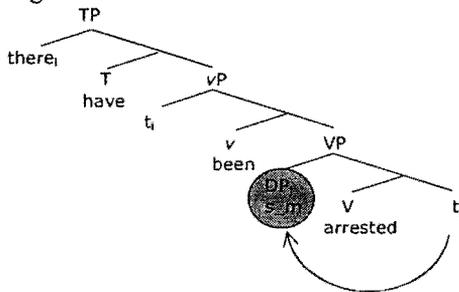
- b. Sono stati arrestati alcuni uomini.  
are been arrested some men

(Caponigro and Schütze 2003:293)

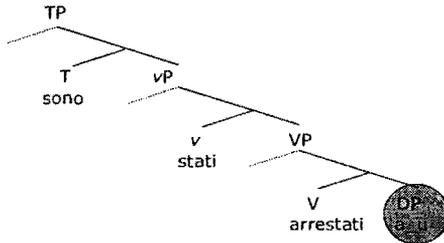
There are two possible solutions to explain this contrast under my analysis: (a) V requires satisfying the EPP in English but it doesn't in Italian. (b) Passive participles in Italian overtly undergo V-to-v Head-movement. Either account is compatible with our analysis so that I will not take a stand here.

Let's consider the first case. The structures of (17a) and (18b) are shown in (19) and (20), respectively.

- (19) English: There have been some men arrested



- (20) Italian: Sono stati arrestati alcuni uomini



As we have seen in (14), English seems to require an object to move to the Spec of VP and so as in (19), while Italian seems not to have such a requirement as in (20). The contrast between (17) and (18) can be accounted for by the nature of the EPP in the two languages.

The second possible explanation to the contrast between English and Italian in the existential constructions is that although both English and Italian require an object to move to the Spec of VP, passive participles in Italian overtly undergo V-to-v Head-movement, while those in English don't. This is supported by the fact that English allows having an adverb such as *unlawfully*, *brutally* in

between, but Italian does not allow having an adverb such as *illegalmente* (unlawfully), *bruscamente/rudemente* (brutally), *bene* (well) in between.

- (21) a. There have been some men {**unlawfully arrested** / **brutally beaten**}.  
 b. Some men have been {**unlawfully arrested** / **brutally beaten**}.
- (22) a. \*Sono stati illegalmente arrestati alcuni uomini.  
 are been unlawfully arrested some men  
 b. \*Alcuni uomini sono stati illegalmente arrestati.  
 some men are been unlawfully arrested  
 c. Alcuni uomini sono stati arrestati illegalmente.  
 some men are been arrested unlawfully
- (23) a. \*Sono stati bruscamente/rudemente colpiti alcuni uomini.  
 are been brutally hit some men  
 b. \*Alcuni uomini sono stati bruscamente/rudemente colpiti.  
 some men are been brutally hit  
 c. Alcuni uomini sono stati colpiti bruscamente/rudemente.  
 some men are been hit brutally
- (24) Questo genere di spettacoli è sempre stato <\*bene> recensito <bene>  
 this kind of shows is always been well reviewed well  
 dalla critica.  
 by-the critics  
 'This kind of show has always been reviewed positively by the critics.'  
 (Caponigro and Schütze 2003:298)

However, adverbs such as *certo*, *certamente* can appear between *stati* and *arrestati* as shown in (25) and (26).

- (25) a. Sono stati certo arrestati alcuni uomini.  
 are been certainly arrested some men  
 b. Alcuni uomini sono stati certo arrestati.  
 some men are been certainly arrested
- (26) a. Sono stati certamente arrestati alcuni uomini.  
 are been certainly arrested some men  
 b. Alcuni uomini sono stati certamente arrestati.  
 some men are been certainly arrested

Although it appears that Head-movement solution is not hold, Andrea Calabrese (personal communication) pointed out that "certamente" seems to have the

interpretation of a parenthetical in the sense that it is a modifier of the utterance or the entire speech act.<sup>7</sup>

As we have shown above, either account requires an object to move to the Spec of VP in English. In other words, *there* must not merge into the Spec of VP. Given that the Spec of TP is too high for *there* to merge and the Spec of VP is too low, we conclude that *there* merges into the Spec of  $\nu$ P.

#### 4.2 *It* and clausal arguments

In contrast to NP arguments, clausal arguments do not need Case (cf. Stowell 1981). As is obvious in (27), in contrast to an NP argument, a clause can function as an argument of an adjective, which does not assign Case.

- (27) a. I am afraid that John will leave me  
 b. \*I am afraid John (Bošković 1995:32)

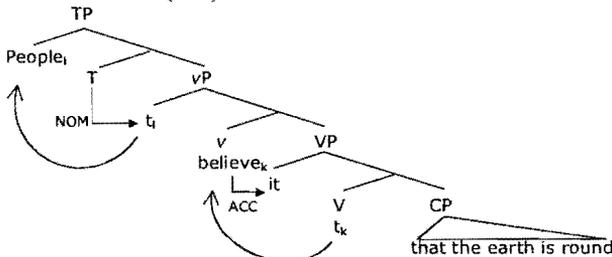
Clauses can also function as complements of verbs that do not assign accusative Case.

- (28) a. John remarked that she left  
 b. \*John remarked her leaving
- (29) a. It seems that she left  
 b. \*It seems her leaving (cf. Bošković 1995:32)

Interestingly, *It* can appear in the object position and discharges the accusative Case of the verb, leaving the true object argument Caseless (cf. Authier 1991, Bošković 1995, Postal and Pullum 1988).

- (30) a. People widely believe that the earth is round.  
 b. ?People widely believe it that the earth is round.

- (31) The structure of (30b)

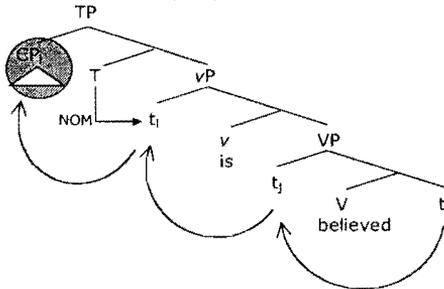


(30b) supports the proposal that *it* merges into the Spec of VP, given that a clausal argument can be Caseless.

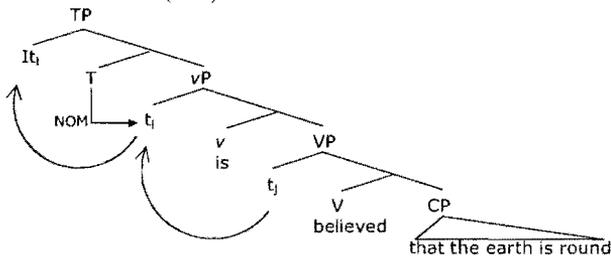
Bošković (1995) argues that clauses need Case when they move to subject position (cf. Delahunty 1983, Koster 1978, Kuno 1973).<sup>8</sup>

- (32) a. That the earth is round is widely believed  
 b. It is widely believed that the earth is round

(33) The structure of (32a)



(34) The structure of (32b)



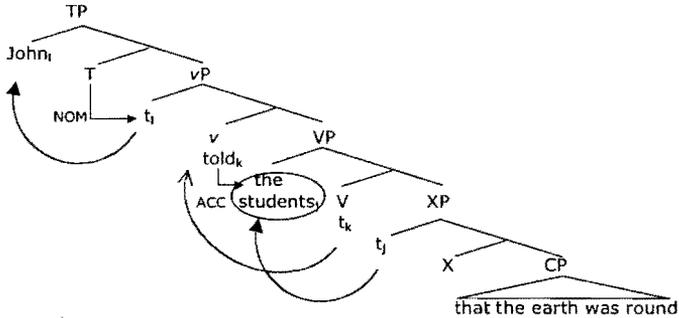
On the proposal that *it* merges into the Spec of VP, grammaticality of (32) is correctly captured, given that clausal arguments need Case when they move to subject position while they can be Caseless when *it* appears with them as shown in (33) and (34).

If *it* merges into the Spec of VP and discharges accusative Case (when the sentence is active) or nominative Case (when the sentence is passive), then it is predicted that *it* cannot appear in the double object constructions. This prediction is borne out.

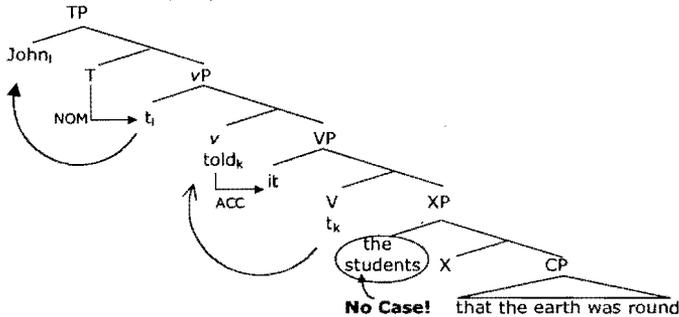
- (35) a. John told/taught the students that the earth was round.  
 b. \*John told/taught the students it that the earth was round.

- c. \*John told/taught it the students that the earth was round.  
 d. \*It was told/taught the students that the earth was round.  
 e. The students were told/taught that the earth was round.

(36) The structure of (35a)



(37) The structure of (35c)



Ungrammaticality of (35b, c, d) is accounted for if *it* merges into the Spec of VP. As in (37), an indirect object *the students* cannot get any Case because *it* is valued accusative Case and X does not assign Case to an element in the Spec of XP. Thus, this strongly supports the conclusion that *it* merges into the Spec of VP. Hence, *there* and *it* have different syntactic base-positions.

## 5 Conclusion

To summarize, I eliminate a special condition on AGREE for expletives. As its consequences, we conclude that *there* merges into the Spec of vP, while *it* merges into the Spec of VP. In addition to these consequences, we show that an NP object with an uninterpretable feature must move into the Spec of VP in English. As observed in section 2, we show a Merge over Move vs. Move over

Merge issue. My analysis leads us to the conclusion that we need neither preference as an economy condition.

## ACKNOWLEDGEMENTS

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## NOTES

<sup>1</sup> In this paper, I assume that CP does not need case. See section 4.2.

<sup>2</sup> In this view, it is assumed that a Case-feature of the expletive can be satisfied under the Spec – Head configuration independently of  $\phi$ -agreement.

<sup>3</sup> Here, “partitive” Case is in the sense of Belletti (1988), Bošković (2002a, 2002b), Lasnik (1992, 1995), and Shima (2000) only for NP-associates of the expletives. Therefore, it is different from partitive Case in Latin, Russian, Finish, etc.

<sup>4</sup> This is very reminiscent of Lasnik (1995) under the Agr-based Case theory.

<sup>5</sup> I assume that X assigns Case under AGREE so that AGREE relation between a head X and an element in the Spec of XP is excluded but I do not take a stand on whether the Case by X is structural or inherent.

<sup>6</sup> In Beck and Johnson (to appear), the head X is the source of HAVE part to the meanings in the double object frame. In Johnson (1991), XP is posited to be a kind of DP, and in Pesetsky (1995), it is PP. Its syntactic category is not important for our purposes here.

<sup>7</sup> However, still they do not seem to him to be pronounced like other parenthetical expressions.

<sup>8</sup> Koster (1978) argues that sentential subjects don't exist, while Delahunty (1983) argues that they do. See also Kuno (1973) who discusses sentential subjects in detail.

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# The Prosodic Basis of Bantu Glide Epenthesis\*

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## 1. Introduction

Many Bantu languages exhibit a process of stem-initial consonant mutation triggered by a prefix ending in a placeless nasal. We illustrate this Bantu-wide process with the data from Kikuyu, a Bantu language spoken in Kenya. In (1), /N-/ represents the nasal prefix and the dash marks the morphemic boundary

- (1) /ko-N-tom-a/           →       [koo-n-dom-a]   'to send me'  
      /ko-N-yur-i-a/       →       [koo-n-jur-i-a]   'to let me fill'

In the case of a vowel-initial stem, the prefixation of /N-/ is expected to emerge as a nasal. What we find instead is a nasal-oral cluster that shares the palatal specification, that is, [nj].

- (2) /ko-N-it-a/           →       [koo-nj-it-a]   'to strangle me'

This study is concerned with the palatal segment [j], in particular, what triggers its epenthesis in vowel-initial stems in Bantu.

We show that this epenthetic segment results from two processes in vowel-initial stems, which is illustrated in (3).

- (3) ko-N-it-a/           →       koo-Ny-it-a       →       [koo-nj-it-a]

One process involves the epenthesis of the palatal glide *y* between /N-/ and vowel-initial stems. The epenthetic glide then undergoes mutation just as the stem-initial *y* does when it comes in contact with /N-/, as illustrated in (1). The output [nj] stems from epenthesis and mutation. In this study, we address the question of what triggers the glide epenthesis.

We demonstrate here that Bantu glide epenthesis is driven by both alignment and syllable markedness conditions. Specifically, this epenthesis results from two requirements: a) /N-/ must align with the left edge of a prosodic - not morphological - stem and b) prosodic stems must start with an onsetful syllable (Downing 1998a, 1998b, 2000). These two

requirements, when highly ranked, force /N-/ to affix itself to a prosodic stem with an initial consonant. Vowel-initial stems that miss this initial consonant resort to epenthesis to supply the missing segment.

This study is significant for three reasons. First, it provides an account of the hitherto unexplained phenomenon in Bantu. Second, it provides a crucial piece of phonological evidence for the misalignment between prosodic and morphological categories predicted in Downing (1998a, 1998b, 2000). Lastly, it sheds light on why no language exploits vowel epenthesis to avoid the violation of \*NÇ proposed in Pater (1996, 1999, 2001).

This article is organized as follows. In section 2, we present the epenthesis data from three Bantu languages. In section 3, we analyse the epenthesis data. Section 4 explores the implications of the proposed analysis.

## 2. Bantu Glide Epenthesis

We illustrate the Bantu glide epenthesis with data from LuGanda, Kikuyu and Luhya. In each of the three languages, the affixation of a prefix ending in /N-/ produces two distinct outcomes. In LuGanda, these two outcomes are a nasal-oral cluster [ɲ] and a geminate nasal [ɲɲ].

### (4) LuGanda epenthesis (Cole 1967)

|    |            |           |                                   |
|----|------------|-----------|-----------------------------------|
| a. | lw-èèyó    | ɲj-éyó    | 'broom(cl.11)/brooms(cl.10)'      |
| b. | kw-ààgál-á | ɲj-ágál-á | 'love(cl.15)/I love'              |
| c. | lw-èèndó   | ɲɲ-ééndó  | 'ladle(cl.11)/ladles (cl. 10)'    |
| d. | kw-ááník-á | ɲɲ-áník-á | 'put out to dry/I put out to dry' |

The nasal-oral cluster [ɲ] appears if the stem-initial vowel is followed by an oral consonant, as in (4ab). But when a nasal or a nasal-oral cluster follows, the geminate nasal [ɲɲ] emerges due to Meinhof's Law, as in (4cd) (Meinhof 1932; Meeussen 1962; Herbert 1977, 1986; Johnson 1979).

Kikuyu and Luhya are similar to LuGanda in that the affixation of a prefix ending in /N-/ also produces two distinct outputs. Like LuGanda, the affixation can produce a nasal-oral cluster when an oral consonant appears after the stem-initial vowel. But when a nasal or nasal-oral cluster appears after the stem-initial vowel, that is, in the environment of Meinhof's Law, a single nasal [ɲ] - not a geminate nasal [ɲɲ] - surfaces, as in (5cd) and (6cd).

## (5) Kikuyu epenthesis (Armstrong 1967)

|    |                        |              |                           |
|----|------------------------|--------------|---------------------------|
| a. | εεt-εet-ε /a-εt-εet-ε/ | ɲj-εt-εet-ε  | 'he/I has/have called'    |
| b. | ro-oa                  | ɲj-oa        | 'skin, hide/skins, hides' |
| c. | a-aneɔ-εet-ε           | ɲ-aneɔ-εet-ε | 'he/I has/have spread'    |
| d. | ro-embɔ                | ɲ-embɔ       | 'song/songs'              |

## (6) Luhya epenthesis (Dalgish 1975)

|    |                  |                   |              |
|----|------------------|-------------------|--------------|
| a. | /εN-iβ-a-ŋg-a/   | → enz-iβ-aa-ŋg-a  | 'I steal'    |
| b. | olw-iika         | tsiinɔ-ika        | 'horn/horns' |
| c. | /εN-um-i-ŋg-i-a/ | → εɲ-um-ii-ɲj-i-a | 'I dry'      |
| d. | olw-iimbo        | tsiin-imbo        | 'song/songs' |

The non-geminate outputs in (5cd) and (6cd) raise the question of whether these data involve epenthesis in Kikuyu and Luhya. There are three reasons to believe that they do. First, the placeless nasal consistently appears with a palatal specification on the surface in vowel-initial stems in all three languages. As vowel-initial stems do not have the initial consonant that supplies the palatal specification, it must come from some other segment, which we will show shortly comes from the epenthetic palatal glide *y*. Second, even if (5cd) and (6cd) can be accounted for without appeal to epenthesis, the appearance of the oral palatal segment in (5ab) and (6ab) has to be accounted for. Lastly, analysing (5cd) and (6cd) as involving epenthesis not only unifies the accounts of the two distinct outputs in Kikuyu and Luhya but also makes possible a unified analysis of all three Bantu languages.

The difference between LuGanda and Kikuyu/Luhya stems not from whether epenthesis is involved but from whether these languages permit geminate consonants on the surface. There is independent evidence that LuGanda permits not just geminate nasals, but all sorts of geminate consonants (Clements 1986). Unlike LuGanda, Kikuyu and Luhya do not. This difference is responsible for the difference between LuGanda on the one hand and Kikuyu and Luhya on the other hand (See Peng (2003; to appear) for a detailed analysis of consonant mutation including how inputs such as /N-y/ emerges both as [ɲj] and [ɲ] in Kikuyu; see Archangeli, Moll and Ohno 1998 for an alternative analysis of Kikuyu consonant mutation).

We have so far been assuming that the epenthetic segment is a palatal glide *y*. Some evidence from Kikuyu has been presented in (1) and (2), which shows that *y*-initial and vowel-initial stems emerge with identical outputs. Similar evidence is presented for LuGanda (7) and Luhya (8).

(7) Evidence for *y* as the epenthetic segment in LuGanda (Cole 1967)

- |    |              |               |                                |
|----|--------------|---------------|--------------------------------|
| a. | kù-yúzá      | ɣ̥-júzá       | 'tear (cl. 15)/I tear'         |
| b. | mà-yú        | ɣ̥-jú         | 'house(cl. 6)/houses (cl. 10)' |
| c. | kù-yímífil-á | ɣ̥-ɣ̥ímífil-á | 'stand up(cl. 15)/I stand up'  |
| d. | lù-yĩmbá     | ɣ̥-ɣ̥ĩmbá     | 'song(cl. 11)/songs (cl. 10)'  |

(8) Evidence for *y* as the epenthetic segment in Luhya (Dalgish 1975)

- |    |                   |                   |                           |
|----|-------------------|-------------------|---------------------------|
| a. | /eN-yeel-a-ɣ̥-a/  | → en-zeel-aa-ɣ̥-a | 'I land'                  |
| b. | axa-yofu          | in-zofu           | 'elephant (dim)/elephant' |
| c. | /eN-yoomb-a-ɣ̥-a/ | → eɣ̥oomb-aa-ɣ̥-a | 'I surpass'               |
| d. | axa-yuundo        | iɣ̥uundo          | 'hammer (dim)/hammer'     |

As the comparisons of (4) with (7) and (6) with (8) show, vowel-initial and *y*-initial stems are completely identical in their surface outcomes in LuGanda and Luhya. We take these data as evidence that the inserted segment is the palatal glide. The question that remains is why this segment is inserted in vowel-initial stems, a question we turn to next.

### 3. Analysis

What distinguishes the Bantu glide epenthesis from the usual consonant epenthesis is that it inserts a consonant *y* next to a consonant, the placeless nasal segment. This unique property of Bantu glide epenthesis is precisely why it is difficult to explain this epenthesis in purely syllabic terms.

As is well known, languages resort to consonant epenthesis to break up illicit vowel clusters in order to improve the syllabic wellformedness of the output. In constraint terms, the epenthesis of a consonant between two vowels yields an output that avoids ONSET violations. But in the case of inputs such as /ko-N-VC-a/ or /N-VC-a/, consonant epenthesis does not appear to improve output wellformedness. The insertion of *y* between /N-/ and a vowel-initial stem creates three different outcomes: a) a complex onset if /N-/ and *y* are syllabified into the same syllable, b) a closed syllable if /N-/ and *y* are syllabified into different syllables or c) a syllabic consonant with /N-/ functioning as the nucleus of its own syllable. None of these outputs is prosodically less marked than an output in which /N-/ is syllabified directly as the onset without epenthesis. Thus the challenge in analysing Bantu glide epenthesis is to explain why epenthesis is prosodically desirable.

We demonstrate here that Bantu glide epenthesis is prosodically motivated in that the output of epenthesis is prosodically less marked than an output without epenthesis. The prosodic motivation for glide epenthesis comes from both alignment and syllable well-formedness requirements, which are: a) the right edge of the prefix ending in /N-/ must align with the

left edge of a prosodic stem and b) a prosodic stem must start with an onsetful syllable (Downing 1998a, 1998b, 2000). As a result of these two requirements, the prosodic stem cannot align with the morphological stem at the left edge if the latter begins with an onsetless syllable. Under this circumstance, the languages resort to epenthesis. Epenthesis supplies the crucial onset missing in vowel-initial morphological stems, but desired by prosodic stems.

To see how these ideas can be implemented, let's consider the constraints responsible for the epenthesis in (9) and (10).

(9) Alignment and markedness constraints

- |                            |                                         |
|----------------------------|-----------------------------------------|
| a. ALIGN /N-/:             | Align (/N-/, right, P-Stem, left)       |
| b. ALIGN P-STEM-σ:         | Align (P-Stem, left, σ, left)           |
| c. ONSET:                  | *Align (σ, left, μ <sub>s</sub> , left) |
| d. ALIGN P-STEM (default): | M-Stem ≈ P-Stem                         |

(10) Faithfulness constraints

- |             |                                                                |
|-------------|----------------------------------------------------------------|
| a. MAX-IO:  | Every segment in the input has a correspondent in the output.  |
| b. DEP-IO:  | Every segment in the output has a correspondent in the input.  |
| c. MAX M-P: | Every element of the M-Stem has a correspondent in the P-Stem. |
| d. DEP M-P: | Every element of the P-Stem has a correspondent in the M-stem. |

To express the requirement that the prefix attach to a prosodic stem, we propose ALIGN /N-/ in (9a), an alignment constraint that states that the right edge of /N-/ must align with the left edge of a prosodic stem. Note that we use /N-/ to represent all prefixes ending in a placeless nasal. Thus it governs, say, the affixation of Kikuyu /N-/ as well as Luhya /tsiiN-/. To implement the requirement that prosodic stems must start with an onsetful syllable, we adopt ALIGN P-STEM-σ and ONSET from Downing (1998a: 12). ALIGN P-STEM-σ in (9b) demands that the left edge of a prosodic stem align with the left edge of a syllable. This constraint, together with a high-ranking ONSET, expresses the preference for prosodic stems to start with an onsetful syllable.

The constraints in (9) interact with the four faithfulness constraints in (10) to drive Bantu glide epenthesis. The anti-epenthesis DEP-IO is relevant in that it can be violated to satisfy (9a) through (9c). The anti-deletion MAX-IO plays a role because we need to consider the possibility of vowel deletion as a strategy to force vowel-initial stems to comply with the demands in (9). ALIGN P-STEM in (9d), MAX M-P in (10c) and DEP M-P in (10d), which are proposed in Downing (1998a: 12-13), govern the correspondence between prosodic and morphological stems. ALIGN P-STEM calls for the edges of

morphological and prosodic stems to align, while MAX M-P and DEP M-P are responsible for the segment-to-segment correspondence between morphological and prosodic stems. MAX M-P prohibits outputs in which the segments present in the morphological stem are not present in the prosodic stem while DEP M-P bars outputs in which the segments present in the prosodic stems are missing in the morphological stems. We will see here that ALIGN P-STEM, DEP-IO and DEP M-P can all be violated because Bantu prosodic stems may contain an epenthetic segment that is not part of the morphological stem.

These eight constraints are ranked in these three Bantu languages as follows:

- (11) ALIGN /N-/ , ALIGN P-STEM- $\sigma$ , MAX-IO, MAX M-P » ONSET » ALIGN P-STEM, DEP-IO, DEP M-P

According to (11), these constraints form three tiers with ALIGN /N-/ , ALIGN P-STEM- $\sigma$ , MAX-IO, and MAX M-P occupying the top tier dominating all other constraints. ONSET is sandwiched between the four top-tier constraints and the three bottom-tier constraints: ALIGN P-STEM, DEP-IO and DEP M-P. The reasons for this ranking become clear once we examine the two tableaux in (12) and (13). We present in (12) the tableau for the LuGanda form in (4a) *ɲj-éyó* 'brooms (cl.10)', a form with the placeless nasal in initial position. In (13), we will present the tableau for the Luhya form in (6b) *tsiinzi-ika* 'horn/horns' in (6b). In this form, the placeless nasal is medial.

In the tableaux that follow, we use the straight vertical line "|" and the curly bracket "{" to represent the prosodic and morphological stem boundaries, respectively, while the syllable boundary is marked by the period. We continue to employ the dash "-" to mark morphemic boundaries. In addition, the epenthetic glide is bolded to distinguish it from the glide supplied by the input. We use M $\approx$ P as an abbreviation for ALIGN P-STEM. Consider the tableau for *ɲj-éyó* in (12).

- (12) A tableau for /N-eyo/  $\rightarrow$  [ɲj-éyó] 'brooms (cl.10)'

|    | /N-eyo/     | AL<br>/N-/ | AL<br>PS- $\sigma$ | MAX<br>I-O | MAX<br>M-P | ON<br>SET | M<br>$\approx$ P | Dep<br>I-O | DEP<br>M-P |
|----|-------------|------------|--------------------|------------|------------|-----------|------------------|------------|------------|
| a. | [ɲ {é.yó    | *!         |                    |            |            |           | *                |            | *          |
| b. | [ɲ {é.yó    |            | *!                 |            |            |           |                  |            |            |
| c. | [ɲ. {yó     |            |                    | *!         |            | *         |                  |            |            |
| d. | {ɲ. yé.yó   |            |                    |            | *!         | *         | *                | *          |            |
| e. | [ɲ. {é.yó   |            |                    |            |            | **!       |                  |            |            |
| f. | [ɲ. y {é.yó |            |                    |            |            | *         | *                | *          | *          |

We consider the possibilities of complying with the constraint hierarchy without epenthesis through (12a), (12b) and (12e). These three candidates are identical in two key respects: i) they involve no glide epenthesis and ii) the morphological stem boundary lies between the prefix and the vowel-initial stem. In (12a) where /N-/ is syllabified as the onset, the prosodic stem boundary is placed to the left of /N-/. This candidate violates ALIGN /N-/ because the right edge of /N-/ does not align with the left edge of a prosodic stem. As the candidate in (12b) shows, aligning the prosodic and morphological stems by moving the left edge of the prosodic stem to the right of /N-/ is not an option, either. This move produces an output in violation of ALIGN P-STEM- $\sigma$  because the left edge of the prosodic stem does not coincide with the syllable left edge. We can move the syllable edge to the right of /N-/, that is, treating /N-/ as a syllabic consonant with its own syllable, as in (12c). As /N-/ functions as the nucleus of the syllable, it is onsetless. This output is ruled out by ONSET because it gives rise to two onsetless syllables. In (12c), we consider the possibility of deleting the stem-initial vowel. This option is eliminated by MAX-IO. Finally, the output in (12d) explores the possibility of inserting a glide and marking the morphological boundary to the left of /N-/. This candidate results in an output in violation of MAX M-P because the morphological stem contains elements not included in the prosodic stem. As (12f) shows, the optimal option involves inserting the glide, including it as part of the prosodic stem and attaching /N-/ to the left of this prosodic stem. This output results in the least serious violations.

As the comparisons of (12f) with (12a), (12b), (12c) and (12d) show, ALIGN /N-/, ALIGN P-STEM- $\sigma$ , MAX-IO, MAX M-P must dominate ONSET. In addition, ONSET must dominate ALIGN P-STEM, DEP-IO, and DEP M-P, as the comparison between (12e) and (12f) reveals. Otherwise, (12f) cannot emerge as the optimal output. This ranking is further confirmed by the tableau for the Luhya form *tsiin-z-ika* 'horns' where the placeless nasal is medial. In (13), we see that the proposed constraint hierarchy correctly identifies the candidate with the epenthetic glide in (13f) as the optimal output.

(13) A tableau for /tsiiN-ika/  $\rightarrow$  [tsiin-z-ika] 'horns'

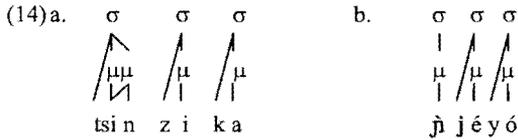
| /tsiiN-ika/      | AL<br>/N-/ | AL<br>PS- $\sigma$ | MAX<br>I-O | MAX<br>M-P | ON<br>SET | M $\approx$ P | Dep<br>I-O | DEP<br>M-P |
|------------------|------------|--------------------|------------|------------|-----------|---------------|------------|------------|
| a. tsii.n i.ka   | *!         |                    |            |            |           | *             |            | *          |
| b. tsii.n i.ka   |            | *!                 |            |            |           |               |            |            |
| c. tsiin. ka     |            |                    | *!         |            |           |               |            |            |
| d. {tsiin. yi.ka |            |                    |            | *!         |           | *             | *          |            |
| e. tsiin.} i.ka  |            |                    |            |            | *!        |               |            |            |
| f. tsiin.ly i.ka |            |                    |            |            |           | *             | *          | *          |

As the optimal candidate illustrates, the epenthetic glide functions as the onset of the initial syllable and supplies the missing initial consonant required by the prosodic stem. As in (12), the inclusion of the epenthetic glide in the prosodic stem renders (13f) in compliance not only with the four top-tier constraints but also ONSET.

This analysis reveals the prosodic motivation for glide epenthesis in vowel-initial stems in Bantu. When a morphological stem is vowel-initial, its initial onset is missing. In a language where ALIGN /N-/, ALIGN P-STEM- $\sigma$  and ONSET are ranked higher than ALIGN P-STEM, DEP-IO, and DEP M-P, this onset becomes crucial to the prosodic stem. Epenthesis emerges as a strategy to supply the onset missing in the morphological stem but required by the prosodic stem.

Apart from accounting for epenthesis in vowel-initial stems, this analysis correctly predicts why epenthesis is not necessary when a prefix ending in a placeless nasal is prefixed to consonant-initial stems. In a form with a consonant-initial stem such as /tsiiN-CVCV/, the morphological, prosodic and syllable boundaries can all be marked between /tsiiN-/ and /-CVCV/, that is, [tsiiN.]{CV.CV}. In an output such as [tsiiN.]{CV.CV}, ALIGN /N-/, ALIGN P-STEM- $\sigma$  and ONSET as well as the other five constraints are all satisfied, because the morphological, prosodic and syllable boundaries are all perfectly aligned. To insert a glide between /tsiiN-/ and a consonant-initial stem will inevitably result in violations of some constraints, making such outputs less than optimal. The same goes with an input where /N-/ is initial such as /N-CVCV/. With this input, the constraint hierarchy correctly predicts that the optimal output is [N.]{CV.Ca}, that is, an output without epenthesis where the syllable, morphological and prosodic stem boundaries lie between /N-/ and consonant-initial stems. The output [N.]{CV.Ca} incurs one violation of ONSET because of its initial syllable. In contrast, inserting a glide in consonant-initial stem would result in more serious violations as [Ny.]{CV.Ca} violates ALIGN /N-/ while [N]y.]{CV.Ca} violates ALIGN P-STEM- $\sigma$ . Consequently, there is no need for glide epenthesis in consonant-initial stems (See Archangeli, Moll and Ohno (1998) for an alternative analysis of vowel-initial stems in Kikuyu and Peng (2003) for a discussion of some of the problems with their analysis).

As these two tableaux show, this analysis of glide epenthesis calls for a particular syllabification of initial and medial nasal-oral clusters. When the nasal-oral cluster appears in medial position, the nasal is syllabified as the coda of the preceding syllable. Following Downing (to appear), we assume that this coda nasal shares the second mora with the preceding vowel as in (14a). When a nasal-oral cluster appears in word-initial position, the nasal portion of the cluster forms its own syllable, with the nasal functioning as a syllabic consonant as in (14b).



Downing (to appear) provides extensive arguments showing why Bantu medial nasal-oral clusters should be syllabified as in (14a). For space reasons, we will not discuss her arguments here. Interested readers should consult Downing (to appear) directly.

There is independent evidence that word-initial nasal-oral clusters should have the surface syllabic representation in (14b). We will consider arguments from three sources: a) LuGanda; b) Kikuyu tone shift; and c) nasal retention and deletion in Bantu languages. Recall that the /N-/ prefixation produces two distinct outcomes in LuGanda: [nj] and [ɲ]. The initial nasal portion of [nj] and [ɲ] is tone-bearing, which suggests that it is at least moraic. Moreover, as geminate consonants such as [ɲɲ] are generally analysed as hetero-syllabic, the geminate output suggests that the first portion of [nj] and [ɲ] form its own syllable. In other words, the tonal and geminate data provide independent evidence for the syllabification of [j̃j-éyó] and [j̃ɲ-áñik-á] as [j̃.jé.yó] and [j̃.ɲá.nì.ká]. This syllabification is exactly what is called for by our analysis of epenthesis. In addition, these tonal and geminate data support our claim that [nj] and [ɲ] are a cluster rather than a unitary segment.

In Kikuyu, the nasal portion of word-initial nasal-oral clusters is not tone-bearing. Nevertheless, there is some evidence that it functions as a tone-bearing unit. The evidence comes from a rightward tone shift phenomenon, which, according to Clements and Ford (1979: 188), was productive until quite recently in Kikuyu nouns because it applies to recent loans from English. Kikuyu tone shift manifests itself in the fact that left-to-right tone assignment skips the initial tone-bearing unit - namely, the leftmost syllable - and associates tones with the second tone-bearing unit. When a form consists of a nasal-oral cluster in word-initial position such as [NCVCV], tone is assigned to the leftmost V instead of the rightmost V, suggesting that the word-initial N counts as a tone-bearing unit with respect to tone shift. An example given in Clements and Ford (1979: 192-193) is *ngĩngĩ* 'neck'. According to Clements and Ford (1979: 193), all nominal prefixes including the nominal prefix /N-/ brings with it a low tone while the nominal root supplies a high tone. If /N-/ counts as a tone-bearing unit, Clements and Ford's (1979: 190) Initial Tone Association Rule 2 (Associate the first tone with the second tone-bearing unit) correctly predicts a low tone on the first vowel and a high tone on the second vowel. If /N-/ did not count as a tone-bearing unit, we would predict \**ngĩngĩ* or \**ngĩngĩ*, depending on whether the high tone is retained. As Kikuyu short or long vowels carry only one tone, the tone-bearing unit must be the syllable. Thus, Kikuyu tone shift data

support the claim that the nasal portion of word-initial nasal-oral clusters is syllabic with its own syllable.

In addition to direct evidence from LuGanda and Kikuyu, there is a third piece of evidence for syllabifying the nasal portion of word-initial nasal-oral clusters as a syllabic consonant. This evidence stems from the phenomenon of nasal retention and deletion seen in quite a number of Bantu languages. Take Venda for example. In Venda, the nasal portion of word-initial nasal-oral clusters may be deleted if the stem consists of two or more syllables, as in (15a). But if a stem is mono-syllabic, the nasal is retained, as in (15b).

(15) Venda (Ziervogel, Wentzel and Makuya 1972: 82-83).

|    |            |   |         |          |
|----|------------|---|---------|----------|
| a. | /N-s̀èthá/ | → | ts̀èthá | ‘yellow’ |
|    | /N-húlú/   | → | khúlú   | ‘big’    |
| b. | /N-tswú    | → | ń.tswú  | ‘black’  |
|    | /N-ṛù/     | → | ṛù      | ‘wet’    |

According to Ziervogel, Wentzel and Makuya (1972: 82-83), the surface reflex [n] from the /N-/ class prefix is not only retained. It is also syllabic and tone-bearing as in Venda, as shown in (15b). What these data suggest is that a bisyllabic minimum is imposed on Venda adjectives. When the affixation of /N-/ to a root results in an adjective less than two syllables, the /N-/ prefix surfaces as a syllabic consonant in compliance with the minimum size requirement. The minimal requirement is seen repeatedly in the world’s languages and is not unheard of in Bantu languages (See Peng (1991) and Downing (1997, 1998b, 2000) for a similar requirement). The nasal retention data in (15b) thus provide further evidence for the syllabification proposed in (14b).

To summarize, Bantu glide epenthesis emerges as a response to two requirements: a) prefixes ending in a placeless nasal must attach to a prosodic stem; and b) prosodic stems must start with an onsetful syllable. These two requirements drive Bantu glide epenthesis, which delivers the missing initial consonant in vowel-initial stems. Apart from providing an analysis of glide epenthesis, we have offered independent evidence for the syllabification called for by the analysis of epenthesis .

#### 4. Implications

We explore here the implications of the proposed analysis of the Bantu glide epenthesis. We show that these implications provide further evidence in support of the proposed analysis of Bantu glide epenthesis.

One implication of this analysis concerns a prediction made in Downing (1998a, 1998b, 2000). According to Downing, there are two logically possible ways in which a morphological category can be misaligned with a prosodic category: a) a prosodic category may include less than what is contained in the corresponding morphological category predicted by the

DEP M-P»MAX M-P ranking or b) a prosodic category may include more than what is contained in the corresponding morphological category predicted by the MAX M-P»DEP M-P ranking. The evidence presented in Downing (1998a) – namely, the extraprosodicity phenomena in which the onsetless syllables are ignored in reduplication and tone and stress assignment – all belong to the type in a), that is, the prosodic domain is smaller than the morphological domain. Downing (1998b, 2000) presents morphological evidence from reduplication for the MAX M-P » DEP M-P ranking. To the best of our knowledge, no phonological evidence has been presented for the MAX M-P » DEP M-P ranking. Bantu glide epenthesis provides the first piece of phonological evidence for the second type of misalignment, joining the reduplication evidence presented in Downing (1998b; 2000).

A second implication of the proposed analysis is that it sheds light on why vowel epenthesis is not exploited as a means to circumvent the violations of \*NÇ proposed by Pater (1996, 1999, 2001). Pater's \*NÇ predicts that in order to avoid \*NÇ violations, languages may choose vowel epenthesis to split up the offensive NÇ clusters. This type of language is predicted to exist, yet no language has yet to be found that exhibits this pattern to the best of our knowledge. This analysis of Bantu glide epenthesis provides an explanation of why vowel epenthesis cannot be an optimal strategy in these Bantu languages. To understand this point, consider the tableau in (16), in which we compare the output without epenthesis in (16a) with various candidate outputs with vowel epenthesis in (16b), (16c) and (16d).

(16)

|    | /tsiiN-CV/    | AL<br>/N-/ | AL<br>PS-σ | MAX<br>I-O | MAX<br>M-P | ON<br>SET | M≈<br>P | Dep<br>I-O | DEP<br>M-P |
|----|---------------|------------|------------|------------|------------|-----------|---------|------------|------------|
| a. | tsiiN.]{CV    |            |            |            |            |           |         |            |            |
| b. | tsiiN V.}{CV  |            | *!         |            |            |           | *       | *          | *          |
| c. | tsiiNV.){CV   | *!         |            |            |            |           |         | *          | *          |
| d. | tsii.}NV.}{CV | *!         |            |            |            |           | *       | *          | *          |

Notice that the output without epenthesis does not violate any of the eight constraints. In contrast, those outputs with epenthesis in (16b) through (16d) inevitably violate some of the 8 constraints. Thus, regardless of how these constraints are ranked, vowel epenthesis can never emerge as the optimal strategy to circumvent the \*NÇ violation in these Bantu languages, given the proposed constraint hierarchy. This result stems from ALIGN /N-/ and Align P-Stem-σ, which force the prefix to appear as close to the prosodic stem as possible. Vowel epenthesis inevitably distances the prefix ending in a placeless nasal from its prosodic host. For this reason, vowel epenthesis cannot be optimal in these Bantu languages.

In addition to these implications, this analysis of Bantu glide epenthesis bears on a number of other issues of importance to Bantu and prosodic morphology. First, the status of NC as a unitary segment or cluster has long been a contentious issue in the studies of Bantu. This analysis of glide epenthesis provides clear phonological evidence that both medial and initial NC's should be treated as a cluster because N of NC belongs to a different syllable from C of NC. Second, this analysis makes it possible to maintain the claim that the left edge of the morphological stem in Bantu appears consistently between the rightmost prefix and the root in support of Myers (1987) and Hyman and Mtenje (1994). If N and C of NC are treated as a unitary onset segment, we would be forced to accept the claim that in the forms with a prefix ending in a placeless nasal, the left edge of the stem boundary appears between /N-/ and its preceding prefixes. Lastly, this analysis provides additional evidence that a regular morphological affixation may target a prosodic rather than a morphological host. It joins the growing evidence in reduplication and infixation that suggests that morphological operations may take prosodic constituents as their domains.

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# An Optimality-Theoretic Account of German Sign Language Pluralization

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## 1 Introduction<sup>1</sup>

The topic of this paper is pluralization in German Sign Language (DGS). We are going to show that plural marking in DGS involves two basic strategies, namely reduplication and zero marking. In addition to that, reduplication comes in two different types. Both, the choice of basic strategy as well as the choice of reduplication type, will be shown to depend on phonological properties of the underlying noun. Hence, the form of the output crucially depends on phonological characteristics of the input.

The article is organized as follows: In section 2, we start our investigation with a brief survey of plural marking strategies in spoken languages, focusing on issues that will turn out to be relevant for our discussion of DGS plural patterns. In section 3, we introduce the types of nouns that have to be distinguished in DGS and we show how these different types derive their respective plural forms. Section 4 presents a constrained-based analysis for plurals in DGS. Our main findings are summarized in section 5.

## 2 Plural marking in spoken languages

In some languages, the phonological form of a plural allomorph is determined entirely by phonological properties of the stem. In English, the plural suffix assimilates the feature [ $\pm$ voice] of the preceding phoneme; moreover, after /s/ and /z/, we observe /ə/-insertion (cf. 1a). In Turkish, suffix vowels generally harmonize with the last vowel of the stem with respect to certain features. In pluralization, the relevant feature is [ $\pm$  back], as is illustrated in (1b).

- (1) a. dog  $\rightarrow$  [dɔ:gz], cat  $\rightarrow$  [kæts]; house  $\rightarrow$  [hauzəz]  
 b. ev 'house'  $\rightarrow$  ev-ler 'houses'; gün 'day'  $\rightarrow$  gün-ler 'days';  
 adam 'man'  $\rightarrow$  adam-lar 'men'; çocuk 'child'  $\rightarrow$  çocuk-lar 'children'

In contrast to that, in other spoken languages, the choice of a plural allomorph is (at least to some extent) idiosyncratic and thus lexically determined. This is illustrated by the German examples in (2). The two words in (2a) have the same rhyme (*-aus*). Still, they take different plural suffixes, both of which are accompanied by umlaut. The examples in (2b) are even more striking in that we are dealing with two homonymous lexical items. Both items form their plural by means of different suffixes where only the former is accompanied by umlaut.<sup>2</sup>

|        |         |         |          |           |         |        |        |         |
|--------|---------|---------|----------|-----------|---------|--------|--------|---------|
| (2) a. | Haus    | →       | Häus-er  | vs.       | Maus    | →      | Mäus-e |         |
|        | 'house' |         | 'houses' |           | 'mouse' |        | 'mice' |         |
|        | b.      | Bank    | →        | Bänk-e    | vs.     | Bank   | →      | Bank-en |
|        |         | 'bench' |          | 'benches' |         | 'bank' |        | 'banks' |

Interestingly, in many languages, we also find instances of zero marking, that is, pluralization is not always overtly expressed on a noun. In German, zero marking is quite common; two examples are given in (3).

|        |        |   |         |    |           |   |            |
|--------|--------|---|---------|----|-----------|---|------------|
| (3) a. | Segel  | → | Segel-Ø | b. | Fehler    | → | Fehler-Ø   |
|        | 'sail' |   | 'sails' |    | 'mistake' |   | 'mistakes' |

In the present context, the fact that in some languages, pluralization is realized by means of reduplication is particularly interesting. This phenomenon comes in two types: (i) partial reduplication (cf. 4a) and complete reduplication (cf. 4b).

|        |                  |   |                        |            |
|--------|------------------|---|------------------------|------------|
| (4) a. | kaldíŋ 'goat'    | → | kal-kaldíŋ 'goats'     | (Ilocano)  |
|        | púsa 'cat'       | → | pus-púsa 'cats'        |            |
|        | b. kurdu 'child' | → | kurdu-kurdu 'children' | (Warlpiri) |
|        | kamina 'girl'    | → | kamina-kamina 'girls'  |            |

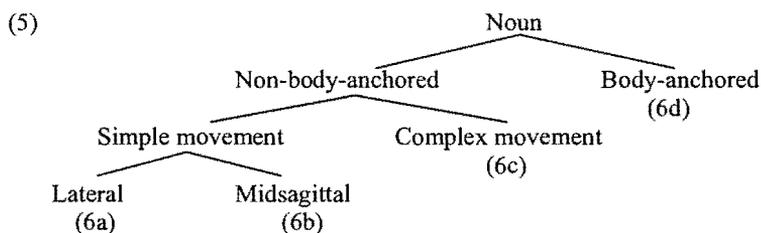
In sum, pluralization is far from being a uniform phenomenon across and even within languages. Crosslinguistically, pluralization strategies include affixation, reduplication, and zero marking. In the following, we will show that DGS also makes use of different strategies, namely two types of reduplication and zero marking. We will argue that the choice of strategy as well as the type of reduplication is determined by phonological properties of the underlying noun. In this respect, the DGS patterns can be compared to those observed in e.g. English and Turkish. We are dealing with phonologically triggered allomorphy.

### 3 Plural marking in DGS

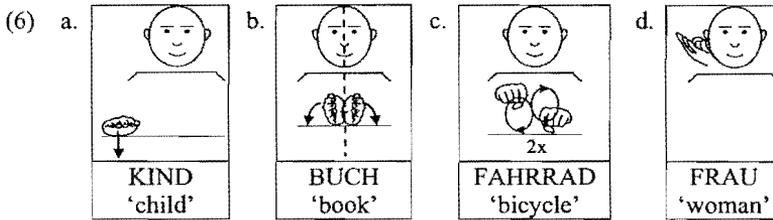
Patterns of nominal plural marking have been described for a number of different sign languages. For the most part, however, the information given is merely descriptive and no effort is made to provide analyses that allow for

interesting generalizations. Still, it is clear from the literature that many sign languages use more than just one plural marking strategy and that sign languages differ from each other with respect to how they realize pluralization. Two pluralization strategies, which are mentioned frequently in the literature are reduplication and zero marking.<sup>3</sup>

Before turning to the pluralization patterns found in DGS, we will make the reader familiar with the noun types that shall play a role in the following discussion. One important distinction has to do with the noun being body-anchored or not. Only for non-body-anchored signs, movement characteristics are also relevant. What is crucial is the distinction between complex and simple movement. For signs with simple movement, the question whether or not the noun is signed in relation to the midsagittal plane (z-plane; cf. Brentari (1998:34) and figure (6b) below) is also of importance. The following figure gives an overview over the four types of nouns that need to be distinguished.



In (6) one example is given for each of the different types of DGS nouns. The sign KIND ('child') in (6a) is signed on the lateral side of the signing space, the position of which is, of course, dependent on the handedness of the signer. All signs of this type are one-handed signs. The signs in (6b) are also signed within the neutral signing space. A crucial difference to those in (6a), however, is that they are specified for a particular relation to the midsagittal plane (indicated by a dotted line). Most of the signs of this type are two-handed. They are either signed symmetrically to the midsagittal plane or on the midsagittal plane. In the former case, the non-dominant hand is a coarticulator (as in (6b)), in the latter case, the non-dominant hand indicates the place of articulation. The third class of nouns consists of signs which are inherently specified for a complex movement, where complex may mean circulating, alternating, and/or repeated (straight and arc movements do not count as complex). The sign FAHRRAD 'bicycle' in (6c) combines all three of these features. This class also contains a few one-handed signs, as, for instance, ZUG 'train' (cf. also footnote 7 below). A final class of noun signs contains all nouns that are body-anchored. 'Body anchored' does not necessarily imply contact with a body part: while the sign FRAU 'woman' in (6d) makes contact with the ear lobe, the sign MANN 'man' is signed close to the side of the forehead but does not make contact.



In the following, we are going to refer to non-body-anchored lateral nouns as L-nouns, to non-body-anchored midsagittal nouns as M-nouns, to nouns with inherent complex movement as C-nouns, and to body-anchored nouns as B-nouns. The three noun-specific options for plural marking, which depend on the phonological characteristics of the nouns introduced in (6), are sideways reduplication, simple reduplication, and zero marking.<sup>4</sup> The crucial change imposed on L-nouns is sideways reduplication of the whole sign, as is illustrated in (7a). The hand performs three slight downward movements while moving a bit towards the lateral side of the signing space. Forms with simple reduplication (i.e. repetition without movement towards the lateral side) or zero marking are ungrammatical, as is illustrated in (7bc).<sup>5</sup>

- (7) a. KIND>+>+ 'children'      b. \*KIND++ 'children'      c. \*KIND 'children'

By contrast, sideways reduplication is not an option for M-nouns. (8a) illustrates that for a M-noun like BUCH 'book', the plural form only involves simple reduplication of the whole sign. Sideways reduplication as well as zero marking gives rise to ungrammaticality, as (8bc) illustrate.<sup>6,7</sup>

- (8) a. BUCH++ 'books'      b. \*BUCH>+>+ 'books'      c. \*BUCH 'books'

C-nouns are even more restrictive. The plural form of these nouns does not involve any additional reduplication. The only possible realization is (9a), which involves zero marking.

- (9) a. FAHRRAD 'bicycles'      b. \*FAHRRAD>+>+ 'bicycles'      c. \*FAHRRAD++ 'bicycles'

In this respect, B-nouns behave like C-nouns. Again, simple as well as sideways reduplication is ungrammatical (10bc). Only the form without any reduplication in (10a) is wellformed.

- (10) a. FRAU  
'women'  
b. \*FRAU >+>+  
'women'  
c. \*FRAU++  
'women'

Obviously, in DGS, several phonological features block reduplication in plural marking. The examples in (9) and (10) illustrate that the inherent place of articulation-feature [body-anchored] is incompatible with plural reduplication. Likewise, the prosodic path features [repeat], [circle], and [alternating] do not permit plural reduplication.

Before turning to the analysis of the observed patterns, we will briefly discuss the interaction of pluralization with spatial localization. Since sign languages make use of the signing space, they have the unique potential to establish a relation between plural reduplication and spatial localization of referents. In DGS, the localization of referents of the same type can be performed either by sideways reduplication of the whole sign (cf. 11a) or by means of a reduplicated classifier handshape (cf. 11b). Hence, we find patterns that seem to contradict the generalizations made above for M-nouns like BUCH 'book' or HAUS 'house' and C-nouns like FAHRRAD 'bicycle'.

- (11) a. HAUS>+>+  
house:PL  
'houses (in a row)'  
b. FAHRRAD CL<sub>vertical</sub>>+>+  
book CL:PL  
'Bicycles are standing next to each other'

In both examples in (11), however, sideways reduplication does not only express the simple plural form of the nouns but also a particular spatial configuration of the entities the nouns refer to. As opposed to L-nouns like KIND 'child', M-nouns like HAUS 'house' can only be reduplicated to the side if a particular spatial relation is implied. This may be related to a pragmatic principle which states that marked expressions receive marked meanings. Hence, with M-nouns, sideways reduplication always induces an additional semantic effect that cannot be found with L-nouns. Only with L-nouns sideways movement is part of the morphological expression of the plural feature.

The same is true in (11b). However, with nouns that allow for spatial localization by means of a classifier handshape, the spatial localization of the entities the noun refers to is usually not expressed by reduplication of the whole noun sign. Rather, it is expressed by reduplication of the classifier handshape in postnominal position. As in (11a), the reduplicated classifier handshape indicates a particular spatial arrangement (cf. Nijhof & Zwitserlood (1999) for a similar observation in NGT). Besides, in (11a) and (11b), sideways movement indicating spatial localization of referents is not restricted to the lateral area of the signing space. For spatial localization, the whole signing space can be used. By contrast, sideways movement in the pluralization of L-nouns is restricted to the lateral area of the signing space.

So far, we have shown that the realization of plural marking in DGS crucially depends on phonological properties of the underlying noun. Two basic strategies have to be distinguished: reduplication and zero marking. Only nouns with simple movement which are signed in neutral signing space can be reduplicated. Nouns that are signed on the lateral side of the signing space show sideways reduplication, nouns that are signed in relation to or on the midsagittal plane only allow simple reduplication. In contrast to that, nouns that have inherent complex movement and nouns that are body-anchored cannot be reduplicated at all. The basic patterns are summarized in the following table.

| Non-body-anchored             |                              | Complex movement<br>(C-noun) | Body-anchored                          |
|-------------------------------|------------------------------|------------------------------|----------------------------------------|
| Simple movement               |                              |                              | (with or without movement)<br>(B-noun) |
| Lateral noun<br>(L-noun)      | Midsagittal noun<br>(M-noun) |                              |                                        |
| <b>Sideways reduplication</b> | <b>Simple reduplication</b>  | <b>Zero marking</b>          |                                        |

#### 4 A constraint-based analysis for DGS plurals

In this section, we are going to propose an optimality-theoretic account of plural marking in DGS. We will argue that the morphophonological form of the output is determined by a number of constraints, all of which are independently motivated. The analysis presented here is based on earlier work by Pfau & Steinbach (2003), who present an account of reciprocal marking in DGS within a constraint-based framework. The first three constraints to be introduced in the following are also relevant for the derivation of reciprocals in DGS. As with reciprocal marking, the central constraint for plural marking is  $MAX(IMIZE)$ , formulated in (12), which forces the realization of the plural feature in the output.  $MAX$  is a member of the family of faithfulness constraints.

(12)  $MAX$ : Every feature present in the input must be realized in the output.

We assume that in DGS, the realization of the plural feature imposes two changes on a base form: repetition and sideways movement. That is, according to Brentari's (1998) feature hierarchy, pluralization adds the two phonological features [repeat(2x)] and [direction: >] to the prosodic branch of the feature hierarchy. Consequently, we split up  $MAX$  into the two sub-constraints  $MAX_{RED}$  and  $MAX_{SIDE}$ , where  $MAX_{RED}$  is ranked higher than  $MAX_{SIDE}$ .  $MAX_{RED}$  is crucial for the derivation of L-nouns and M-nouns like *KIND* 'child' and *BUCH* 'book', whereas  $MAX_{SIDE}$  is only crucial for the derivation of L-nouns because only these show sideways movement.

Another important constraint is IDENT(F), given in (13), which requires that all features that are lexically specified in the input may not be changed in the course of the derivation.

- (13) IDENT(F): Features specified in the input, may not be changed.

IDENT(F) is also a faithfulness constraint. It accounts for the difference between L- and M-nouns. The grammatical output of L-nouns like KIND 'child', which involves sideways reduplication, does not violate IDENT(F), since L-nouns have a specification for place of articulation ([neutral right] for right-handed signers) which is not lost in the sideways reduplicated form. As opposed to L-nouns, M-nouns are specified for an articulation which is executed in relation to the midsagittal plane. Therefore, sideways reduplication of M-nouns violates IDENT(F), since in sideways reduplication of M-nouns, the relation of the hand(s) to the midsagittal plane is lost.

A third constraint that will turn out to be relevant for the derivation of plurals in DGS is called \*MOVE; it excludes additional movements, which are not part of the lexical entry of the underlying noun (14).

- (14) \*MOVE: Sequential movements must not be added to the input.

\*MOVE restricts the linear complexity of signs. It is only violated if we add sequential movements (i.e. syllables) to the whole sign. As a consequence, plural marking with L- and M-nouns always violates \*MOVE twice.

In order to account for the observed patterns for L- and M-nouns, we have to assume that IDENT(F) is ranked higher than the two MAX-constraints. Moreover, we must assume that \*MOVE is always outranked by MAX<sub>RED</sub>, which forces the realization of the feature [repeat(2x)]. The ranking of \*MOVE and MAX<sub>SIDE</sub> with respect to each other is not of importance in the exemplary derivations sketched in the following tableaux. However, one-handed C-nouns which are not specified for a specific relation to the midsagittal plane (e.g. ZUG 'train') provide evidence that \*MOVE must be ranked between the two MAX-constraints.<sup>8</sup>

The derivation of L-nouns is illustrated in tableau 1 below. The successful output candidate in line 3 (indicated by ☞) does neither violate IDENT(F) nor any of the MAX-constraints. All the other candidates violate one or even both MAX-constraints. Note that the candidate in line 4 involves sideways movement without reduplication.

| <b>KIND + [+ pl]</b> | IDENT(F) | MAX <sub>RED</sub> | *MOVE | MAX <sub>SIDE</sub> |
|----------------------|----------|--------------------|-------|---------------------|
| KIND                 |          | *!                 |       | *                   |
| KIND++               |          |                    | **    | *!                  |
| ☞ KIND>+>+           |          |                    | **    |                     |
| KIND>                |          | *!                 | *     |                     |

**Tableau 1.** Non-body-anchored lateral nouns (L-nouns)

Recall that the crucial difference between L-nouns and M-nouns is that only the latter are specified for an articulation which has a fixed relation to the midsagittal plane. Therefore, the candidates in lines 3 and 4 of tableau 2 both violate IDENT(F). The candidate in line 1 does not violate IDENT(F); however, it violates both MAX-constraints. Consequently, the candidate with simple reduplication in line 2 is the optimal one, since it only violates MAX<sub>SIDE</sub>.

| <b>BUCH + [+ pl]</b> | IDENT(F) | MAX <sub>RED</sub> | *MOVE | MAX <sub>SIDE</sub> |
|----------------------|----------|--------------------|-------|---------------------|
| BUCH                 |          | *!                 |       | *                   |
| ☞ BUCH++             |          |                    | **    | *                   |
| BUCH>+>+             | *!       |                    | **    |                     |
| BUCH>                | *!       | *                  | *     |                     |

**Tableau 2.** Non-body-anchored midsagittal nouns (M-nouns)

So far, we have accounted for the derivation of L- and M-nouns. As it stands, however, our analysis cannot account for the plural forms of C- and B-nouns. For C- and B-nouns which are specified for a particular relation to the midsagittal plane, we would expect simple reduplication and for C- and B-nouns which are not specified for such a relation, we would even expect sideways reduplication in the output. In section 3 we have, however, already seen that these forms are ungrammatical.

It might be tempting to assume that these restrictions are due to general markedness constraints that forbid (a) the cooccurrence of inherent complex movement with reduplication and (b) the cooccurrence of a lexically specific location property (body-anchored) with reduplication. This assumption, however, is problematic in light of the fact that the cooccurrences in (a) and (b) are attested in verb signs. The C-verb FAHRRADFAHREN ‘to bike’ is almost identical to the C-noun FAHRRAD ‘bicycle’ and the B-verb VERGESSEN ‘to forget’ is very similar to the B-noun MANN ‘man’. Still, both verbs can undergo aspectual modification by means of simple reduplication, as (15) illustrates.

- (15) a. TÄGLICH CLAUS FAHRRADFAHREN++  
 every.day Claus bike-HAB  
 ‘Claus bikes every day.’

|                                            |      |      |             |
|--------------------------------------------|------|------|-------------|
| b. LEHRER                                  | MEIN | NAME | VERGESSEN++ |
| teacher                                    | my   | name | forget-HAB  |
| 'The teacher keeps on forgetting my name.' |      |      |             |

Hence, reduplication is not excluded in general for body-anchored signs and signs with complex movement. Obviously, the restriction that C- and B-signs do not permit simple reduplication holds only true for the class of nouns. Moreover, it is not even a general property of nouns in sign languages.<sup>9</sup> This fact poses yet another problem for the formulation of general markedness constraints. Hence, the ban on reduplication of C- and B-nouns cannot simply be attributed to general phonological properties of sign languages.

There are two possible ways to deal with this dilemma. First, one might stipulate that the lexical feature [+ plural] imposes two phonological restrictions on the input: nouns that contain the place of articulation-feature [body-anchored] and/or one (or more) of the prosodic features [repeat], [circle], and [alternating] cannot undergo reduplication at all. Following this line of argumentation, the phonological input restrictions on plural marking in DGS must be specified in the lexical entry of the plural feature. L-nouns and M-nouns can be reduplicated because they are neither specified for [body-anchored] nor for one of the three prosodic features mentioned above. Likewise, C-verbs and B-verbs permit aspectual reduplication, since the aspectual feature – unlike the plural feature – does not impose any phonological restrictions on the input. Finally, the lexical restrictions that are relevant for nominal plurals may be language specific.

In this paper, we will follow an alternative line of reasoning. In particular, we will propose the two related markedness constraints in (16) which exclude the cooccurrence of reduplication with certain phonological features. For pluralization in DGS these constraints have to be further restricted to nouns. Recall that the feature [repeat(2x)] neither cooccurs with the place of articulation feature [body-anchored] nor with the movement features [repeat], [circle], and [alternating], which, for convenience, in the following, we will subsume under the feature [complex movement]. Hence, in DGS nouns the feature [repeat(2x)] appears only in contexts that neither contain the inherent feature [body-anchored] ([BA]) nor the prosodic feature [complex movement] ([CM]).

- (16) a. \*[RED/BA]<sub>N</sub>: In nouns [repeat(2x)] must not cooccur with [BA].  
 b. \*[RED/CM]<sub>N</sub>: In nouns [repeat(2x)] must not cooccur with [CM].

Obviously, there is a tension between faithfulness constraints, on the one hand, which preserve as much of the input as possible, and markedness constraints, on the other hand, which favor output forms that are less complex and therefore easier to produce (cf. also Rathmann & Mathur 2002 for markedness constraints in ASL verb agreement). In order to block reduplication with C-nouns and B-nouns, the two constraints in (17), which are not ranked with respect to each

other, must be ranked higher than  $MAX_{RED}$  and  $MAX_{SIDE}$ . Since L- and M-nouns do not contain any of the phonological features specified in the markedness constraints, their derivation is not affected by the addition of these two constraints.

Tableau 3 illustrates why FRAU ‘woman’ cannot undergo plural reduplication. The candidate with simple reduplication in line 2 violates  $*[RED/BA]_N$ . Sideways reduplication (line 3) and sideways movement without reduplication (line 4) are even worse, since in both cases the feature [body anchored] is lost. This gives rise to an IDENT(F) violation. Consequently, the candidate with zero marking is the optimal one although it violates both MAX-constraints

| FRAU + [+ pl] | IDENT(F) | $*[RED/BA]_N$ | $MAX_{RED}$ | *MOVE | $MAX_{SIDE}$ |
|---------------|----------|---------------|-------------|-------|--------------|
| ☞ FRAU        |          |               | *           |       | *            |
| FRAU++        |          | *!            |             | **    | *            |
| FRAU>+>+      | *!       | *             |             | **    |              |
| FRAU>         | *!       |               | *           | *     |              |

Tableau 3. Body-anchored nouns (B-nouns)

The same explanation can be applied to C-nouns such as FAHRRAD ‘bicycle’. Reduplication of C-nouns, like reduplication of B-nouns, leads to a violation of one of the two markedness constraints in (16). Unlike reduplication of B-nouns, reduplication of C-nouns violates  $*[RED/CM]_N$ . Once again, the candidate with zero marking is the optimal one.

## 5 Conclusion

We have investigated the realization of nominal plurals in DGS. We have argued that the basic means of plural marking in DGS is sideways reduplication. However, sideways reduplication can only apply to a small number of nouns, since its application depends on phonological properties of the underlying noun. Only L-nouns without complex movement permit sideways reduplication. As opposed to L-nouns, M-nouns, which are specified for a particular relation to the midsagittal plane, form their plural without sideways movement. Hence, they only permit simple reduplication. The plural form of B- and C- nouns does not involve reduplication at all. These nouns have zero marked plurals. Hence, in DGS there are three ways of realizing the plural feature: (i) sideways reduplication, (ii) simple reduplication, and (iii) zero marking.

Furthermore, we have proposed an OT-analysis of plural marking in DGS. The constraints  $MAX_{RED}$  and  $MAX_{SIDE}$ , are responsible for the realization of reduplication and sideways movement. In addition, the markedness constraints  $*[RED/BA]_N$  and  $*[RED/CM]_N$  exclude certain classes of nouns from reduplication. Finally, \*MOVE and IDENT(F) are two more general constraints

which do not only apply to plural marking. The final ranking of all relevant constraints is given in (17).

$$(17) \text{IDENT(F)} \gg *[\text{RED/BA}]_N, *[\text{RED/CM}]_N \gg \text{MAX}_{\text{RED}} \gg * \text{MOVE} \gg \text{MAX}_{\text{SIDE}}$$

## Notes

<sup>1</sup> We are very much indebted to Andrea Kaiser, Elke Steinbach, and Jutta Warmers. Without their patient help, this research would not have been possible.

<sup>2</sup> Note that even in German, the choice of a particular plural allomorph is predictable in some contexts. It depends, for instance, on a preceding derivational suffix. Moreover, after stems ending in a vowel the suffix *-s* is always used.

<sup>3</sup> Wilbur (1987:124) formulates some generalizations about nominal plural marking in ASL that only partially overlap with those made for DGS below: (i) the plural of nouns that are made with one hand at a location on the face can be realized by repeating the sign alternately with both hands; (ii) if a noun makes contact with some body part, the plural is made by reduplication and usually with a horizontal sweeping arch; (iii) nouns that involve repetition of movement in their singular form cannot undergo (sideways) reduplication. Furthermore, Valli & Lucas (1992:118) mention that only few nouns in ASL can be reduplicated; however, they don't attempt to make any generalizations about what nouns exactly these are. British Sign Language seems to be more similar to DGS. According to Sutton-Spence & Woll (1999:105f), some plurals are realized by a "distributive bound plural morpheme", that is, they are made by repeating the sign, with each repetition distributed in a different location (= sideways reduplication). They also point out that body-anchored signs and signs with repeated movement in the singular cannot be pluralized in this way. For Austrian Sign Language, Skant et al. (2002:39f) mention a further interesting plural marking strategy, namely plural marking by alternating movement. See also Stavans (1996) for Israeli Sign Language and Nijhof & Zwitserlood (1999) and footnote 9 below for Sign Language of the Netherlands.

<sup>4</sup> Reduplication is a very common morphological process in the grammar of sign languages. It is also used in verbal plurals (Fischer & Gough 1978), aspectual modification (Klima & Bellugi 1979), reciprocal marking (Pfau & Steinbach 2003), and verb-noun conversion (Supalla & Newport 1978).

<sup>5</sup> Notational conventions: '++' indicates simple plural reduplication; every + represents one repetition of the base form, i.e. a sign like BUCH++ is performed three times all together. '>+>+' indicates sideways plural reduplication. Note that there are individual differences amongst signers with respect to the number of repetitions. Most signers repeat the base noun twice, others may repeat it three times or only once. Since two repetitions was the most common pattern in our data, our discussion and analysis will be based on this pattern. However, nothing hinges on this distinction.

<sup>6</sup> The examples in (7) and (8) make clear that, strictly speaking, pluralization in DGS does not involve reduplication but rather triplication. The base is not repeated once but twice. Interestingly, triplication is also found as a productive morphological process in some spoken languages, e.g. in the Austronesian languages Mokilese and Thao (cf. Blust 2001). In both languages, however, triplication does not express plurality but rather some sort of aspectual modification.

<sup>7</sup> Insofar, pluralization of midsagittal nouns can be compared to that of nouns in Warlpiri (cf. 4b). In both cases, we observe complete reduplication of a base noun without further changes. The plural form of lateral nouns such as KIND 'child' is somewhat different, since one phonological parameter, namely location, is modified in the reduplicand. Complex reduplicative constructions where the reduplicand involves some different phonological material are also found in spoken languages.

<sup>8</sup> One-handed C-nouns like ZUG 'train' share some properties with L-nouns, because they are signed on the lateral side of the signing space. We expect ZUG to permit sideways movement since ZUG does not stand in a specific relation to the midsagittal plane and therefore, IDENT(F) does not exclude sideways movement in this case. Consequently, \*MOVE must be ranked between the two MAX-constraints. This ranking correctly predicts that zero marking is the optimal output candidate

for all kinds of C-nouns.

<sup>9</sup> As opposed to DGS, Sign Language of the Netherlands (NGT) permits simple reduplication of at least some B-nouns. While there are differences with respect to the behaviour of B-nouns, C-nouns seem to behave similarly in DGS and NGT, that is, they do not permit reduplication.

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# Non-Restrictive Modification in Japanese

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This paper investigates the properties of the non-restrictive relative clause (NRR) construction in Japanese. The NRR has a unique form/function mismatch in that it is an adnominal modifier, but it may be interpreted as if it were a subordinate or coordinate conjunction to the main clause (e.g., ‘because X’, ‘in spite of X’, ‘when X’, X and ~), where X is a statement about the modified head. As there is no formal difference in Japanese between a NRR and its restrictive counterpart (RR), the difference between the two is semantic. I suggest that the basic reading of the NRR, incidental information about the referent of the modified NP, is based on the characteristics of the proper noun or other specific reference NP that is modified by the NRR. I also point to some linguistic contexts and pragmatic factors that favor certain readings over others and may lead to resolution of the ambiguity of the incidental information. The analysis of the NRR is important in that it can be extended to similar constructions in Japanese such as nominal apposition and adjectival modification.<sup>1</sup>

## 1 Introduction

The purpose of this paper is to study the syntactic, semantic, and pragmatic properties of NRRs in Japanese as contrasted with RRs and compared with NRRs in English. Traditionally, non-restrictive modification has been defined semantically, as represented by Trask’s (1993) definition:

- (1) *non-restrictive*: “Denoting a modifier, such as an adjective or a relative clause, whose presence is not required for identification of the referent of the noun phrase containing it, but which serves merely to add extra information.” (p. 186)

In English, restrictive and non-restrictive and modification generally differ in prosody.<sup>2</sup> Non-restrictive adjectives have a characteristic prosody, described as “reduced stress on the adjective” (Trask 1993) or “emphasis on the modified noun” (Crystal 1997:332):

- (2) a. Look at John's black DOG. (Non-restrictive)  
 b. Look at John's BLACK dog. (Restrictive)

As for clausal modification, NRRs are distinguished from RRs by the so-called "comma intonation," a combination of distinctive intonation and (optional) pause that isolates the relative clause from the main clause; it is reflected in orthography as two commas delimiting the clause, shown in (3).<sup>3</sup>

- (3) a. The dog, which/\*that was adopted from the local shelter, was named Fluffy. (Non-restrictive)  
 b. The dog which/that was adopted from the local shelter was named Fluffy. (Restrictive)

Moreover, in English, there is evidence for syntactic difference. Syntactic analysis of NRRs has posed challenges for linguists due to discontinuous structures such as (3a) above. Emonds' (1977) Main Clause Hypothesis of NRRs states that "appositive relatives are derived from deep structure coordinate right sisters to the clause containing the modified antecedent" (p. 212). In proposing an analysis for parentheticals in general, McCawley (1988) proposes that NRRs are "adjuncts to the whole sentence and that they are moved, without change of constituent structure, to a position immediately following the target" (1988: 426).<sup>4</sup> This accommodates both the word order facts and the evidence that the NRR is not a constituent of the larger noun phrase it appears to be part of. (4a) and (4b) support McCawley's analysis:

- (4) a. John sold Mary, who had offered him \$600 an ounce, a pound of gold, and Arthur did  $\emptyset$  too.  
 b. John sold a violin, which had once belonged to Nathan Milstein, to Itzhak Perlman, and Mary did  $\emptyset$  too.

(4) shows that the VP substituted by 'do-support' does not include the NRR: (4a) carries the message that Arthur [sold Mary a pound of gold] and (4b), that Mary [sold a violin to Itzhak Perlman]. Neither VP includes the NRR.

McCawley and Emonds treat NRRs within the realm of syntax. Other authors claim that the interpretation of NRRs does not belong to syntax proper but to discourse (Sells 1985, Fabb 1990), a higher level of logical form (Safir 1986), or utterance phenomena (Burton-Roberts 1998).<sup>5</sup>

## 2 Ambiguity of RR/NRR Modification

### 2.1 Absence of syntactic differentiation

Japanese NRRs differ from English NRRs in a number of respects. Most notably, antecedents of Japanese NRRs are limited to noun phrases, as shown below: (5a/6a from McCawley 1988, with brackets added.):

- (5) a. John told me <sub>s</sub>[that Mary's operation was successful], which I was relieved to hear. (418, 5a)
- b. \*Watasi-wa kiite ansin sita [Mary-no syuzyutu-ga seikoo  
I-Top heard-and relieved was Mary's operation-Nom success  
datta koto] -o John-ga watasi-ni itta.  
was Nm] -Acc John-Nom me-to said
- c. John-wa Mary-no syuzyutu-ga seikoo datta to watasi-ni itta  
John-Top Mary-Gen operation-Nom success was that me-to said.  
Watasi-wa sore-o kiite, ansin sita  
I-Top that-Acc heard-and relieved was  
'John told me that Mary's operation was successful. I was relieved to hear that.'
- (6) a. Fred is <sub>AP</sub>[very confident of himself], which I am not. (419, 7a)
- b. \*Fred-wa watasi-wa sooja-nai (yooni) [totemo zisin-ga aru].  
Fred-Top I-Top so-not (this way) very confidence-Nom have
- c. Fred-wa totemo zisin-ga aru ga, watasi-wa soo zyanai  
Fred-Top very confidence-Nom have but I-Top so is not  
'Fred is very self confident, but I am not.'

Japanese lacks non-restrictive modifiers that have entire sentences or Adjectival phrases as targets as in (5a) or (6a). Attempts to premodify APs or S's with adnominal clauses with the intended reading result in unacceptable sentences (5b, 6b). NRRs are translated as two sentences conjoined by *to* 'and' or *ga* 'but' or two separate sentences, as shown in (5c) and (6c).

Moreover, Japanese NRRs are identical to RRs on the surface:

- (7) a. Tom has a violin, which once belonged to Heifetz, and Jane has one, too.
- b. Tom-wa baiorin-o motteite Jane-mo itidai motteiru ga, Tom-no  
Tom-Top violin-Acc has-and Jane too one has but Tom-Gen  
baiorin-wa mukasi Heifetz-no mono datta.  
violin-Top once Heifetz-Gen thing was  
'Tom has a violin and Jane has one too, and Tom's violin once belonged to Heifetz.'
- (8) a. Tom-wa Heifetz no mono datta baiorin o motteiru.  
'Tom has a violin that once belonged to Heifetz.'

As shown in (8a), when a relative clause modifies a common noun, it always has a RR reading. The semantic equivalent of an English NRR sentence like (7a) is thus a conjunction such as (7b) (or two separate sentences). Sometimes, a common noun in Japanese has specific reference even without a demonstrative such as *sono* 'that,' resulting in RR/NRR ambiguity:

- (9) a. Densya-kara orita onnanoko-wa watasi-ni te-o futta.  
 train -from descended girl-Top me-to hand-Acc waved  
 b. 'The girl who had gotten off the train waved at me.' (RR)  
 c. 'The girl, who had gotten off the train, waved at me.' (NRR)

As the glosses show, English is unambiguous in this respect due to the comma intonation and orthographic representation.

Burton-Roberts (1998) lists a number of RR/NRR contrasts in English. Two of the listed contrasts can be tested for Japanese. First, the claim that "RRs, but not NRRs, are within the scope of operators and expressions outside the R-clause itself" (Burton-Roberts 1998:34):

- (10) a. John said that the receivers who had done a good job should be dismissed.  
 b. John said that the receivers, who had done a good job, should be dismissed.

Burton-Roberts observes that in (10b) "John is 'innocent of the knowledge of the NRR,'" thus the question of why John dismissed the receivers does not arise. By contrast, in (10a), that question makes sense, since John's *saying* takes scope over the content of the RR. Note the scope of the saying verb in (11a):

- (11) a. Syatyoo-wa [kaisya-o uragitta syaintati]-o syoosin-saseru to  
 President-Top company-Acc betrayed employees-Acc promote that  
 happyoo-sita. (RR)  
 announced  
 'The president announced that he would promote the employees who betrayed the company.'  
 a' ?Kitto uragiri-o siranakatta no daroo.  
 Apparently betrayal-Acc know-Neg-Pst Nm maybe  
 'Apparently, he did not know about the betrayal.'  
 b. Syatyoo-wa [kaisya-o uragitta Hanako]-o syoosin-saseru to  
 President-Top company-Acc betrayed Hanako-Acc promote that  
 happyoo-sita. (NRR)  
 announced  
 'The president announced that he would promote Hanako, who betrayed the company.'

- b' ?Kitto uragiri-o siranakatta no daroo.  
'Apparently, he did not know about the betrayal.'

For both (11a) and (11b), a statement that claims the *president's* ignorance about the betrayal (11a', b') sounds odd, and there is no clear difference in this oddness between (11a) and (11b). Thus we conclude that, unlike in English, the scope of the saying verb extends to both a RR and a NRR.

The second test for the RR/NRR contrast compares the two constructions for the effect of Binding Condition C: an R-expression in NRR is not c-commanded by the antecedent in argument position.

- (12)a. John<sub>i</sub> gets on best with those firms who employ him/\*John<sub>i</sub> frequently.  
b. John<sub>i</sub> gets on well with those firms, who employ him/John<sub>i</sub> frequently.

In English the coreference of the R-expression *John* in a RR clause with the c-commanding antecedent results in unacceptability, as shown in (12a), while the same does not apply to the R-expression in a NRR clause, (12b). Compare this with a similar pair in Japanese:

- (13)a. John<sub>i</sub>-wa itumo kare<sub>j</sub>/zibun<sub>j</sub>/\*?John<sub>i</sub>-ni sigoto-o kureru kaisya-ni  
John-Top always him/self/John -to work-Acc give firm-to  
kansya-si-teiru.  
thank-do -ing  
'John is grateful to the firms that always give him work.'  
b. John<sub>i</sub>-wa itumo kare<sub>j</sub>/zibun<sub>j</sub>/\*?John<sub>i</sub>-ni sigoto-o kureru Tanaka-Shoji-ni  
kansya-si-teiru.  
'John is grateful to Tanaka-Shoji Company, who always give him work.'

(13a) and (13b) are no different in the degraded acceptability of an R-expression coindexed with (what appears to be) a c-commanding antecedent. In terms of Principle C, then, RR and NRR in Japanese are non-distinct.

Based on the above discussion, I conclude that there is no evidence for syntactic distinction between RRs and NRRs in Japanese.

## 2.2 Semantic difference between RRs and NRRs

Having excluded syntactic difference between RRs and NRRs, let us now look at the semantic difference. Traditional characterizations of the NRR include the following: "(it is used) simply to characterize (...), they may be termed 'ornamental'" (Jespersen 1924); it supplies "extra information" (Trask 1993, see (1)). As McCawley (1993) points out, the NRR clause also represents a speech act separate from the act that its containing clause represents.<sup>6</sup>

Now we look at the NRR's semantic characteristic as contrasted with the RR. There is a well-known clause-internal phenomenon that involves discontinuous negation with *sika* 'only'. In the [NP-*sika*...V-*nai*] 'V only NP' construction, the NP-*sika* 'only NP' must occur in the same clause as V-*nai* 'not V' (Miyagawa 1986). This clause-mate requirement can be applied to the relative clause structure as a diagnostic for determining whether the NP modified by the RR or NRR is syntactically in the same clause as the negative predicate in the containing clause:

- (14)a. Sono gakkoo-wa<sub>NP</sub>[nihongo-o 1-nen izyoo benkyoo sita gakusei]  
 that school-Top Japanese-Acc 1 year over studied students  
*sika ukeire-nak-atta.*  
 only accept-Neg-Pst  
 'That school accepted only students who had studied over one year of Japanese.'
- b. Sono gakkoo-wa<sub>NP</sub>[nihongo-o 1-nen izyoo benkyoo sita Hanako] *sika ukeire-nak-atta.*  
 'That school accepted only Hanako, who had studied over one year of Japanese.'

The grammaticality of sentences (14a) and (14b) and the availability of the intended reading suggests that the bracketed NPs and *ukeirenakatta* 'did not accept' are clause-mates at the level which is relevant for the interpretation of *-sika...nai*. Thus the RR and NRR show no syntactic difference in that the NP as a whole is a constituent of the negative sentence. What is more important here is the semantic difference between the NPs in (14a) and (14b). Sentence (14a) states that the students who were accepted are identified by the fact that they had studied over one year of Japanese, in contrast with all those who had less than one year of Japanese. In (14b), *Hanako* is the name of the individual who was accepted, and *Hanako* is not identified by the fact of her Japanese instruction experience. (15a) and (15b) confirm this:

- (15)a. Sono gakko-wa gakusei -sika ukeirenakatta.  
 That school-Top students-only accept-Neg-Pst  
 'That school accepted only students.'
- b. Sono gakko-wa Hanako-sika ukeirenakatta.  
 'That school accepted only Hanako.'

Without the RR clause limiting the reference of the students to those who have had a year's instruction in Japanese, (15a) fails to have the same meaning as (14a). By contrast, (15b) still is synonymous with (14b) in terms of truth-conditional meaning, since *Hanako* is *Hanako*, even without being identified in the sentence as one having studied Japanese before.

It is concluded that the RRs and NRRs in Japanese are semantically different in the same way as described in the traditional definition of NRRs in English, although they are syntactically undifferentiated, as shown in 2.1.

### 2.3 Proper nouns and definite NPs

NRRs of Japanese modify proper nouns and nouns modified by demonstratives, as shown below:

- (16)a. Tatiagatta no -wa mae -no seki ni notteiru Taro datta.  
 Stood up Nm -Top front -Gen seat at riding Taro was  
 ‘The one who stood up was Taro, who was seated in the front seat.’
- b. Tatiagatta no -wa mae -no seki ni notteiru ano otoko datta.  
 Stood up Nm -Top front -Gen seat at riding that man was  
 ‘The one who stood up was that man, who was seated in the front seat.’

An account of non-restrictively modified proper noun in Vandelanotte and Willemse (V&W) provides an interesting insight into the NRR modification of the kind shown in (16a, b). V&W state that proprial lemmas (i.e., proper nouns) sometimes “receive some amount of modification without acquiring the “categorizing” function of common nouns, but rather retaining the rigid, unique designation associated with proper names” (2002:9), and illustrate such cases with (17a):<sup>7</sup>

- (17)a. An angry Blair left the meeting yesterday. (V&W 2002:27, (49))
- b. Okotta Blair-wa kinou sono kaigi-o deta.  
 Became angry Blair-Top yesterday that meeting-Acc left  
 ‘(Lit.) Blair, who became angry, left that meeting yesterday.’

Compare this with (18), in which a proper noun is used as a common noun modified by a RR:

- (18)a. Which Blair are you talking about? My uncle Bill Blair or Blair the politician?
- b. Dono Blair no koto o itteru no? Ozi no Bill Blair no koto?  
 which Blair Gen fact-Acc saying Nm uncle Cop Bill Blair Gen fact  
 Soretomo seizika no Blair?  
 Or politician Cop Blair

(17b) and (18b) are translations of (17a) and (17b) respectively. In (17b), since ‘angry’ in Japanese is a verb *okoru* ‘to become angry’, the state of being angry is expressed by a relative clause [*okotta*] ‘(Lit.) who had become angry’.

Just as *Blair* is used in (17a) as a proper noun, the proper noun *Blair* in (17b) is modified by a NRR and retains its unique reference. V&W explain that *angry* in (17a) has a “contrastive” or “specifying” effect, i.e., a modification that contrasts the current/temporary state of Blair with other possible states at other occasions – a happy Blair, a smiling Blair, etc. As shown in the gloss for (17b), [*okotta*] has a resultative sense, i.e., the result of becoming angry, thus the NRR has a time sequential reading in addition to the specification function attributed to *angry* in (17a) for the English adjective.

I propose that at least some instances of NRR modification in Japanese, those representing temporary states of the referent of the head noun, can be explained in the same way as the adjectival modification of (17a). For instance, in (16) above, the NRR clause [*mae no seki ni suwatte ita*] ‘who was seated in the front seat’ specifies the condition of the man named Taro (16a) or the man identified as ‘that man’ (16b) at the time the speech event took place. More generally, it is a proper noun’s intrinsic property of unique reference that allows the modification (adjectival in English, clausal or adjectival in Japanese) to have such “specifying” or “contrastive” functions. It is different from RRs in that the identification of the modified NP does not depend on the modifier. The specifying and contrasting does not involve choosing from a number of individuals, but reference to a particular state of the unique referent.<sup>8</sup>

### 3 Interpretation of NRRs

#### 3.1 Multiple ambiguity of NRRs

In this section I discuss ambiguity in the interpretation of NRRs in Japanese. While all NRRs convey incidental or additional information about the head NP, the relation between this information and the meaning of the main clause (of which the NP is an argument) is underspecified. Nevertheless, as indicated in the paraphrases, this relation has one of several readings: temporal sequence (19a), causation or rationalization (19b, c), and definition or explanation (19d). (19e) is an instance of a link that may look neutral at first glance, but that may imply causation in a subtle manner.

- (19)a. *Densya kara orita watasi -wa isoide deguti e mukatta.*  
 train from descended I-Top hurriedly exit to went toward  
 (Lit.) ‘I, who got off the train, hurried toward the exit.’  
 (Par.) ‘Having gotten off the train, I hurried toward the exit.’
- b. *Nihon kara kita Tanaka-san -wa gorufu -ga daisuki desu.*  
 Japan from came Tanaka-Mr. -Top golf -Nom loves  
 (Lit.) ‘Mr. Tanaka, who came from Japan, loves golf.’  
 (Par.) ‘Mr. Tanaka loves golf, as he comes from Japan.’

- c. Nihonzin-no Tanaka-san-wa “r”-no hatuon-ga nigate da.  
 Japanese Cop Tanaka-Mr-Top “r” of pronunciation-Nom poor is  
 (Lit.) ‘Mr. Tanaka, a Japanese, is not good at pronouncing the “r”  
 sound.’  
 (Par.) ‘Mr. Tanaka is not good at pronouncing the “r,” and that’s  
 probably because he is Japanese.’
- d. John-wa Nihon no tyuugaku 3-nensei ni ataru  
 John-Top Japan’s middle school 3<sup>rd</sup> grader to correspond  
 “9-nensei” da.  
 9<sup>th</sup> grader Cop.  
 (Lit.) ‘John is a ninth grader, which corresponds to third grade in a  
 Japanese middle school.’
- e. Korerano sakkatati-ga katuyaku si-hazime-ta Meiji 20-nendai,  
 these authors-Nom active be-begin-Pst Meiji 20’s  
 30-nendai-no bungaku -mo, karera-o tuuzite genzai -to  
 30’s -Gen literature also they-Acc through present with  
 zituduki -no yooni kanzite imasita.  
 continued of as if feeling was  
 (Lit.) ‘The literary works of the 20’s and 30’s of the Meiji Era, (during  
 which time) these authors started to be active, were felt (by me) as if  
 they were a continuum with the present times.  
 (Takeo Okuno, *Nihon Bungaku-si*)

The temporal sequence reading is typical for NRRs with non-stative predicates that modify the subject NP of a matrix clause that is also an event, as in (19a). Compare this with (19b), where the main clause is stative (*gorufu ga daisuki da* ‘loves golf’). In (19b) the relation is one of implied cause-effect. The NRR of (19c), a copular predicate, is stative thus the sentence is not interpreted as an event /event relation as in (19a), but as possible causation. (19d) is an instance of NRR that conveys just extra information, a definition or translation, with no further implied links.

### 3.2 Disambiguation

As shown in 3.1, the incidental information carried by the NRRs about the modified NP may be assigned more specific readings of sequence, causation, adversal relation, etc. This is probably due to a hearer/listener’s tendency to add a meaningful relation to such incidental information -- what is called the “principle of cooperation” in the traditional Gricean approach to communication. In our case, it amounts to assuming that the content of the NRR is causally or temporally related to the proposition of the larger clause. Schematically:

(20)

$s_2$ [<sub>NP</sub>[X NP1]... Pred1 ...] →  $s_1$ [NP1 X] this is why/despite this  $s_2$ [NP1...Pred]  
 $s_1$ [NP1 X] and then  $s_2$ [NP1...V]

(Where X is the NRR, NP1 is the modified NP, Pred2 is the matrix predicate, S2 is the original matrix clause, and S1 is the clause derived from NP1 and the statement about NP1 (i.e., the NRR)).

Example (=19b):

$s_2$ [<sub>NP</sub>[[Nihon-kara kita] <sub>NP1</sub>[Tanaka-san]]- wa <sub>Pred1</sub>[gorufu-ga daisuki da]].  
 →  $s_1$ [Tanaka-san -wa nihon-kara kita]; dakara  $s_2$ [Tanaka-san-wa gorufu-ga daisuki da.]

The hearer's choice of the relation between S1 and S2, e.g., causative (this is why~), adversative (despite this), etc., is based on some presuppositions and stereotypes about the relation between what is said about the head NP (the NRR) and what the main clause says about that NP. Next, we look at some modal adverbs and other elements that encourage certain readings over others. For instance, *yahari* 'as expected', *soredemo* 'despite that', *sasugani* 'understandably, as might be expected', and *sono wari ni* 'considering the degree of ~'. Compare (19b) with (21a):

- (21) a. Nihon kara kita Tanaka-san wa yahari gorufu ga daisuki desu.  
 Japan from came Tanaka-Mr. Top as-expected golf Nom loves  
 b. (Lit.) 'As expected, Mr. Tanaka, who came from Japan, loves golf.'  
 c. (Par.) 'As expected, Mr. Tanaka loves golf, and that is because he came from Japan.'

While the causal link is only suggested/inferred in (19b), the addition of *yahari* 'as expected' in (21a) strengthens the causal reading (21c) by encouraging a logical connection between the content of the NRR and the proposition of the matrix sentence. From the viewpoint of discourse modality, Maynard (1992) comments as follows: (when *yahari* or its colloquial variant *yappari* is used in the structure [X *yahari/yappari* Y] where X and Y are two discourse segments) "*yahari/yappari* triggers socioculturally shared information as knowledge which is relevantly associated with the proposition expressed in [Y]" (1992:128-129). On the other hand, *soredemo* 'despite that' is used where the link between the NRR and the sentence as a whole is felt to be unexpected, i.e., the opposite of the readily assumed link of the *yahari* examples:

- (22) a. Nihon-kara kita bakari no Yuji -wa, soredemo tyanto zibun hitori-de  
 Japan-from came only Cop Yuji-Top despite-that properly self alone  
 basu ni noreta.  
 bus on ride-can-Pst

- b. (Lit.) 'Yuji, who had just come from Japan, even so, was able to ride a bus all by himself.'
- c. (Par.) 'Although Yuji had just come from Japan, in spite of that, he was able to ride a bus all by himself.'

In (22) the assumption that results in the paraphrased reading is that people from Japan are usually not fluent in English, thus it is unusual that someone who has just arrived in America is capable of being independent.

In this section it was shown that some modal adverbials contribute to the disambiguation of the basically incidental information of the NRR by suggesting a clear relation between that information about the NRR-modified NP and the main proposition of the sentence.

#### 4 Conclusion

The distinction between NRRs and RRs is semantic in Japanese. There is no formal distinction on the surface, nor is there evidence of syntactic distinction. I proposed that the NRR reading of a relative clause is the result of the semantic characteristic of the proper nouns and other unique-reference NPs such as demonstratives. The NRR provides incidental/additional/extra information about the modified NP, but it is interpreted in different ways depending on pragmatic assumptions about the information and its relation with the proposition of the main sentence. The form/function mismatch of an adnominal modifier interpreted as adverbial is not limited to clausal modification, but rather, it is a widespread phenomenon also seen in APs and NP-no (NP + 'genitive' particle *-no*) structures (e.g., Nishiyama 1993).<sup>9</sup> A unified account of modification across these different categories will be the subject of further research.

#### Notes

<sup>1</sup> The following abbreviations are used throughout this paper: NP = Noun Phrase, Top = topic marker, Cop = copula, Nom = nominative case marker, Acc = accusative case marker, A = adjective (*keiyoshi*), AN = adjectival noun (*keiyodoshi*), Neg = negative, Pst = Past, Nm = nominalizer, Par. = Paraphrase, Lit. = Literal.

<sup>2</sup> In a prosodic text analysis study of modifier expressions, Asano et al. (1996) report that non-restrictive nominal modification in Japanese shows a Weak Connection (the modifier phrase and the modified phrase have approximately the same fundamental frequency ( $F_0$ ) peaks), while restrictive modification shows a Strong Connection (the modified phrase has a lower  $F_0$  peak than the modifier phrase). Examples: *Kyoto-no* [SC] *touki* 'earthenware of Kyoto' (restrictive) vs. *Kyoto-no* [WC] *Touji* 'Touji (name of temple) in Kyoto' (non-restrictive). It is similar to the difference in stress in English adjectival modification described in (2). This is an interesting finding, although such prosodic difference is less salient than the "comma intonation" of English NRRs.

<sup>3</sup> Comma intonation isolates interposed element in a number of constructions in English other than the nonrestrictive relative clause, including the nonrestrictive appositive NP (e.g., "Koizumi, the current prime minister of Japan, visited Washington D.C. last spring."), interpolated clause (e.g.,

“Koizumi – that’s the family name of Japan’s prime minister – visited Washington D.C. last spring.”), and certain adverbial phrases (e.g., “Harry Potter, *of course*, is another matter.”)

<sup>4</sup> McCawley’s structure involves crossing branches, which is not standard in generative grammar (“No Crossing Branches Constraint,” e.g., Radford 1988:121).

<sup>5</sup> According to Fabb, Safir’s LF’ (prime) can be assimilated to discourse level, “a level of representation at which combinations of matrix sentences are represented” (1990:68).

<sup>6</sup> McCawley’s example is a NRR clause embedded in an interrogative:

(i) Is Bill, who was standing here a minute ago, still in the building?

“The nonrestrictive clause is not, strictly speaking, part of the request for information but corresponds to a separate act that the speaker performs while in the process of asking his question” (1993:295). (i) can be translated either as (iia) or as (iib):

(ii) a. Sakki made koko ni tatteita Bill wa mada kono tatemono no naka ni iru? (NRR)

b. Bill wa sakki made koko ni tatteita kedo, mada kono tatemono no naka ni iru?

(iia) is a literal translation of (i). While it is not clear that (iia) conveys two separate speech acts, in (iib), an interpretative translation of (i), a statement about Bill is added to a speech act of asking a question. Thus, although the NRR form (as in iia) shows the lack of clear separation from the matrix clause, the interpretation (as in iib) suggests separate speech acts, on a par with English.

<sup>7</sup> In Vandelanotte and Willemse’s (2002) terminology, “proper name” (PN) refers to a semantic-syntactic class that contrasts with “common noun” (CN), while “proprial lemmas” (PLs) are dictionary entries (“words that function prototypically as PNs” but “peripherally also as CNs”). Examples of PNs (underlined): “the year 2000,” “the song ‘The Seven Drunken Knights,’” “the question ‘What does it mean to live in modern society?’” PLs: Napoleon, Times (the magazine), Peter Thompson. I use the term ‘proper noun’ to refer to what correspond to V & W’s PLs.

<sup>8</sup> In Japanese, pronouns such as *kare* ‘he’, *kanozuyo* ‘she’, and *watasi* ‘I’ also can be premodified, either restrictively or non-restrictively. In this respect, Japanese pronouns are much closer to demonstrative phrases like *ano hito* ‘that person’ than to pronouns of English.

<sup>9</sup> Nishiyama (1993) observes that in (ia) *ano toki no* does not distinguish one president from another, but points to a slice of the temporal continuum of that individual and that this kind of modifier can be rephrased as an adverbial *ano toki* as in (ib).

- (i) a. Ano toki no daitooryoo-wa hurue-te-imasita ne. (adnominal)  
that time-Gen president -Top trembling was  
(Lit.) ‘Mr. President (you) of that time was trembling, right?’  
b. Daitooryoo-wa ano toki hurue-te-imasita ne. (adverbial)  
president-Top that time trembling was  
(Lit.) ‘(Mr. President,) you were trembling at that time, right?’

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# Extraction out of Spanish DPs

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## 1. Patterns of Extraction

As Ormazabal (1991) showed for Spanish, and Cinque (1980) and Giorgi & Longobardi (1991), among many others, for other Romance languages, the possibility of wh-extraction out of Romance DPs depends on the type of argument present in the DP. The examples in (1) illustrate that possessors, agents and objects can be extracted out of DP whenever they are the only argument in the DP.

- (1) a. ¿De quién has leído [varios libros [<sub>t<sub>poss</sub></sub>]]?  
Of whom (you) have read several books  
b. ¿De quién has leído [varios libros [<sub>t<sub>agent</sub></sub>]]?  
Of whom (you) have read several books  
c. ¿De qué has leído [varios libros [<sub>t<sub>obj</sub></sub>]]?  
Of what (you) have read several books

Nevertheless, as Ormazabal (1991) notes, when two or more arguments are present in the DP, the extraction possibilities change. The presence of a possessor blocks the extraction of agents and objects, although the presence of an agent or an object has no effect on the extraction of a possessor from the DP.

- (2) a. He leído [varios libros [de Cervantes]<sub>ag</sub> [de Juan]<sub>poss</sub>]  
(I) have read several books [of Cervantes]<sub>ag</sub> [of Juan]<sub>poss</sub>  
b. \*¿[De quién] has leído [varios libros t<sub>ag</sub> [de Juan]<sub>poss</sub>]]?  
Of whom (you) have read several books t<sub>ag</sub> [of Juan]<sub>poss</sub>  
c. He leído [varios libros [de Física]<sub>obj</sub> [de Juan]<sub>poss</sub>]  
(I) have read several books [of Physics]<sub>obj</sub> [of Juan]<sub>poss</sub>  
d. \*¿[De qué] has leído [varios libros t<sub>obj</sub> [de Juan]<sub>poss</sub>]]?  
Of what (you) have read several books t<sub>obj</sub> [of Juan]<sub>poss</sub>
- (3) a. ¿[De qué coleccionista] has comprado [varios ejemplares [de esa obra]<sub>obj</sub> t<sub>poss</sub>]]?  
Of what collector (you) have bought several copies [of that work]<sub>obj</sub> t<sub>poss</sub>  
b. ¿[De qué coleccionista] has comprado [varios retratos [de Rembrandt]<sub>ag</sub> t<sub>poss</sub>]]?  
Of what collector (you) have bought several copies [of Rembrandt]<sub>ag</sub> t<sub>poss</sub>

Furthermore, the presence of an agent blocks the extraction of an object, (4a), but the presence of an object has no effect on the extraction of an agent, (4b):

- (4) a. \*¿[De qué obra] conoces [varias traducciones t<sub>obj</sub> [de escritores importantes]<sub>ag</sub>]?  
 Of what work (you) know [several translations t<sub>obj</sub> of writers important]<sub>ag</sub>]  
 b. ¿[De quién] conoces [varias traducciones [de La Celestina]<sub>obj</sub> t<sub>ag</sub>]?  
 Of whom (you) know several translations [of La Celestina]<sub>obj</sub> t<sub>ag</sub>]

The descriptive generalization, stated in Torrego (1987) and Ormazabal (1991), is that PP arguments within Spanish DPs display a hierarchical relation, with possessors higher than agents and agents higher than objects.

A very different picture emerges when DPs headed by the definite article are taken into consideration: only objects can be extracted out of Definite DPs (i.e., DPs headed by the definite article).

- (5) a. \*¿De qué autor has leído [los libros t<sub>ag</sub>]?  
 Of which autor (you)have read the books t<sub>ag</sub>  
 b. \*¿De quién has visto [las fotos de ese monte t<sub>poss</sub>]?  
 Of whom (you)have seen the photos of that mount t<sub>poss</sub>  
 c. ¿De qué cantante salieron publicadas [las fotos t<sub>obj</sub>]?  
 Of which singer were published the photos t<sub>obj</sub>

Note that the grammaticality of (5c) argues against an explanation of (5a-b) based on the so-called Specificity Effect (Fiengo & Higginbotham (1981), among others), which describes that wh-movement out of Specific DPs is excluded. Furthermore, the behavior of Spanish Specific DPs and Spanish Definite DPs differs regarding extraction:

- (6) a. \*¿De qué autor has leído [estos libros t<sub>ag</sub>]?  
 Of which autor (you)have read these books t<sub>ag</sub>  
 b. \*¿De quién has visto [estas fotos de ese monte t<sub>poss</sub>]?  
 Of whom (you)have seen these photos of that mount t<sub>poss</sub>  
 c. \*¿De qué cantante salieron publicadas [estas fotos t<sub>obj</sub>]?  
 Of which singer were published these photos t<sub>obj</sub>

The ungrammaticality of the examples in (6) with demonstratives shows that Specificity Effects in Spanish do not discriminate among agents, possessors and objects. The extraction of any of them causes ungrammaticality.

The different readings available in (7) show another difference between Specific DPs and Definite DPs in Spanish:

- (7) a. Juan vio una foto de todo el mundo narrow/wide  
 Juan saw a picture of everybody  
 b. Juan vio la foto de todo el mundo narrow/wide  
 Juan saw the picture of everybody

c. Juan vio esta foto de todo el mundo narrow/\*wide  
 Juan saw this picture of everybody

The sentence in (7a) is ambiguous. It can mean ‘Juan saw one picture of a group’ (narrow scope reading) or ‘Juan saw several pictures’ (wide scope reading). Since May (1977), a syntactic movement (QR) in LF of the quantified element ‘todo el mundo’ (everybody) has been assumed to derive these two readings. Note that the sentence in (7b) shows the same ambiguity, while the sentence in (7c) is not ambiguous: it only has the narrow scope reading. Thus, we can conclude that Spanish Definite DPs allow for extraction of their argument, while Spanish Definite DPs do not.

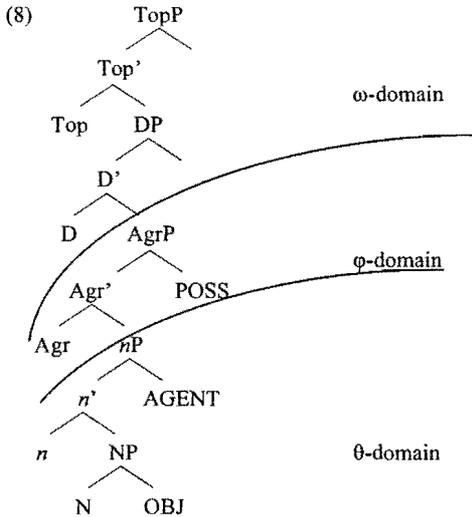
To summarize so far: Data with extraction out of indefinite DPs shows that arguments within Romance DPs (agents, possessors and objects) display a hierarchical relation, with possessors higher than agents and agents higher than objects. Furthermore, it has been shown that only objects can undergo extraction out of Spanish Definite DPs and that extraction out of Specific DPs is generally banned.

## 2. Assumptions on the Structure of DPs in Spanish<sup>1</sup>

The analysis developed in this paper assumes standard notions in the Minimalist framework (cf. Chomsky (1995) and subsequent work). Furthermore, following Abney’s (1987) DP-hypothesis, I assume that the internal structure of DPs resembles the internal structure of clauses in the richness of its functional configuration. Therefore, the analysis developed in this paper is based on certain developments regarding the CP structure. Mainly, I will be assuming Grohmann’s (2000) division of clause structure into three domains, and its extension to the DP proposed in Grohmann and Haegeman (2002).

Grohmann (2000) discusses different cases of ill-formed movement in the clausal domain. His observations on the length and type of movements disallowed in the clausal domain lead him to split the clause into three Prolific domains: A Thematic domain, which contains the predicate and its arguments; an agreement domain, where arguments can receive Case and Phi-features; and a Discourse domain, where discourse information is encoded.

Adapting Grohmann’s (2000) and Grohmann and Haegeman’s (2002) proposals, I assume (8) as the basic DP structure:



Note that the structure in (8) shows the three Prolific domains within the DP without massive proliferation of functional structure. The presence of *nP* reinforces the parallelism between clausal and nominal domains. *nP* is the locus of agentivity, that is, it hosts agents, and is only projected when an agent is present. Thus, *nP* in the nominal domain is the counterpart of *vP* in the clausal domain.

Similarly, the presence of TopP mimics the structure of clauses and follows recent proposals (Rizzi (1997), among others) concerning the possibility of 'splitting' the CP-layer. Grohmann and Haegeman (2002) argue for the presence of TopP in the nominal domain as the host of nominal left dislocation in languages such as West Flemish. In my analysis, TopP is the equivalent of Szabolsci's (1983) and Ormazabal's (1991) K(om)P and it serves as the escape-hatch for the elements extracted out of DPs. Moreover, TopP is projected just in case it is required to check off a feature in the structure.

As for AgrP, I group under this functional category any of the agreement-related functional categories proposed in earlier analyses. That is, I replace NumP, GenP, PossP, and others, by a more general AgrP, where all the agreement-based relations are established.

Finally, let me discuss the treatment of determiners I adopt here. I assume (following Abney (1987), Bernstein (1993), Zamparelli (2000), among many others) that not all determiners are generated in D. Thus, following Milsark's (1977) division of Ds, I assume that only the presence of a strong determiner<sup>2</sup> triggers the projection of DP, and that weak determiners appear generated in a lower projection, which I identify here as AgrP<sup>3</sup>.

As for the locality relations operating in DPs, I follow Grohmann's (2000) implementation of the Anti-Locality Hypothesis, based on Bošković (1997) Bošković's (1997) and Saito and Murasugi's (1999) proposals on a lower-bound on locality. Hence, movements within Prolific domains can be grammatical only in case the duplicity of the element moved is avoided by a last resort procedure that yields a drastic effect on the output. In short: elements within DPs can only move from a Prolific domain to a Prolific domain, unless there is compelling evidence to the contrary at the interface<sup>4</sup>.

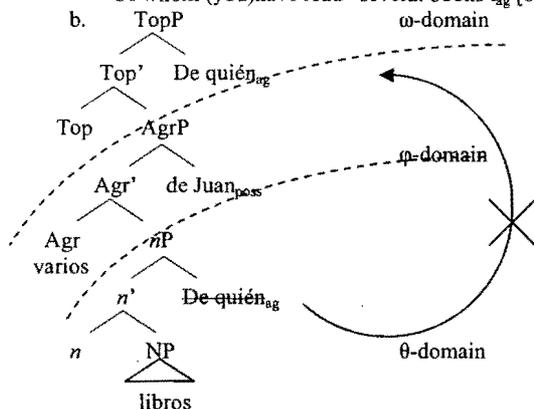
Apart from Grohmann's (2000) Anti-Locality Hypothesis, I follow previous analyses' intuition regarding the extremely local character of movement in Romance DPs and I assume that phrasal movement within DPs crosses only one maximal projection in each step. This restriction on the maximal length of movement follows some general conditions on movement, such as the Minimize Chain Links Principle of Chomsky and Lasnik (1993) or the Locality Principle introduced in Manzini (1994). The two principles aim to restrict possible movement operations by stating that an element must move the shortest distance. The Minimize Chain Links Principle regulates the length of the links of a chain to derive the notion of government. Several authors have pursued this line of research (cf. Manzini (1994), Fox and Lasnik (2003), among others). Manzini (1994) takes as her departure point this line of research and proposes that movement must involve two adjacent minimal domains. According to Manzini (1994), 'the minimal domain of a head X consists of all and only the elements that are immediately contained by, and do not immediately contain, a projection of X' (Manzini (1994: 482)); that is, the minimal domain of XP will contain its Spec, X itself, the complement of X, and the elements adjoined to XP. Moreover, Manzini (1994) considers two minimal domains (A and B) adjacent to one another if there is no member of a third domain (C) that contains A but not B, or vice versa. In short, Manzini's (1994) Locality principle requires movements from one maximal projection to the next maximal projection<sup>5</sup>.

To summarize: Movement within DP is highly restricted. It cannot take place further than one maximal projection and the movement must be from one Prolific domain to another Prolific domain.

### 3. The analysis

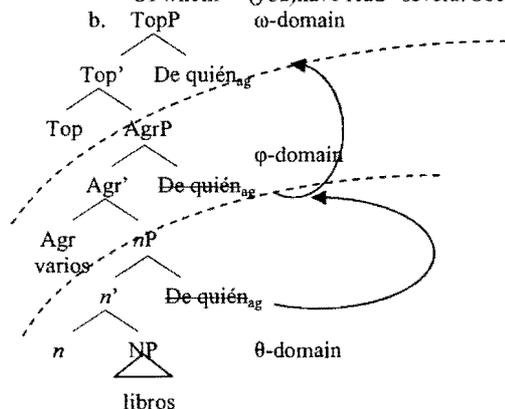
Under the assumptions discussed above, the explanation for the blocking effects in extraction out of Spanish non-specific DPs is straightforward: the presence of a possessor in the Specifier of AgrP blocks the extraction of any element, since the *wh*-element cannot cross more than one maximal projection in its movement<sup>6</sup> to the Specifier of TopP. This is illustrated in (9):

- (9) a. \*¿[De quién]<sub>ag</sub> has leído [varios libros t<sub>ag</sub> [de Juan]<sub>poss</sub>]?  
 Of whom (you)have read several books t<sub>ag</sub> [of Juan]<sub>poss</sub>



The derivation of the grammatical (10a), schematized in (10b), shows that the movement of the agent when a possessor is not present meets the requirements postulated for movements within DPs. Each of the movements in (10b) crosses only one maximal projection and respects the Anti-Locality Hypothesis.

- (10) a. ¿[De quién]<sub>ag</sub> has leído [varios libros t<sub>ag</sub>]  
 Of whom (you)have read several books t<sub>ag</sub>

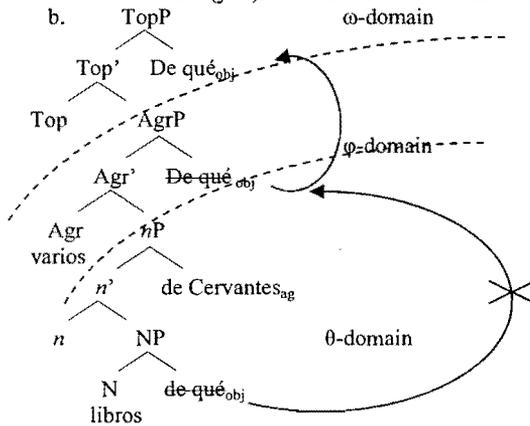


Note that movement of objects follows the same restrictions. The descriptive generalization states that objects cannot be extracted from non-specific DPs whenever a possessor or agent is present. The explanation for the blocking effects of possessors on the movement of objects is completely parallel to the

one described for the blocking effects of possessors on the movement of agents: the presence of a possessor in the Spec of AgrP forces the object to skip the Spec of AgrP as an intermediate landing site, and this produces a violation on the conditions of locality established for DPs.

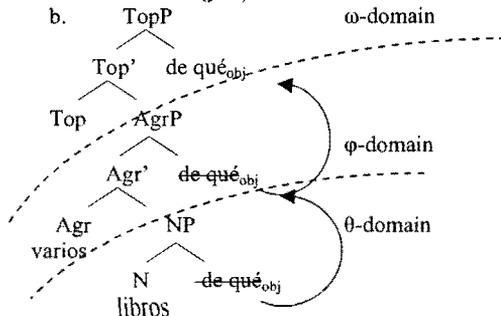
Let us pay attention now to the blocking effect of agents on the movement of objects. Under the analysis presented so far, the presence of *nP* would block the extraction of an object out of a non-specific DP due to a locality violation.

- (11) a. \*¿De qué has leído [varios libros [<sub>t<sub>obj</sub></sub>] de Cervantes]?  
Of what (you)have read several books of Cervantes



This is because the movement of the object from its initial position to the Spec of AgrP position would cross more than one maximal projection, namely, the object crosses *nP*. Therefore, in order for an object to be able to move, *nP* must not be present in the structure. The derivation of the grammatical (12a) is (12b):

- (12) a. ¿De qué has leído [varios libros [<sub>t<sub>obj</sub></sub>]]?  
Of what (you)have read several books



The evidence for the lack of *nP* projection when a 'de'(of)-agent is absent comes from the different behavior of 'por' (by)-agents and 'de'(of)-agents with respect to extraction. 'De'(of)-agents block the extraction of objects out of non-specific DPs while 'por' (by)-agents do not affect extraction of objects:

- (13) a. ¿De qué tema has criticado la investigación <sub>t<sub>obj</sub></sub> por los americanos?  
 Of what topic (you)have criticized the investigation by the Americans  
 b. \*??? ¿De qué tema has criticado la investigación <sub>t<sub>obj</sub></sub> de los americanos?  
 Of what topic (you)have criticized the investigation of the Americans

As commonly assumed, 'por' (by)-agents are not dependent on the theta-grid that predicates (Ns or Vs) project and it is the P 'por' (by) that introduces the relevant 'agentivity' relation. That is why they typically appear in passivizations, where the agentive projection is not present. The contrasts in (13) thus show that the introduction of agentivity with a 'por' (by)-agent does not trigger the presence of *nP* in non-specific DPs. Therefore, the extraction of objects is not blocked when a 'por' (by)-agent is present since there is no *nP* in the relevant structure and the movement of the object respects the locality conditions established.

Note that Bošković (1997) shows a similar pattern with *vPs*, the counterpart of *nP* in the clausal domain. Bošković (1997) discusses data such as:

- (14) a. \*John wagered Peter to be smart  
 b. John believes Peter to be smart  
 c. Peter was wagered (by Mary) to be smart  
 d. Peter was believed to be smart

Given the generalization that agentive verbs cannot Exceptionally Case Mark in general (cf. Pesetsky (1992)), the crucial difference between (14a) and (14b) is that verbs such as 'wager' assign the agent theta-role to their subject, while verbs such as 'believe' do not assign an agent theta-role. Bošković (1997) captures the difference by the presence or absence of *vP*: *vP* is only projected in (14a). Assuming that the embedded subject must reach the Spec of AgrOP to get its Case, Bošković (1997) then argues that the ungrammaticality of (14a) is due to the presence of *vP*, which blocks the required movement of the embedded subject to the Spec of AgrOP.

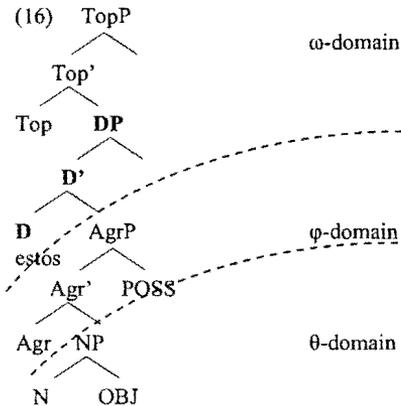
His analysis finds support in cases such as (14c), where, although we can have an agent introduced by the P 'by', the sentence is grammatical since the V has been passivized. Given Bošković's (1997) analysis, it follows then that an agentive by-phrase does not induce projection of *vP*; the contrast between (14a) and (14c) thus parallels the contrast between (13a) and (13b), which can be interpreted as providing additional evidence for the current analysis.

Given the discussion above, the ungrammaticality of (15b) shows that agentive adjectives are introduced in the Spec of *nP*.

- (15) a. Criticaron la investigación Americana de este tema  
 (they)criticized the investigation American of that topic  
 b. \*¿De qué tema criticaron la investigación Americana?  
 of what topic (they)criticized the investigation American

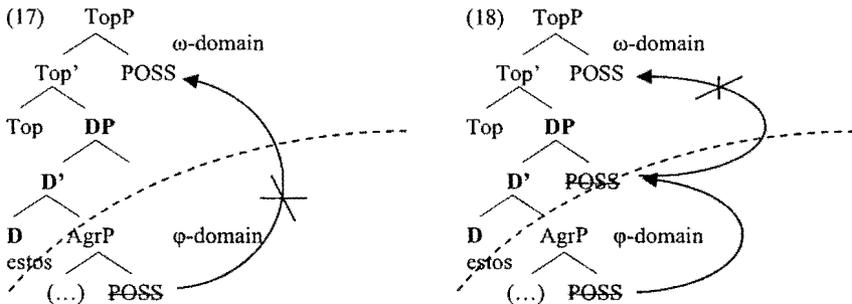
To sum up my analysis so far: The different possibilities of extraction observed in non-specific DPs are derived from the locality conditions on movement that elements within DPs must satisfy.

Let us focus now on the Specificity Effects observed in Spanish DPs. The descriptive generalization is that extraction out of Specific DPs is generally banned. The abstract structure of a Specific DP under my analysis is (16):



As (16) illustrates, the presence of a strong D, such as 'estos' (these) in (16), forces DP to be projected in the structure. Note that the presence of DP in the structure derives straightforwardly the impossibility of extraction out of Specific DPs: any movement from an element in the Spec of AgrP to the Spec of TopP (cf. (17)) will not meet the locality conditions on movement, since this movement would cross more than one maximal projection; that is, the whole element moves from the Spec of AgrP to the Spec of TopP.

Furthermore, due to Anti-Locality, the extracted element cannot land in the Spec of DP, since that would necessarily involve a second movement within the  $\omega$ -domain to escape out of the TopP (cf. (18)).



In short: The presence of DP in Specific DPs causes the wh-movements of PP arguments to violate the locality conditions on movement that elements within DPs must satisfy.

The line of analysis developed in this paper leads to propose that the definite article does not project DP in cases where extraction out of Definite DPs is possible (i.e., when an object is present in the Definite DP, see (5c) above).

This explanation is based on the assumption that there are two versions of the definite article in Spanish. The existence of two different definite articles in Romance has been proposed to account for the different properties of definite articles depending on the context (cf. Torrego (1987), Ormazabal (1991), Vergnaud and Zubizarreta (1992), Longobardi (1994), among others). According to these proposals, the presence of a weak version of the definite article is responsible for some atypical uses of the definite article such as (19):

- (19) a. El Pepe vino ayer  
The Pepe came yesterday  
b. Las cervezas que te bebiste anoche!  
The beers that CL (you)drank last night

Further evidence for this syntactic account comes from the example in (20). (20) shows that in cases where we need to place the definite article as the head of the DP projection, since no other position is available to host this element in the structure (the numeral filling the Agr head position) no argument can be extracted.

- (20) a. \*¿De qué cantante salieron publicadas las tres fotos  $t_{obj}$ ?  
Of which singer were published the three photos  $t_{obj}$



depending on their syntactic behavior. This division of determiners has been extensively used in subsequent literature on DPs (cf. Zamparelli (2000) for an extensive summary on this topic).

<sup>3</sup> Note that the analysis developed in this paper is also consistent with proposals that claim that weak Ds move (cf. Herburger (2000), Rochrs (2002), among others, on D movement). Nothing in my analysis depends on this assumption.

<sup>4</sup> Since the latter scenario will not arise in the cases I am discussing, for my purposes all movement within a Prolific domain is disallowed.

<sup>5</sup> The adoption of Manzini's (1994) Locality condition for Grohmann's (2000) proposal in the clausal domain raises several problems, as movements in the clausal domain appear to be able to cross more than one maximal projection. A possible way to accommodate Manzini's (1994) Locality condition in Grohmann's (2000) tripartite structure is to assume the possibility of multiple Specifiers in the clausal domain (On this issue see Chomsky (2001), who allows this option rather freely for at least some projections in the clausal domain). This option would allow very short movements in the clausal domain, which would respect Manzini's (1994) Locality. I leave a more detailed explanation of movement within the clausal domain for future research.

<sup>6</sup> Following Grohmann (2000), I assume here that the only possible phrasal movement in overt syntax is movement to a Specifier position. Adjunction can only be the result of base generation (see Grohmann (2000) for relevant discussion).

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# Japanese V-V Compounds as Doubly Headed VPs

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## 1. Introduction

A resultative construction consists of an activity verb and a result phrase. In this construction, the verb acquires a causative meaning and the other phrase has a result interpretation (see Hoekstra 1988 for more detailed descriptions). The following examples indicate that the category of the result-denoting phrase can vary from one language to another. In English, a result phrase is made up of an adjectival phrase (1a) or a prepositional phrase (1b). In serial verb languages, a result phrase can be an unaccusative verb (2), or a transitive verb (3). A resultative construction may also appear as a V-V compound as shown in (4).

- (1) a. John beat the goat **dead**.  
b. Mary wiped the dust off the **table**.
- (2) Ozo      gha      gbe      ewe      **wu**.  
Ozo      FUT      hit      goat      **die**  
"Ozo will strike the goat dead."      (Edo; Baker & Stewart (2002))
- (3) a Ma      I      qɔalen      **Ooa**      tsi.  
1sg      PROG      beat      **kill.PL**      3PL  
"I smashed them dead"      (≠Hoan; Collins 2002, 56)
- b. A      náki      hen      kfi  
3sg      hit      3sg      kill  
"He hit it dead."      (Saramaccan; Veenstra 1996, p4)
- (4) Taro-ga      Jiro-o      naguri-**korosi-ta**.  
Taro-NOM      Jiro-ACC      strike-**kill-PAST**  
"Taro killed Jiro by striking (him)"

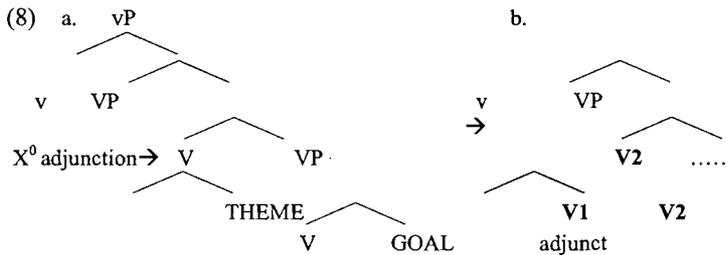
This variation is problematic for the traditional analyses of a resultative construction in which the result phrase is treated as the complement of the activity verb. For example, Hoekstra (1988) argues that an activity denoting



Nishiyama (1998) argues that the accomplishment result verb is the main verb in the resultative construction in Japanese. He then argues that the Japanese resultative construction has the reverse embedding pattern as schematized in (7).

(7) [v<sub>2</sub>P [v<sub>1</sub>P CAUSE ]RESULT]

I follow his proposal that the accomplishment verb is the main verb of the V-V compound, but I do not accept his assumption about the position of the activity (CAUSE) verb. Instead, I argue that the activity denoting verb is head-adjointed to the accomplishment denoting verb as illustrated in (8).



One immediate advantage of this analysis over Nishiyama's is that it easily extends to the resultative constructions in general. The activity denoting verb in English and Edo resultative construction can also be treated as being an adjunct on the phonologically null CAUSE verb which takes either a stative (in English case) or achievement (in Edo case) complement. This adjunction structure also reflects the interpretation of intransitive resultative constructions, such as *The dog barked Jon awake*, which is "the dog CAUSED him to become awake by barking. The CAUSE interpretation thus indicates the presence of a phonologically null CAUSE verb. In this analysis, the problem of the activity verb not lexically selecting the stative phrase does not arise. It is not the case that an activity verb can have either a lexically selected object or a result phrase, but an activity verb in a resultative construction is not in the position to select (or not select) the complement of the accomplishment verb.

The analysis of head adjunction makes a few predictions regarding the properties of the construction. As an adjunct on a head ( $X^0$ ), the activity verb cannot project its own phrase because an adjunct on a head should be a head. As an adjunct, moreover, the activity verb does not c-command the internal arguments. Consequently, the selectional relation between the manner denoting activity verb and the object may not hold. This prediction holds even when one takes a different view of theta role assignments. As the theta grid of the adjoined head would not percolate to the compound V node, thus, the selectional relation would not hold between the manner verb and the internal arguments.

In the next section, I focus on Japanese examples to illustrate the adjunct-like properties of the activity verb (V1). The same properties, however should be held by activity verbs in all the resultative constructions. In section 3, I argue that the difference between English and Japanese is that the English matrix verb (CAUSE, BECOME) is phonologically null. The Japanese matrix verb is phonologically overt (see. Marantz 2003, Harley 2001 for the use of manner roots in DM).

## 2. Properties of Japanese Resultative V-V compounds

In this section, I demonstrate that the V1 in a Japanese V-V compound is not a CAUSE verb (see below) which takes a stative, result-denoting complement. Two types of examples indicate this point. First, it is the V2 and not the V1 that determines the agentivity of the compound (section 2.1). This pattern contrasts sharply with the  $\neq$ Hoan data in Collins (2002) which indicated that in  $\neq$ Hoan, the transitivity of the result verb does not affect the transitivity of the compound. The following data thus shows that in Japanese, unlike in  $\neq$ Hoan, the result denoting verb is directly selected by the transitivity determining head (little *v*) of the compound. The second type of example indicates that when the selectional property of the V1 and the V2 differ, it is the selection of the V2 and not of the V1 that is respected (section 2.2). Then, I illustrate that the V1 is subject to some morphological restrictions because of its adjunct status (section 2.3)

### 2.1. THE aspect of compounds

The following examples indicate that the V2 determines the event structure of the compound. A V-V compound that denotes an accomplishment event has always an accomplishment V2, and a V-V compound that denotes an achievement event has an achievement V2. The event denotation of the predicates is shown in (9) with a time-frame adverbial. The compound is compatible with the time-frame adverbial *sanjikan-de* 'in three hours', which indicates that the compound denotes an accomplishment event (9a). The sentence with the V2 *kowashi* 'break (transitive)' as its main verb is compatible with the same time adverbial (9b), which indicates that the V2 denotes an accomplishment event like the compound. The V1, however is not an accomplishment verb as shown by the incompatibility of the time-frame adverbial in (9c).

(9) Compound = Accomplishment

- |    |          |           |                |                    |
|----|----------|-----------|----------------|--------------------|
| a. | Taro-ga  | isu-o     | sanjikan-de    | tataki-kowashi-ta. |
|    | Taro-NOM | chair-ACC | in three hours | pound-break-PAST   |
- “Taro broke the chair by pounding (on it) in three hours.”

V2 = Accomplishment

- b. Taro-ga isu-o sanjikan-de **kowashi-ta.**  
 Taro-NOM chair-ACC in three hours break-PAST  
 "Taro broke the chair in three hours."

V1 = Activity

- c. \* Taro-ga isu-o sanjikan-de **tatai-ta.**  
 Taro-NOM chair-ACC in three hours pound-PAST

In the examples above, it followed from any theory of resultative constructions that the combination of an activity verb and a result denoting phrase yields an accomplishment denoting compound. The examples below, however, indicate that this is not the case. In Japanese, the combination of an activity V1 and an achievement V2 yield an achievement compound. The progressive marker *teiru* on an accomplishment verb gives progressive interpretation (see McClure, 1995). The compound *obore-shin* 'drown-die' with the progressive marker only gives the resulting state interpretation, indicating that this compound denotes an achievement event and not an accomplishment event. Unlike in other resultative constructions, the activity verb in a Japanese resultative compound does not add a CAUSE meaning.

- (10) a. Hanako-ga shin-dei-ru.  
 Hanako-NOM die-PROG-PRES  
 "Hanako is dead." NOT "Hanako is dying"
- b. V1=Activity  
 Hanako-ga obore-tei-ru.  
 Hanako-NOM drown-PROG-PRES  
 "Hanako is drowning"
- c. Compound = Achievement  
 Hanako-ga obore-shin-dei-ru.  
 Hanako-NOM drown-die-PROG-PRES  
 "Hanako is dead (from drowning)."  
 NOT "Hanako is dying by drowning"

These examples indicate that the V1 does not add a process/causation meaning to the compound (see Nishiyama 1998, for more examples concerning the absence of an agent argument in transitive-unaccusative compounds.) For Japanese V-V compounds, we can conclude that the event structure of the V2 determines the event structure of the compound. The V1's inability to affect the event structure of the compound is straightforwardly accommodated if we assume that the V1 is an adjunct.

## 2.2. SELECTIONAL restrictions

The next set of examples gives additional support for the adjunct status of the V1. Unlike verbs in a resultative serial verb construction, the verbs in a Japanese resultative V-V compound may not share an object. (see Nishiyama 1998). The sentence in (11) indicates that the verb *shime* ‘strangle’ selects for an elongated object such as a neck, and not an animate (but non-elongated) object like chicken. The sentence in (11b) shows that the verb *koros* ‘kill’, on the other hand, selects for an animated object and not an inanimate object like a neck. The compound *shime-koros* ‘strangle-kill’ inherits the selectional restriction of the V2 and allows an animate object. An elongated inanimate object, *kubi* ‘neck’, in contrast, is not allowed as an object of this compound.

- (11) a. Hanako-ga \*niwatori-o/kubi-o shime-ta.  
 -NOM chicken-ACC/neck-ACC strangle-PAST
- b. Hanako-ga niwatori-o korosi-ta.  
 -NOM chicken-ACC kill-PAST  
 “Hanako killed the chicken.”
- c. Hanako-ga niwatori/\*kubi-o shime-korosi-ta.  
 -NOM chicken/neck-ACC strangle-kill-PAST  
 “Hanako killed the chicken by strangling (its neck).”

The next set of examples illustrates the same point. Although the verb *huk* ‘wipe’ normally selects for a surface, the compound with this verb as its V1 can take a non-surface argument as its complement. This again illustrates that the selectional restriction of the V1 can be ignored.

- (12) Taro-ga gomi-o huki-tot-ta.  
 -NOM garbage-ACC wipe-remove-PAST  
 “Taro removed the garbage by wiping (the table)”
- Cf. # Taro-ga gomi-o hui-ta.  
 -NOM garbage-ACC wipe-PAST

## 2.3. MORPHOLOGY

In most cases of resultative V-V compounds in Japanese, the two verbs match in transitivity, but sometimes they don’t (see Nishiyama 1998; Matsumoto 1996). In this section, I show examples that indicate that the two verbs must match in transitivity underlyingly. The surface mismatch, thus, I argue is due to morphological constraints. This assumption follows the arguments provided in Collins (2002). Since both verbs in a compound move to the same v head, the

verbs, in principle, should have the same transitivity feature which agrees with that of the little *v*.

Typical V-V compounds have the following patterns shown in (13) and (14). The V1 and V2 match in transitivity.

(13) Transitive-transitive

- a. *yaki-koros* 'kill by burning'  
burn(TR)-kill
- b. *oshi-ake* 'push open'  
push-open(TR)
- c. *ori-mage* 'bend'  
fold(TR)-bend(TR)

(14) Unaccusative-unaccusative

- a. *yake-shin* 'die from burning'  
burn(IT)-die
- b. *nagare-ochi* 'flow down'  
flow-fall
- c. *ore-magar* 'bend'  
fold(IT)-bend(IT)
- d. *tare-sagar* 'hang down'  
dangle(IT)-hang(IT)

However, the following examples are exception to this generalization

(15) Unaccusative- transitive

- a. *mai-age* 'whirl something up' (Matsumoto (27b), pp213)  
dance-lift
- b. *tare-sage* 'hang something down'  
dangle-hang(TR)
- c. *hane-kaes* 'bounce something back'  
jump-return(TR)

The key difference between these examples and those in (13) lies in the morphological make-up of the V1. While the V1 in (13) are monomorphemic and transitive, the V1 in (15) are monomorphemic and unaccusative. For these verbs to be transitive, they must have a transitivity suffix, and attaching a transitivity suffix to these V1s gives us ungrammatical forms, as shown in (16).

- (16) a. \**tar-asi-sage* (cf. tare-sage)  
dangle-TRANS-hang
- b. \**hane-sase-kaes* (cf. hane-kaes)  
jump-TRANS-return

Given these examples, I propose the following morphological constraint.

(17) V1 cannot contain a transitivizing morpheme.

This restriction can be derived from the locality condition in syntax. Assuming the left adjunction, the V2 is adjacent to the *v*, but the V1 is not. It is not controversial to assume that transitivizing morpheme realizes little *v*. Since the V1 cannot be adjacent to the little *v* in the compound context, it is impossible to attach a transitivizing affix to the V1.

The mismatching transitive-unaccusative pattern, on the other hand, follows from a purely morphological restriction. The examples in (18) indicate that the V1 is monomorphemic and transitive. The ungrammaticality of the forms in (19) indicates that these verbs in the V1 position are incompatible with the intransitivizing suffix *-(r)e*.

(18) Transitive- unaccusative

- |                        |                    |                            |
|------------------------|--------------------|----------------------------|
| a. <i>hari-tsuk</i>    | 'get pasted on'    | (Matsumoto (5-6) pp 203-4) |
| paste-get.attached     |                    |                            |
| b. <i>tsuki-sasar</i>  | 'get pierced'      |                            |
| thrust-stick           |                    |                            |
| c. <i>fumi-katamar</i> | 'get tramped hard' |                            |
| tramp-harden           |                    |                            |

- |                        |                  |
|------------------------|------------------|
| (19) a. * <i>har-e</i> | "past-INTRANS"   |
| b. * <i>tsuk-e</i>     | "thrust-INTRANS" |
| c. * <i>fum-e</i>      | "tramp-INTRAN"   |

Thus, the mismatching pattern in (18) is due to the absence of unaccusative forms of the V1s.

As mentioned in section 2.1, the transitive-unaccusative V-V compounds in (18) are not the same as a regular resultative serial verb construction. Nishiyama (1998) provides more tests to show that the compounds behave like unaccusative verbs, and not like transitive, accomplishment verbs.

(21) Progressive Test with (20)

- |                                                                   |  |
|-------------------------------------------------------------------|--|
| a. <i>Shiiru-ga hari-tsui-tei-ru.</i>                             |  |
| sticker-NOM paste-attach-PROG-PRES                                |  |
| "The sticker is pasted on" NOT "The sticker is getting pasted on" |  |
| b. <i>Hari-ga tsuki-sasat-tei-ru.</i>                             |  |
| needle-NOM thrust-stick-PROG-PRES                                 |  |
| "The needle is sticking out (of something)"                       |  |
| NOT "The needle is getting pierced (into something)"              |  |

To summarize, the morphological make-up of the mismatched compounds indicate that the mismatch pattern is due to morphological constraints. The unaccusative-transitive pattern results from the impossibility of little *v* (or a transitivizing affix) to intervene between the two verbs. The transitive-

unaccusative pattern arises when the transitive V1 is incompatible with a intransitivizing suffix.

### 3. Directions for Future Research: Serial Verb Construction

In the last section, I have provided arguments for the adjunct-ness of the V1 in Japanese resultative V-V compounds. In this section, I show that this adjunct analysis should extend to resultative constructions in general. In section 3.1, I show that the event structure argument and the selectional mismatch argument readily apply to Dutch (and most likely to English) resultative construction. In section 3.2, I provide my comments on resultative serial verb constructions in West African and Carribean languages.

#### 3.1. DUTCH (from Hoekstra 1988)

The verbs in Dutch resultative constructions show the same type of adjunct properties observed with the Japanese V-V compounds. In Dutch, auxiliary selection is used to identify unaccusative verbs. However, it has been noticed that some verbs select for different auxiliaries depending on the context. In (22a) the activity verb *vliegen* 'fly' selects for the auxiliary *hebben* 'be', like non-unaccusative verbs, but in (22b), it select for the auxiliary *zijn*. This alternation does not indicate that the verb is lexically ambiguous between unaccusative and non-unaccusative. Like the activity verb that forms a compound with an unaccusative verb in (10), the verb *vliegen* in (22b) is an adjunct on a phonologically null verb which takes the result denoting small clause *het vliegtuig te pletter* 'the airplane to pieces', and being an adjunct, the argument structure of the verb *vliegen* 'fly' does not affect the argument structure of the predicate.

(22) a. Reflexive Construction

dat het vliegtuig zich te pletter **heft** gevlogen  
that the airplane itself to pieces has flown  
'that the airplane crashed.'

b. Resultative Construction

dat het vliegtuig te pletter **is** gevlogen  
that the airplane to pieces is flown  
'that the airplane crashed.'

#### 3.2. SERIAL verb constructions

Resultative serial verb constructions have some properties suggesting that the head adjunction analyses of the activity verb applies to these constructions. For example, in transitive-transitive serial verb languages such as Saramaccan, it has

been argued that the result denoting verb (V2) has to be transitive in a resultative serial verb construction. This may suggest that transitive V2 is necessary to license an external argument. Resultative serial verb constructions, however, differ from Japanese resultative V-V compounds and the Dutch resultative construction. For serial verb constructions, object sharing is necessary. This is quite puzzling that the selectional restrictions of the activity verb can be ignored in V-V compounding and AP/PP constructions, but not in a serial verb construction. However, I have no solution to this puzzle.

#### 4. Conclusion

In this paper, I have argued that the traditional mechanism of event selection cannot adequately account for the various types of resultative constructions. Instead, I proposed that all the activity verbs in a resultative construction are head adjoined to the CAUSE (or little *v*) head. This analysis is superior to the traditional analysis of Japanese resultative V-V constructions (such as Nishiyama 1998), and event selection (of Hoekstra 1988) for European languages because the absence of selectional relations between the activity verb and the result phrase is captured by using the property of adjuncts. I have focused on the Japanese examples to illustrate this point. In Japanese V-V compounds, when the selectional properties of the V1 (activity verb) and the V2 (accomplishment verb) differ, the selectional restrictions of the V1 are ignored. This is expected in an adjunction structure since V1 is a mere adjunct while the V2 is the main verb. I have extended this analysis to AP/PP resultative constructions.

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# Grammaticalization as Economy: Late Merge Causing Linguistic Change

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## 1 Introduction

Within recent Minimalism, merge and move are both used in the construction of phrase markers but merge "comes `free'" (Chomsky 2001: 3). This means merge is preferred over move as a speaker constructs a sentence. Such an economy principle should also guide linguistic change and it does in that, as elements lose lexical meaning, they are merged higher. Late Merge can actually be seen as the driving force behind grammaticalization: it `explains' why lexical elements lose their meaning.

Kayne (2000) suggests that prepositions such as `of in French are merged outside the VP. This is compatible, within recent Minimalism (e.g. Chomsky 1995: 316, 348, 378; 2001: 3), with an economy principle, namely (1):

1. Late Merge: Merge as late as possible.

The intuition behind this principle is that fully lexical words such as Ns and Vs are merged first since they don't always need to move overtly. Grammatical words such as auxiliaries and prepositions are `needed' later in the derivation and therefore either moved there or merged late. In this paper, I examine how Late Merge needs to be formulated more precisely to account for the frequent head to head changes throughout the history of English.

Some instances of grammaticalization as a change to a higher position are given in table 1. C and I can be split into finer layers, and an I moving to I would imply something in ASP moving to the higher T (% means unattested):

|     |                               |                 |     |       |                          |
|-----|-------------------------------|-----------------|-----|-------|--------------------------|
|     | I                             | C               |     | I     | C                        |
| N > | %                             | <i>till/and</i> | D > | %     | ?                        |
| V > | modal/ <i>saw</i>             | 'say'           | I > | modal | <i>to</i>                |
| A > | MP/'then'                     | <i>so/yet</i>   | C > | %     | <i>that</i> <sup>1</sup> |
| P > | <i>on/aan/hr</i> <sup>2</sup> | <i>for/like</i> |     |       |                          |

Table 1: Grammaticalization as Late Merge

Space doesn't permit my going into all of these. Section 2 examines two instances where a verb changes to a higher position. Since the verb had to move to this higher position to check tense (or from where its tense needed to be checked via AGREE), Late Merge just eliminated the movement part and the verb came to be base generated in the higher position. Roberts & Roussou (1999) look at modals in a similar way, and I add perception verbs. In section 3, I look at prepositions changing from lower to higher positions. This can also be seen in terms of Late Merge.

## 2 From V to AUX

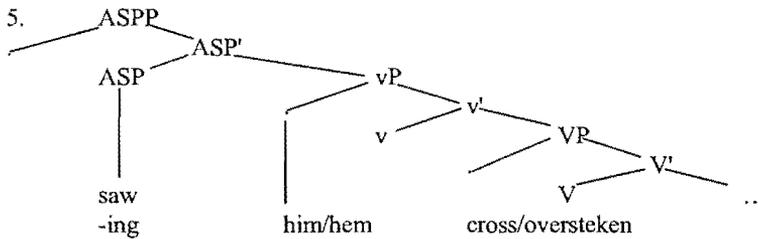
This change is well-known, e.g. Roberts (1993) and Lightfoot (1979), and not just in Indo-European. Chinese aspect markers such as *le* have grammaticalized from verbs (e.g. Sun 1996: 85; 178). I'll examine two cases, the perception verb (hence, PV) *saw* and the deontic modals.

### 2.1 Saw

Evidence that *see/saw* in English is no longer a regular V is that it has reduced possibilities as to its complement. Thus, the complement in (2a) has to be perfective, as the impossibility of a present shows in (2b). Instead (3) is used. This is unlike the situation in the other Germanic languages, as Dutch shows in (4), the translation of (2):

2.
  - a. I saw him cross the street.
  - b. \*I see him cross the street.
3. I see him crossing the street.
4.
  - a. Ik zag hem de straat oversteken.
  - b. Ik zie hem de straat oversteken.

The structure I argue for is (5):



Modern English has two options for ASP: either perfective *saw* or imperfective *-ing*. If ASP is perfective, *cross* is dependent on that. This use of *saw* is evidential and it is not surprising that it occurs only in the past. Abraham (1998) argues that "evidentiality is ... often triggered by the perfect or perfectiveness". Comrie (1976: 108-110) argues that the perfect is typical for the inferential evidential, not the direct evidence one.

The evidence that *saw* in English is no longer a regular V is many-fold. One is that it has reduced possibilities as to its complement, e.g. no stative, as in (6) and (7), no *have* in (8), and no passive in (9). This is unlike the *see* that is not grammaticalized, as in (10):

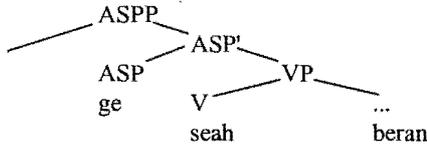
6. \*I saw you be/being tall.
7. \*I saw him know/knowing the answer.
8. \*I saw him have crossed the street.
9. \*He was seen leap across the stage.
10. Seeing her be so healthy is a pleasure.

In Old English (OE), the situation is unlike that in (2a), and infinitival complements do occur with an imperfective interpretation, as in (11):

11. *ða of wealle geseah weard Scildinga ... beran ofer bolcan beorhte randas*  
Then on wall saw guardian of-Shieldings ... being-carried over gang plank  
bright shields, Then from the wall, the guard of the Shieldings saw bright  
shields being carried over the gang plank'. (Beowulf 230-1)

So, OE *seah* is a regular V and often it is prefixed with *ge*, an indication of aspect, as in (12):

12.



In Middle English (ME), *ge-* is lost and *saw* can move to ASP in accordance with Late Merge. However, it 'competes' with *to*, *ing*, and the past participle, as in (13) and (14) from Shakespeare:

13. I saw her coral lips to move. (Shrew I i 175)  
 14. to see me thus transformed to a boy (Merchant II vi 39)

So, *saw* is not in ASP yet. (13) and (14) are frequent from later ME on, as in (15) and (16), and especially in the 16th and 17th centuries:

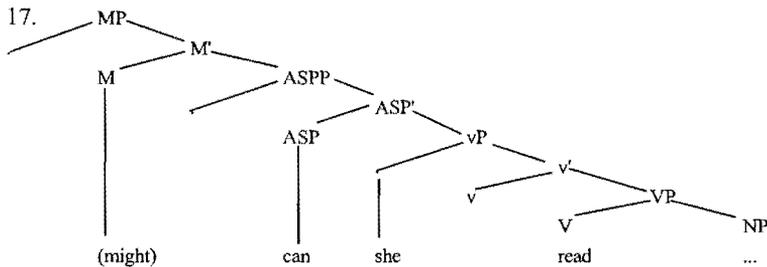
15. Whanne God had seen the erthe to be corrupt. (Wyclif, Gen Vi 12)  
 16. You dwell, (said he,) in the City of Destruction, ... I see it to be so.  
 (Bunyan, Pilgrim's Progress 12/11)

In OE, prefixes such as *ge* and *for* on the verbs determine perfectivity. As the prefixes disappear, *-ing* and *to* are reanalyzed as imperfective and for a while the past participle, as in (14), is a perfective. *Saw* competes with all of these for the ASP position.

According to Late Merge, the change from V to ASP is expected. In cases where *saw* is merged with another verb, the argument structure of that other verb is primary. Since *saw* would have to move to check tense anyway, it can be generated in ASP, as in (5), rather than in the VP and then move later.

## 2.2 Modals

A contemporary analysis is given in (17), following van Gelderen (2003), but with the TP left out:



One might ask what modals have in common with aspect? In Spanish, Yagua (Payne 1995: 68), and English, the perfective form ends up expressing obligation, as in *ought to*, derived from *agan* 'to have' and *have to*. I argue that (deontic) mood and aspect are mutually exclusive: either of the two is expressed in ASP.

Evidence for (17) can be found in complementation patterns. Thus, deontic modals, as in (18) and (19), cannot have a perfective or imperfective complement. This is indicative of their not having a full ASPP complement. Epistemic modals, since they are higher in the tree, can have such complements, as is shown in (18) and (19):

18. \*I can have read that book (deontic and perfective).  
 19. \*I can be swimming (deontic and progressive).  
 20. He must have read that letter.  
 21. He must be looking for that letter.

A second piece of evidence is that ordinarily *have* and a participle indicate present relevance with the ungrammatical absolute past interpretation in (22) as a result. After a modal, as in (23) and (24), *have* is grammatical with a past tense interpretation, however. In addition, *have* is always a clitic after a modal and has been since Late Middle English. If the modal occupies ASP and *have* cannot, *have* is a past tense marker in T, with the modal moving to T:

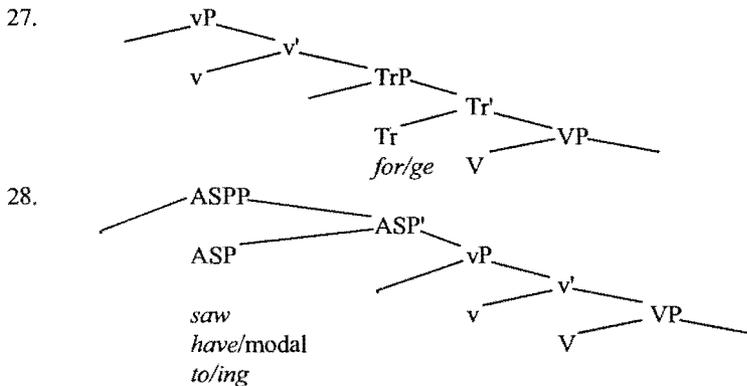
22. \*I have made him ill yesterday.  
 23. You should've made him ill yesterday.  
 24. *it xuld a be seyð* 'It should have been said'.  
 (PL, #131 a1449 Margaret Paston)

How modals change from verb to auxiliary has often been discussed, but I make it more precise by arguing deontic modals are in ASP. A less frequently cited fact about OE modals that can be used as evidence is that modals often have complements with a prefixed *ge*, as in (25):

25. *Swa sceal geong guma gode gewyrcean*, So shall young man good-DAT accomplish (*Beowulf* 20)  
 26. *þæt ic sænæssas geseon mihte*, that I sea-bluffs see might (*Beowulf* 571)

If the modal is a V, one expects it to appear with a *ge*-complement. Once the modal comes to occupy ASP, it no longer has that complement possibility.

Putting this change in terms of Late Merge, the modal in OE is probably a *v*, and becomes ASP, as in (28). The reason behind the change is that the modal needed to move anyway to check features. Without going into this more, (27) to (28) shows inner aspect (here Tr) changing to outer aspect (here ASP):



### 3 From P to I to C

The change from P to I to C (and its finer layers) is different from that of V to AUX since *for* and *to* do not typically move to check features. It is therefore not straightforwardly 'merge over move', but just Late Merge. In 3.2, I show there is some evidence that there is movement between the lower and the higher position before the preposition is finally merged high.

#### 3.1 *For*, from P to C

*For* changes from location, to causation, to irrealis marker, as in (29) to (32):

29. *þæt he for eaxlum 3estod*,  
 that he before shoulder stepped,  
 'That he stood before him?'. (*Beowulf*, 358)  
 30. *for werefyhtum ... ond for arstafum usic sohtest*,

- for fighting ... and for support (you) us sought,  
 'You wanted us for fighting and support?. (*Beowulf*, 457-8)
31. *forþan ic hine sweorde swebban nelle*,  
 therefore I him sword-with kill not want,  
 'Therefore I don?t want to kill him by sword?. (*Beowulf*, 679)
32. *moche he lofde echn(e) cniht. þat lofde for to segg(e) riht*,  
 'Much he loved every knight who loved to say the truth'. (*Bruot*, Otho,  
 5523)

How is it possible to formulate an account for these changes using Late Merge? I argue that, since the preposition is outside the core, its meaning can be broader (compatible with its semantics). Therefore, in (33), *for* is added late, and (once structural Case becomes current), it can attract an NP to it in C:

33. for [Beowulf left Hrothgar]

Evidence for this is that in ME preposing becomes very frequent, as in (34) to (36):

34. *for mine lond 7 for mine feo. mine eorles fulle to mine cneo*,  
 for my land and for my property my earls fell to my knees'.  
 (Caligula 1733-4)
35. *þu 3ef þeseluēn for me to lese me fra pine*, 'you gave yourself to me to  
 release me from my pain'. (*Wohunge* 88-9)
36. *for cuð hit is me nouþe*, for known it is (to) me now. (Caligula 1727)

Many of these are ambiguous as to what the preposition means, e.g. in (35), *for* could be a marker of benefit or a complementizer.

The preposition *for* comes to be generated in a higher position and attracts an NP. This is accounted for by Late Merge.

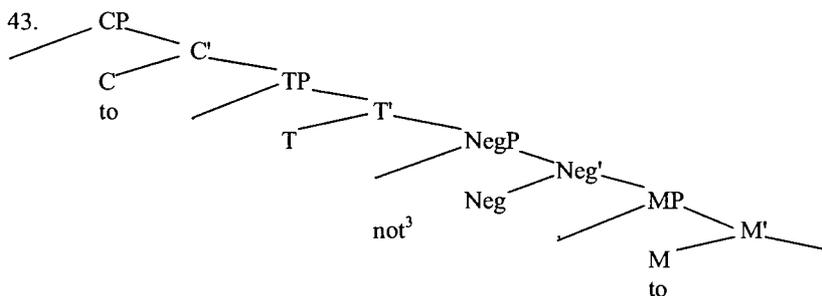
### 3.2 *To as C*

I will now show that *to* in English is either in M or in C, but that prescriptive rules prevent it from becoming frequent in C, as expected from Late Merge. (37) to (39) present instances where *to* occurs before *not*, and (40) to (42) where it occurs after *not*. The examples are from the British National Corpus, BNC (<http://thetis.bl.uk>), a 100-million word corpus:

37. It would be unrealistic **to not** expect to pay higher royalties (BNC-CSS 245)
38. He professes **to not** be ready for that (BNC-CGB 1649)

39. to train the dog **to not** be afraid of people (BNC-K54 6582)  
 40. It would be unrealistic **not to** show them to be human (BNC-CBF 14312)  
 41. He professes **not to** want the job (BNC-ABJ 970)  
 42. We'll train you how **not to** 'blow it' (BNC-CFV 2052)

These sentences are syntactic minimal pairs. I will argue that the position of *to* in the first set is in C and in the latter in M, as in (43):



The reason the lower *to* is not in ASP is that (44) occurs. *To* is in ASP in earlier stages, as in (13) above:

- 44 a. It is a pleasure not to be going.  
 b. It is a pity not to have gone.

Evidence that the lower *to* is in M, and not in T, is the frequent occurrence of *to not to*, as in (45) and (46), in the corpora, but not *to to not*. This shows *to* occupies M and moves to C without deleting the early copy. If *to* were ever in T, the latter would be expected:

45. - as a request to not to -. (CSE-WH97A)  
 46. This is to try to not to overturn the ... (CSE-WH97A)

Native speakers confirm that these sentences are pretty grammatical. They also show that *to* actually **moves** from M to C since in (45) and (46) its copy is not deleted.

The evidence that the higher *to* is in C is that *for* is in complementary distribution with pre-negative *to*, as (47), (48), and the non-occurring (49) show:

47. it would be inconsistent for Thatcher not to do this. (BNC-AA9 753)

48. she prefers for me not to stay on the phone for very long she does.(BNC-KPY 150)
49. %... for Thatcher to not do this.

Since English infinitivals are not split (van Gelderen 2001), the complementarity shows that either *for* or *to* in the *to not* sentences are in C.

Another piece of evidence is that if *seem* is C-less, it should not have the *to not* sequence, and this is indeed the case. For instance, in the BNC, forms of *seem* with *not to*, as in (50), occur frequently (namely 249 times), whereas there is one hesitant *to not*:

50. At first, the darkening official mood seems not to have troubled Prokofiev (BNC-ABJ 524)

If CP and vP are phases (Chomsky 2001) that can be deleted but TP (and ASPP) cannot, it fits that vP is deleted in (51) if *to* is in M. (52) is ungrammatical because *to* is in C, and ASPP or TP is deleted, not phases:

51. because they desperately wanted not to realize-it. (BNC-A69 1473)
52. \*because they desperately wanted to not realize-it.

The split infinitive, i.e. *to* in C, is relatively infrequent with negatives. For instance, in the BNC (the written and spoken part), there are 17381 instances of *not to* and 93 of *to not*, which means .54% is split. In just the spoken BNC, these figures are 1164 and 43, which means that 3.6% is split. In the (American) Corpus of Spoken Professional American English ([www.athel.com](http://www.athel.com)), there are 381 instances of *not* preceding infinitival *to*, and 59 of *to not*, indicating that 13.4% of negative infinitives are split. This infrequent use of *to not* goes against the predictions of Late Merge. What I'd like to argue is that the injunction against split infinitives is the strongest of such rules in English (equaled perhaps by that against double negation) and that this prescriptive rule stops *to* from being generated in C.

#### 4 Conclusion

There are two types of Late Merge: (a) a V needs to merge and move, so it is simpler to just merge late; and (b) P doesn't need to move but can wait till late and is then reanalyzed. This accounts for the classical grammaticalization of heads to higher heads. There is also evidence from (45) and (46) that prepositions move in the intermediate stage.

## Notes

<sup>1</sup> Fin to Force, see van Gelderen 2001.

<sup>2</sup> Examples from Dutch, English, and Old Egyptian show that the preposition 'on' can come to be used for durative aspect.

<sup>3</sup> Unlike modals and auxiliaries, *to* doesn't cliticize to the negation. This means the negation has to be a specifier of NegP in (43) since otherwise it would block movement of the head *to* to C. Evidence for this movement is given below.

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# Causation and Intentionality

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## 1 Introduction

One of the characteristic features of formal generative grammar is the existence within its explanatory apparatus of elements that are non-overtly realized. This article investigates apparently unrelated phenomena in Italian that call for the existence of a tacit intentional predicate at the semantic level. I assume a neo-Davidsonian framework arguing that predicates contain event arguments and sentences existentially quantify over events and event complexes formed of sub-events.

A piece of data, at first observed in English, considers the modification with the adverb *quasi* (almost), which creates ambiguous sentences when the event described is an intentional action (section 2). I claim that the ambiguity is the effect of the following combination of factors. First, the meaning of *quasi* is a binary predicate true of an event and an intensional entity (property or proposition). Second, the logical form of causative sentences with an intentional subject contains a tacit intentional predicate. The third and final factor is the semantic scope of the existential operator quantifying over events and the intension operator provided by the second argument of *quasi*.

Another phenomenon is a contrast between agent subjects vs. causer subjects with the *fare* periphrastic causative construction (make+VP) (section 3). Some conditions on the causal dynamics of the situation described by this causative construction, hold only when the subject is intentional. These conditions are the result of the speaker's fine-grained conception of the event triggered by the presence of a tacit intentional predicate. Similarly, the presence of an overt intentional predicate activates the conception of fine-grained causal dynamics affecting the entailments among sentences.

While Italian has only indirect evidence for the grammatical difference between volitional agents and non-volitional causers, there are some languages that overtly manifest this distinction. In section 4 I will report some data from Marathi suggesting that the covert distinction in Italian is plausible on comparative ground.

## 2 ‘Quasi’ and Intentionality

### 2.1 Ambiguity with ‘quasi’

It has been noticed that the English adverb ‘almost’ creates different readings for a sentence in which it is inserted (McCawley 1973; cf. also Dowty 1979). The Italian counterpart of ‘almost’, *quasi*, has a similar behavior. Sentence (1), for example, has at least two readings:

- (1) Gianna ha quasi rotto il vaso  
 Gianna has almost broke the vase  
 “Gianna almost broke the vase.”<sup>1</sup>

The first reading is one where Gianna was about to do something that would have broken the vase, but she did not do so. In the second reading Gianna did something that almost broke the vase, but the vase did not break. The subject in (1) is an intentional agent. The two different readings are not available, however, when the subject is an unintentional, inanimate subject (with no difference if the causer is an object, like a rock, or an event, like the wind), as sentences (2 a, b) illustrates:

- (2) a. *La pietra ha quasi rotto il vaso*  
 “The rock almost broke the vase.”  
 b. *Il vento ha quasi rotto il vaso*  
 “The wind almost broke the vase.”<sup>2</sup>

The only available reading for these sentences is one in which the rock or the wind did something that almost broke the vase, but the vase did not break. The reading where the rock or the wind was about to do something that would have broken the vase, but they did not do it, is missing. Interestingly, when the subject is an animate unintentional causer, like in (3), the only reading available is the one where Gianna did something that almost broke the vase, but the vase did not break:

- (3) Gianna accidentalmente ha quasi rotto il vaso  
 “Gianna accidentally almost broke the vase.”

An animate unintentional causer thus parts with an inanimate causer with regard to the availability of the readings in question.<sup>3</sup>

#### 2.1.1 *There must exist an event*

The use of *quasi* (but what I am claiming here is valid for ‘almost’ as well) is licensed exclusively by the occurrence of an event involving the sentence’s

arguments. The sole existence of a situation where the event denoted by the VP might have happened is not sufficient. Thus, it would be improper to use sentence (4), and its English translation as well (see (Higginbotham 1989)), for the situation where a banana skin thrown very close to John would have made John fall, if John had stepped on it. Something must have happened to John (e.g. he tottered):

- (4) John e' quasi caduto  
 John is almost fallen  
 "John almost fell."

It would be improper to use sentence (2) as well to describe a situation where a rock is on the edge of the roof, very likely to fell on the vase underneath, unless, for example, the rock fell close to the vase. Finally, imagine the situation where Gianna is a compulsive breaker during one of her crises. It is very likely she is going to break the vase, but she does not. It would be improper to utter (1), unless we know that she intended to break the vase and she refrained. It is clear on the basis of these data that a simple modal account as, for example, the one proposed by Dowty (1979) following (Sadock 1979), is not sufficient. The existence of events is a requirement for licensing the use of *quasi*.

The data on the ambiguity of *quasi* considered in this section will be accounted for by considering the meaning of the modifier (subsection 2.2), the logical forms of causation sentences with intentional subject and with unintentional subject (subsection 2.3) and the compositional semantics of *quasi* when in construction with causative predicates (subsection 2.4).

## 2.2 The meaning of 'quasi'

I will develop and slightly modify a proposal contained in (Higginbotham 1989) for an analysis of the meaning of 'almost', a modification that takes into consideration the necessity of an event as shown in the previous subsection. *Quasi*, like 'almost', is a binary predicate taking two arguments ( $x$ ,  $y$ ) respectively true of an object and an intensional entity (either property or proposition). Its meaning can be paraphrased as 'x is a thing close to (having) the property or (verifying) the proposition y'.

When *quasi*, or 'almost', modifies a causative predicate, as in the sentences I have considered, the thing identified with the first argument  $x$  of *quasi* is an event  $e$ , and the second argument  $y$  of *quasi* is identified with the property or proposition described by the semantic content expressed by the predicate. The semantic composition is theta identification of arguments, (Higginbotham 1985, 1989: 481). The argument structures of *quasi* and the VP are given in (5) and (6) respectively, and the lines among them are intended to illustrate the theta identification operations:

- (5)  $quasi(x, y)$ .
- (6)  $VP(z, e)$ .

In (7a) semantic composition as illustrated in (5) and (6) is a product of theta identification of the event  $e$  of the VP with the first argument  $x$  of *quasi*, and of the property  $\hat{\lambda}e'$  VP ( $c, e'$ ) ( $c$  being a constant) described by the semantic content expressed by the VP with the second argument  $y$  of *almost* (syntactically, the AdvP projected by *quasi* is in V'). Thus, if the VP is, for example 'fell', the property  $\hat{\lambda}e'$  VP ( $c, e'$ ) is the property of falling. The form in (7a) thus gives the case in which the argument  $y$  of *quasi* is a property and it is read as (7b):

- (7) a. almost ( $e, \hat{\lambda}e'$  VP ( $c, e'$ )).  
 b. some event  $e$  is close to being an event described by the VP.

When the event  $e$  is identified with  $x$ , as in the previous case, but the proposition  $\hat{\exists}e'$  (VP ( $c, e'$ )) is instead identified with  $y$ , semantic composition of the relevant arguments in (5) and (6) results in the form in (8a) (syntactically, the AdvP is in Infl', where the event argument  $e$  of the VP undergoes existential closure). It gives the case in which the argument  $y$  of *quasi* is a proposition and it is paraphrased like (8b):

- (8) a. almost ( $e, \hat{\exists}e'$  VP ( $c, e'$ )).  
 b. some event  $e$  is close to verifying the proposition given by the IP.

In this subsection I have illustrated the meaning of *almost* as a binary predicate true of an event and an intensional entity, either property or proposition. We will see how this account will explain the ambiguity (or lack of it) of the targeted sentences once I will consider their logical forms and their composition with the meaning of *quasi* in the following subsections.

### 2.3 The logical forms for the different readings

When the logical form for sentences (1)-(3) contains only one event, as with the case of the sentences with an unintentional subject, only one reading is possible. When, on the other hand, the logical form contains an event complex formed of two sub-events, as in the case of the sentence with an intentional subject, two readings are available. The event complex relevant in this discussion is an ordered pair  $(e, e')$  formed of an event  $e$  (an intention) and its direct act  $e'$ . With 'direct act' I mean what usually goes under the name of 'direct causation', i.e.

the act performed by the very same person who has the intention of VP, thus not an act performed by some other person according to the subject's intention. In sentence (9a), for example, the sub-event  $e$  is Gianna's intention of breaking the vase and the sub-event  $e'$  is the physical act Gianna performed to break the vase. The sub-event  $e'$  cannot be the act performed by someone whom, for example, Gianna ordered to break the vase:

- (9) a. Gianna ha rotto il vaso  
 "Gianna broke the vase."  
 b.  $\exists e \exists e' \{ \text{Intend}(\text{Gianna}, \wedge \exists e'' \text{ break}(\text{PRO}, \text{the vase}, e'')), e) \& [\text{break}(\text{Gianna}, \text{the vase}, (e, e'))] \}$ .

The logical form for sentence (9a), represented in (9b), contains the predicate 'Intend', denoting a relation between an individual, a proposition and an event. In (9b) the event complex  $(e, e')$  is given by Gianna's intention of breaking the vase and her act in breaking the vase, and the predicate 'Intend' is a relation between Gianna, an individual, the proposition  $\wedge \exists e''$ : break (PRO, the vase,  $e''$ ) of Gianna breaking the vase, and the event  $e$ , Gianna's intention. The logical form for sentence (10a) given in (10b) contains neither the event-complex nor the predicate 'Intend':

- (10) a. La pietra ha rotto il vaso  
 "The rock broke the vase."  
 b.  $\exists e [\text{break}(\text{the rock}, \text{the vase}, e)]$ .

When Gianna acts unintentionally, the logical form for sentence (9a) is similar to the one given for (10a), since in such a situation no event exists that is Gianna's intention.<sup>4</sup>

I will turn now to the logical form for the different readings for sentences (1)-(3). I will first introduce the logical form for the only possible reading for sentence (2), which describes the situation where the rock did something that almost broke the vase, but the vase did not break. What I claim for sentence (2) extends to sentence (3) as well, given that both contain an unintentional subject. This form is given in (11a) and paraphrased as (11b):

- (11) a.  $\exists e \{ \text{almost} [e, \wedge \lambda e' \text{ break}(\text{the rock}, \text{the vase}, (e'))] \}$ .  
 b. There is an event  $e$  that is close to being an event of the rock breaking the vase.

In (11a) there exists only one event, argument of the VP and first argument of 'almost', which takes as its second argument the property of the rock breaking the vase. The form for sentence (1) with the reading where Gianna did

something that almost broke the vase, but the vase did not break, is given (12a), paraphrases as in (12b):

- (12) a.  $\exists e \exists e' \{ \text{Intend}(\text{Gianna}, \wedge \exists e'' \text{ break}(\text{PRO}, \text{the vase}, e''), e) \ \& \ \text{almost} \ [((e, e'), \wedge \lambda e'' \lambda e''' (\text{break}(\text{Gianna}, \text{the vase}, (e'', e'''))))]\}$ .  
 b. There are two events  $e$  and  $e'$ ,  $e$  is Gianna's intention of her breaking the vase,  $e'$  is Gianna's act based on her intention, and the event complex  $(e, e')$  is close to being an event of Gianna breaking the vase.

In (12a) there exists two events forming the pair  $(e, e')$ , argument of the VP and first argument of 'almost', which takes as its second argument the property  $\wedge \lambda e'' \lambda e''' (\text{break}(\text{Gianna}, \text{the vase}, (e'', e''')))$  of Gianna breaking the vase. Finally I will consider the logical form for sentence (1) with the reading where Gianna was about to do something that almost broke the vase, but she did not. This reading corresponds to what is usually called the sentential scope of the sentence. (13a) gives the form, and (13b) its English paraphrase:

- (13) a.  $\exists e \{ \text{Intend}(\text{Gianna}, \wedge \exists e'' \text{ break}(\text{PRO}, \text{the vase}, e''), e) \ \& \ \text{almost} \ [e, \wedge \lambda e'' \exists e' (\text{break}(\text{Gianna}, \text{the vase}, (e'', e')))]\}$ .  
 b. There is an event  $e$  that is Gianna's intention of breaking the vase and this event  $e$  is close to verifying the proposition that there is an event of Gianna breaking the vase.

In (13a) there exists only one event, the intention  $e$ , as the wide scope of the existential operator quantifying over it shows. The existential operator quantifying over the event  $e'$  corresponding to Gianna's act is in the scope of the intension operator, which creates the proposition that there is an event of Gianna breaking the vase.

As observed in 2.1.1, the existence of an event is essential to license modification with *quasi*. This requirement is represented in the logical forms of the possible readings for sentences (1)-(3), in each one of which the existential quantification over at least one event has wide scope. The sentential scope reading for sentence (2) is not, as we saw, available. The reason for the missing reading will become evident as soon as we consider the logical form it would have, were it possible, in (14):

- (14)  $\exists? \text{ almost} \ [?, \wedge \exists e \text{ break}(\text{the rock}, \text{the vase}, (e))]$ .

The question marks in (14) mean to capture the lack of an event to existentially quantify over, and to identify with the first argument of *quasi*, which according to the meaning of *quasi*, needs to be an event. The existential quantification over the only available event argument  $e$  in (14), needs to be in the scope of the

intension operator to deliver the sentential scope. There is no event complex ( $e, e'$ ), in other words, where  $e$  can be existentially closed and identified with the argument  $x$  of *quasi* and the existence of  $e'$  is in the scope of the intension operator to constitute the proposition identified with argument  $y$  of *quasi*. The meaning of *quasi* is therefore not satisfied.

On the basis of ambiguity phenomena with *quasi* I have claimed that there exists a tacit intentional predicate. We would expect that this covert predicate would manifest in other areas of the language. This is indeed the case. One of these areas is constituted by some phenomena with the Italian periphrastic causative *fare*, which I will describe in the next section. These phenomena appear only when the subject of *fare* is an intentional agent, and do not occur when the subject is an unintentional causer.

### 3 Agent vs. Causer with the Italian Periphrastic Causative 'Fare'

An intentional subject of *fare* generates special conditions on causation, conditions that do not exist when the subject is unintentional. These conditions concern the force dynamics of the situations described by the sentences containing the periphrastic construction. I claim that what triggers these conditions is the presence of the tacit intentional predicate introduced in section 2 in combination with the contrastive nature of *fare* with respect to the lexical causative. In the following sentences I exemplify the *fare* construction with an intentional agent (15), with a causer (16), and with an unintentional agent (17):

- (15) Gianna ha fatto rompere il vaso  
Gianna has made break the vase  
"Gianna made the vase break."
- (16) La pietra/il vento ha fatto rompere il vaso  
The rock/the wind has made break the vase  
"The rock/the wind made the vase break."
- (17) Gianna ha fatto accidentalmente rompere il vaso  
Gianna has made accidentally break the vase  
"Gianna accidentally made the vase break."

The relevant interpretation of these sentences is one where the subject of *fare* breaks the vase herself/itself.<sup>5</sup> Gianna or the rock, for example may have broken the vase by pushing it off the edge of the table, or by magic force. There is a particular type of situation, however, that can be described by sentences (16) and (17), but not by sentence (15). This type of situation is one where the subject of *fare*, for example, broke the vase by hitting it in a continuous mechanical way.

Continuous mechanical causation occurs whenever the agent mechanically causes the event denoted by the embedded VP by contact at time  $t$ , and the vase breaks at time  $t$ . Notice that none of the causal dynamics that are possible when the subject of *fare* is intentional conform to this definition of continuous mechanical causation. When Gianna pushes the vase off the edge of the table to break it, the pushing occurs at time  $t$ , and the vase breaks at time  $t'$  as a direct result of the vase falling. In the case of the use of magic, there is no mechanical causation involved. Hence, it seems that the ban on continuous mechanical causation emerges only when *fare* has an intentional subject. This phenomenon is highly widespread, being characteristic of the *fare* construction when it embeds an unaccusative, or alternating unaccusative predicate.<sup>6</sup>

I believe the tacit intentional predicate revealed by the ambiguity with *quasi*, in combination with the contrastive nature of the periphrastic causative, renders causal dynamics and the discrimination among different types of them relevant, similarly, to some extent, to what happens when an overt intentional predicate is present. It is in fact characteristic of an intentional predicate to manifest causal dynamics that are otherwise not emerging.

Typically, sentence (18) entails (19), since a peanut butter-jelly sandwich is made of peanut butter, jelly and bread:

(18) Gianna ate the peanut butter-jelly sandwich.

(19) Gianna ate the peanut butter, the jelly and the bread.

If, however, the predicate 'eat' is embedded under an overt intentional predicate, the entailment is lost, as sentences (20) and (21) show:

(20) Gianna tried to eat the peanut butter-jelly sandwich.

(21) Gianna tried to eat the peanut butter, the jelly and the bread.

Sentence (20) does not entail sentence (21), since they can be taken to report different intentions and therefore expectations on how Gianna will behave, how she imagines the task before her, and how she divides it up into events. The intention reported by (20) for example, might be eating the sandwich as a whole. (21), instead, could be taken to report Gianna's intention of eating the peanut butter separately from the jelly, and finally the bread. Now, if we reconsider sentences (18) and (19) and focus on Gianna's intentions, the tendency is to describe Gianna's action in a way faithful to what she tried to do, as with sentences (20) and (21), with the difference that Gianna not only tried to perform the tasks expressed by the predicates, but also succeeded in doing so.

To summarize this section, the presence of a tacit intentional predicate in combination with the contrastive nature of the Italian periphrastic makes a fine-

grained causal dynamics of events relevant, in a guise similar to what an overt intentional predicate or focus on the subject's intention will do. We have until now presented language internal arguments for the existence in Italian of a tacit intentional predicate. As we will see in the next section, this distinction between intentional and unintentional causation is overt in other languages.

#### 4 Some Cross-linguistic Data

Various languages display different ways to distinguish between an intentional agent and an unintentional causer. Two different ways have been brought to my attention. Tagalog and Malagasy, two Western Malayo-Polynesian languages, distinguish between two different causative morphemes (Travis (2000)). In Marathi, an Indo-Aryan language, an intentional agent is the subject of the sentence and takes the ergative agentive case in the past, while an unintentional causer cannot be the subject and it is realized as an oblique phrase. In this paper I will illustrate the second language by discussing Marathi as described in (Bresnan ms.).

Marathi distinguishes between intentional and non-intentional causers by realizing the intentional agent as a subject and the non-intentional causer as an oblique phrase, and also by differentiating the case assigned to them. Thus, consider the past sentence in (22):

- (22) *alkaa-ni mini-laa maarle*  
 Alka-ERG Mini-D/A hit  
 "Alka hit Mini."

The subject bearing the ergative case *-ni* must be interpreted as an unintentional agent, i.e., Aka did not hit Mini accidentally. An inanimate causer or a non-intentional animate causer, however, cannot be the subject of the sentence, and it can be expressed as an oblique grammatical function with the instrumental case or as an adverbial adjunct. The following sentences provide some examples:

- (23) The wind broke a big leaf on the coconut tree
- (24) *waaryaa-ni naara-aacyaa Δ`aaḍaa-ḥe mo†`e paan tu†le*  
 wind-INST coconut-GEN tree-GEN big leaf break(intr.)  
 "A big leaf of the coconut tree broke with (in) the wind."

In Marathi, (23) cannot be rendered with a sentence where 'the wind' is a subject taking the ergative case. Its counterpart is instead (24), where the predicate is intransitive and the causer is realized as an oblique instrumental phrase. Other ways of representing an unintentional causer are via an oblique postpositional phrase, as sentence (26) as counterpart of the English (25) shows,

or as an agentless passive with an optional instrumental oblique, as in (28) for the English sentence (27):

- (25) The door pinched the cat's tail.
- (26) darwajaa-t maanΔri-ci βepfi cemaɸli  
door-in cat-GEN tail pinched(intr.)  
"The cat's tail got pinched in the door."
- (27) The knife cut the bread.
- (28) (caaku-*ni*) paaw kaaplaa gelaa  
(knife-INST) bread cut was  
"The bread was (got) cut (with the knife)."

Notice that although the instrumental case *-ni* is homophonic with the ergative case *-ni*, they are different cases, this claim being based on the different nature of the verbs, transitive occurring with the ergative case, and intransitive or passive with the instrumental, and on two tests for subjecthood failed by the instrumental case (Bresnan ms.: 10-11).

Like an inanimate causer, an unintentional animate causer also cannot be the subject of a sentence, as illustrated by the following examples:

- (29) jon-*kaɔun* t'elmaa kaaku-cyaa Δunyaa baβaa (çukun) p'uɸlyaa  
John-by Thelma aunt's antique plates accidentally broke  
"Aunt Thelma's antique plates accidentally broke due to John."
- (30) \*jon-*ni* t'elmaa kaaku-cyaa Δunyaa baβaa çukun p'oðlyaa  
John-ERG Thelma aunt's antique plates accidentally broke  
"John accidentally broke Aunt Thelma's antique plates."

In (29) the unintentional animate causer is represented as a 'by' phrase adjunct of an intransitive verb, and the adverb *çukun* (accidentally) is optional, as the information that the event is non-volitional is independently conveyed by the form of the sentence itself. Sentence (30) shows that when John is the unintentional causer of the event, it cannot be the subject of the sentence taking the ergative case.

## 5 Conclusions

The existence of a tacit intentional predicate accounts for the ambiguity of sentences containing *quasi* and the ban on some particular causal dynamics with causative *fare*. Another issue, which I do not address in this paper, where the

asymmetry between intentional and unintentional causation is crucial is the interpretation of the predicate proform *lo* in Italian. Cross-linguistically, the existence of languages that overtly manifest the distinction between intentional and unintentional causation corroborates the analysis given in this article. On the basis of these languages, where the difference of agent vs. causer seems to be syntactic, besides being a semantic one, it would be interesting to explore whether there are language internal data for a syntactic distinction between agent vs. causer. The interactions of the tacit intentional predicate with negation and adverbs other than *quasi* are pertinent to this future inquiry.

## Notes

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<sup>1</sup> In the Northern variety of Italian the complex past has consistently substituted the simple past. The reader should not therefore be concerned with any issue related to perfectivity.

<sup>2</sup> From now on I will dispense with the glosses, unless necessary, since in this paper I am mainly concerned with the semantic of sentences that display the same syntactic structure.

<sup>3</sup> McCawley (1973) correctly thought that (1) is three ways-ambiguous, and (2) and (3) two ways ambiguous. The third reading is obtained by breaking the situation corresponding to the second reading into two, more detailed situations. As, however, this reading is available no matter the volitionality of the subject, it is not relevant in this work.

<sup>4</sup> In note 3 I claimed there is one more reading for sentences (1)- (3). This complexity would require a further complication also in logical forms, since the two readings require the existence of an event complex formed of an ordered pair of sub-events, while the three readings the existence of an ordered triplet of sub-events. As I previously said, this complexity is tangential to the issue under discussion, and I therefore do not consider it in this work.

<sup>5</sup> There is another interpretation where the intentional subject of *fare* had someone else break the vase. As this interpretation is not relevant in this article, I will not consider it further. See (Vecchiato 2003) for a discussion of this interpretation.

<sup>6</sup> See (Vecchiato 2003) for an extensive description of force dynamic constraints with the Italian periphrastic causative and its plausibility with respect to other notions traditionally used to account for the data. See (Levin 1993) for a list of unaccusative and alternating predicates in English (Italian has almost, but not totally, the same list).

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# Number Phrase and Fronted Pre-modifiers in Middle English

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## 1. Introduction

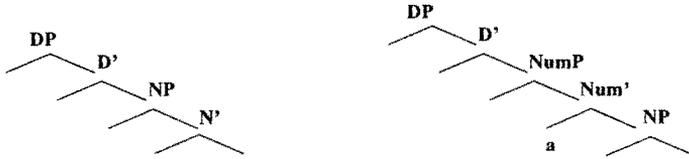
In the history of English, as in many other languages, the indefinite article, the marker for singular indefinite count nouns, grammaticalizes from the numeral *one*. The development has been well treated descriptively (e.g. Rissanen 1967, Mitchell 1985) and examined in typological and cognitive frameworks (e.g. Givón 1981, Hopper and Martin 1987, Heine 1997, Heine and Kuteva 2002). This paper considers the structural change involved in the grammaticalization of the article. As a lexical item grammaticalizes (a term introduced by Meillet 1912), it undergoes phonological, semantic and syntactic changes. Phonologically it is reduced, semantically it moves from a restricted to a more generalized context, and syntactically it becomes less independent, often becoming a clitic or an affix (cf. Hopper and Traugott 1993). Although sometimes, generative theory and grammaticalization are seen as incompatible theories, much can be gained by considering both (e.g. van Gelderen, this volume). In terms of structure, an item that grammaticalizes moves “higher” in the tree, from a lexical to a functional category. Evidence will be presented to show that the numeral, a lexical item with the features and distribution of an adjective, becomes the head of a new category, Number Phrase (NumP).

The emergence of the category NumP in English, is suggested by Ackles (1997) who argues that NumP is a new grammatical, or functional, category that started to be used in the Middle English period in the 12<sup>th</sup> and 13<sup>th</sup> centuries. Additional support is provided in this paper by considering the history of fronted degree modifiers, that is modifiers that precede the indefinite article in modern English in constructions such as (1) below:

- (1) a. I've never experienced **so** bad a storm  
b. I've never experienced **such** a bad storm

The structural change that takes place would be from (2)a to (2)b below:

(2)



a. Old English

b. Present-day English

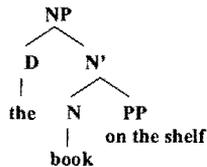
In (2)a, there is no NumP and no indefinite article. In (2)b, the indefinite article is the head of NumP.

In section 2 below, I argue that, given what is already known about language change in the clause and about nominal/clausal parallels, the development of a new category, NumP, in nominals is not unexpected. In section 3, I discuss NumP in Old English and present-day English and in section 4, degree modifiers in present-day English and Middle English. The historical data is taken from the Helsinki corpus and a quotation search of the Oxford English Dictionary (OED). The modern data is from the British National Corpus and from Google.

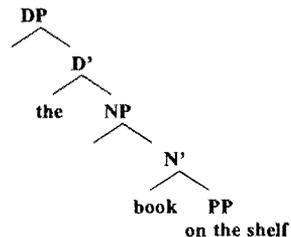
## 2. DP and NumP

Since the late 1980s, syntactic research into nominals has revealed that there are many similarities between nominals and clauses, syntactic and semantic. One of the catalysts for 1990s noun phrase research was Abney's (1987) dissertation, which proposed a new structure for noun phrases. Instead of determiners occupying the specifier position of the noun phrase, as shown in (3)a determiners have their own phrase, the determiner phrase as in (3)b

(3)



a. Pre 1980s:

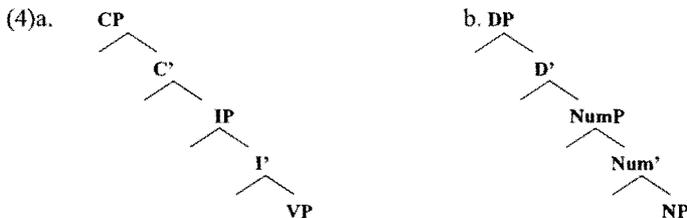


b. Post 1980s

There are many reasons, empirical and theoretical, for preferring the structure in (3)b over that in (3)a and many similarities, semantic and syntactic, between clauses and nominals (see, for example, Bernstein 2001). Theoretically, the DP hypothesis means that the nominal and verbal domains can be given a unified theoretical treatment in terms of X-bar theory and functional categories. In this section, I will concentrate on the similarities in the structures of clauses and nominals and suggest that, in terms of language change, similar developments may have occurred in clauses and nominals.

Structurally, clauses and nominals are similar; each may be split into three areas. Both are built around a lexical item, the verb in clauses and the noun in nominals. In the 1980s, research into clausal structure suggested that there are two functional phrases (or rather areas) in the clause, Complementizer Phrase (CP) and the Inflection Phrase (IP) (Chomsky 1986). These are better considered as “areas” since post 1980s shows that they can be split into more fine-grained structures. The CP may be split, for example, into Topic Phrase (TopP) and Focus Phrase (FocP) (Rizzi 1997). The IP may be split into Tense phrase (TP), subject agreement (AgrS) and Negative Phrase (NegP) (Pollock 1989). In addition, the verb phrase is said to have complex structure with an inner VP and an outer vP.

Meanwhile, research into noun phrases has also proposed a variety of possible categories between DP and NP. The most widely accepted category of all those suggested is Number Phrase (NumP), put forth by Ritter (1991). It may also be that the DP and NumP may be split further, although not much has been agreed cross linguistically. However, Radford (2000) suggests that noun phrases, just like verbs, have inner and outer shells, NP and nP. Assuming there is a number phrase between DP and NP, this means there are three areas in the nominal, just as there are and three areas in the clause. The basic structure of clauses is as in (4)a and of noun phrases as in (4)b:



Furthermore, the three areas are equivalent, having similar function. The CP in the clause is equivalent to the DP in the nominal as argued by Szabolcsi (1989, 1994). These are the discourse link areas where topic, focus, and questions check in the clause and definiteness and referentiality check in the nominal. The IP in the clause is equivalent to the NumP in the nominal and they are both agreement areas. In clauses, the agreement is tense, and in noun phrases the

essential agreement is number (singular and plural). So the conclusion is that nominals and clauses have a similar basic structure and that the IP and NumP are equivalent areas.

Having considered the research into clausal and nominal structure, now consider the changes in clausal structure between Old English (OE) and present-day English (PDE). I suggest that both the clause and the nominal have developed more categories in PDE than there were in OE. It is generally agreed that OE changed from an analytic language to a synthetic language and that more grammatical categories are expected in a synthetic language. One of the specific structural changes, argued for by van Gelderen (1993), is that OE had no IP. She shows evidence that IP, or more specifically TP, is a new category that arose around 1400. Some of the evidence comes from split infinitives and “accusative with infinitive” (ACI) constructions, which start to appear in English at the end of the 14<sup>th</sup> century. The argument is that splitting an infinitive is only possible once the tense node becomes available for *to*. In earlier English, the tense features are argued to be in C. Therefore, given the many parallels between clauses and nominals, it would not be strange or unprecedented to find a similar change happening in nominals, that is a category not present in the OE period developing, or being activated, in Middle English. I suggest that there is no NumP in OE and number features check somewhere else, for example in DP (Ackles 1997, Wood 2003). In this paper, I look at changes in nominals, specifically the introduction of the indefinite article with respect to positions of fronted premodifiers, and suggest that they provide empirical evidence for the introduction of NumP in the same way that the introduction of split infinitives provides evidence that IP was introduced.

### 3. Number Phrase in Old English and present-day English

In this section, I discuss the reanalysis of the numeral to an article and the evidence that PDE has a NumP. Ackles (1997) claims that OE has no NumP, part of the evidence being that the indefinite article, *a*, is the head of NumP and OE has no indefinite article and therefore no need for a Number Phrase. The establishment of the indefinite article indicates NumP has been formed.

#### 3.1 The indefinite article and grammaticalization

It is well established that the indefinite article is a grammaticalized form of the numeral one, a very common phenomenon cross-linguistically. The functional and typological literature cover this quite extensively and in Table 1 below I show the general functional stages that numerals go through when they grammaticalize (Heine 1997). The stages are from a numeral to a referential indefinite to a non-referential indefinite.

**Table 1 Stages in the grammaticalization of the indefinite article**

|           |                     |                                                        |
|-----------|---------------------|--------------------------------------------------------|
| Stage I   | numeral:            | used as a numeral only.                                |
| Stage II  | presentative marker | new discourse participants unknown to hearer.          |
| Stage III | specific marker     | any participant unknown to hearer                      |
| Stage IV  | non-specific marker | (singular count noun)<br>unknown to speaker and hearer |
| Stage V   | generalized article | no longer restricted to singular nouns                 |

When an item grammaticalizes, it may acquire new functions without losing the old ones, so these stages all overlap. In present-day English, all four stages are represented, but stages I and II are more numeral-like in form. These are illustrated below: the numeral in (5), the presentative marker in (6), the specific marker in (7), and the non-specific maker in (8):

- (5) Please give me one coffee and two teas. (stage I).
- (6) While I was on vacation I met one Jane Smith. (stage II).
- (7) I'm buying a red car (and they are delivering it today). (stage III).
- (8) I'm buying a red car (but I can't decide on which make). (stage IV)

It may be seen that, in PDE, stage II is still stressed and still sounds like a numeral, as opposed to the unstressed stages III and IV. In late Old English, the numeral starts to acquire Stage II functions but OE does not have a stage IV, a marker for non-specific count nouns, the indefinite article in PDE. (For a detailed description of the numeral/article and its functions in OE see Rissanen (1967).

Looking at when the change occurs from a morphosyntactic point of view rather than functional, the numeral is still fully inflected in Old English. In the 12<sup>th</sup> century it starts to become indeclinable, reduces, and loses stress. So, it starts to show the typical characteristics of grammaticalization and the characteristics of change from stage II to III. Also, it starts to appear in places where it was not used earlier, that is, to take on new functions. One example from the OE chronicle shows the change. In 1137, the entry is as in (9) which changes to (10) three years later:

- (9) he wæs god munec & god man  
he was (a) good monk and (a) good man
- (10) he wæs **an** yuel man  
he was an evil man

Although there is variation between different texts and different dialects, the numeral may be seen reanalyzing as the article in the 12<sup>th</sup> century.

How would this change look structurally? Numerals in Old English are adjectival and they agree with the noun in case number and gender as seen in (11) and (12):

- (11) þa eodan ða Deniscan from þæm þrim scipum to þæm oðrum þrim  
(CHROA2,91.897.39)  
then went those Danish from those-DAT-PL three-DAT ships to those  
other-DAT-PL three-DAT-PL
- (12) hie flugon ofer Temese buton ælcum forda þa up be Colne on anne  
iggað (CHROA2,85.894.22)  
they flew over Thames out-of each ford then up by C. on one-MASC-ACC-  
SING island-MASC-SING  
they fled across the Thames over every ford then up by C. to an island.

Assuming that the numeral is an adjective, and assuming an analysis of adjective phrases in which the adjective phrase is a specifier, gives a structure as in (13) below for the Old English noun phrase:

- (13)
- 
- ```

graph TD
    DP --> þæm
    DP --> D_prime[D']
    D_prime --> þrim_k[þrim_k]
    D_prime --> NP
    NP --> AdjP
    NP --> N_prime[N']
    AdjP --> Adj_prime[Adj']
    Adj_prime --> t_k[t_k]
    N_prime --> scipum
  
```

In structural terms, the formation of the article is due to the numeral reanalyzing, acquiring the features of a head and becoming the head of a new functional category, NumP. This would mean that a lexical category, an adjective, the numeral *one*, becomes grammatical and the head of NumP in PDE. The next section shows evidence that the PDE article is head of NumP

3.2 Number Phrase in present-day English

Although Ritter (1991) gives evidence for NumP, an independent projection below DP, in Hebrew, it is often assumed that the definite and indefinite articles occupy the same syntactic position in English since they are in complementary distribution. A traditional division of determiners (e.g. Quirk 1985) categorizes determiners as predeterminers, central determiners and postdeterminers, as in Table 2 below. The articles, *a* and *the*, are both central determiners and do not co-occur. However, evidence for two syntactic categories comes from the co-occurrence of two central determiners, *no* and *a*.

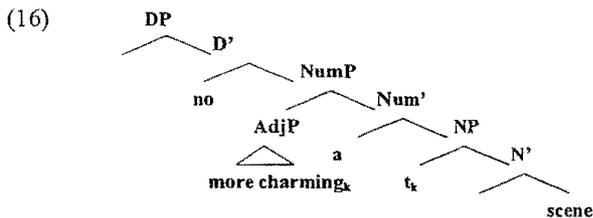
Table 2: Traditional division of determiners

Predeterminers	Central determiners	Postdeterminers
<i>All, both, half, fractions such, what</i>	<i>the, a, demonstratives, some, every, any, no, genitive groups (John's)</i>	<i>Many, few, cardinal numerals, ordinals</i>

Although the indefinite article doesn't co-occur with *the*, it does co-occur with another central determiner, the quantifier *no* as in (14) and (15) below. The two examples are independently observed by Wood (2002) and Matushansky (2002) as providing evidence for NumP in English:

- (14) and there was **no such a thing** as bales in those days, duckie. **No such a thing** as bales of straw, it was loose hay stacked, and you used to cut it with a big hay knife (from Wood 2002:110)¹
- (15) There is **no more charming a scene** of married love in all Shakespeare than this little vignette (NY Times) (from Matushansky, 2002:19. #23b)

Since *no* co-occurs with *a*, in (14) and (15), both “central determiners” cannot be in the determiner position. If *no* is the head of determiner phrase, the indefinite article will be in a lower phrase. The suggested structure is as in (16) below with movement of the phrase “more charming” to Spec-NumP, the indefinite article as the head of NumP and *no* as the head of DP.



With the co-occurrence of *a* and *no*, there is an adjective phrase in NumP which shows that two categories are separate. Overt material in Spec-NumP provides evidence for the presence of NumP in PDE. As Matushansky (2002) shows, Spec-NumP is the position to which degree modifiers move or pass through in PDE.

Since degree modifiers provide overt evidence for a number phrase, I intend to look at the history of constructions with degree modifiers, in order to find whether older varieties of English have a NumP category.

4. Present-day English and Middle English Degree premodifiers

For a preliminary investigation, seven degree modifiers were chosen: *how*, *this*, *that*, *so*, *too*, *such*, and *what*. First, in section 4.1, their behavior in PDE will be described and then, in 4.2, examples from earlier English will be discussed.

4.1 Present-day English

Degree modifiers that may precede the article in PDE are particularly interesting because of their varied behavior both in their ability to front (optional or required) and in the way they affect the accompanying adjective (piedpiping of the adjective may or may not occur). Matushansky (2002) argues that these words are all degree operators and the movement to Spec-NumP indicates quantifier raising. The seven degree modifiers mentioned above may be divided into three groups based on their different movements.

- | | | | |
|------|---|--|---|
| (17) | a | <i>how</i> , (<i>this</i> , <i>that</i>) | (fronting obligatory, piedpiping obligatory) |
| | b | <i>so</i> , <i>too</i> , | (fronting optional, piedpiping obligatory) |
| | c | <i>such</i> , <i>what</i> | (fronting obligatory, piedpiping not allowed) |

First, consider the behavior of adjectives in the presence of a degree modifier. As is well known, the usual position for the adjective in English is after the article and before the noun as in:

- (18) a lovely day

However, when the adjective is modified with one of the degree modifiers *how*, *this*, *that*, *too* or *so*, the adjective may be found before the indefinite article. Also, *such* and *what* behave somewhat similarly, in that they occur before the article, although they do not force the adjective to move. The examples in (19) show the pattern with *how*, *this*, *that*:

- | | | |
|------|----|--------------------|
| (19) | a. | *a how lovely day. |
| | b. | how lovely a day. |
| | c. | *how a lovely day |

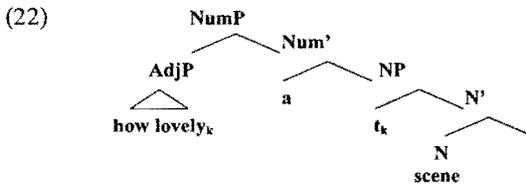
How may not stay in situ and forces the adjective to precede the article. That is, there is obligatory fronting of the degree modifier and obligatory piedpiping of the adjective. This is slightly different from *so* and *too* which optionally front, but if they do front they must pipe the adjective:

- (20) a. a too/so lovely day
 b. too/so lovely a day
 c. *too/so a lovely day

The third set, *such* and *what*, also must front but do not pied pipe the adjective.

- (21) a. *a such lovely day
 b. *such lovely a day.
 c. such a lovely day.

The structure of (19)b would be as in (22) below:²



If there is no NumP position in earlier English, the spec-NumP position would not be available until the indefinite article starts to head the Number Phrase. So, we would expect to see these expressions starting to appear after the grammaticalization of the article.

In the preliminary investigation of these expressions in earlier English that follows, I ask two questions:

- (i) When do these expressions start to appear, indicating that the Spec-NumP position is available?
 (ii) Are there any examples of modifiers following the article, showing that the article develops first?

4.2 Old English and Middle English

According to the available descriptive literature, fronted degree modifiers are not found in OE and start to appear in English between the 13th and 16th centuries. The OED mentions (s.v. *a*) that these constructions were not found in OE. Example (23) below, from the Helsinki corpus, is an example of *so* used as a degree modifier in OE:

- (23) betwioh ða þeostra swa beorht scinende steorra
 (BEDE,13.428.18)
 between those-ACC-PL darknesses-FEM so bright shining star-NOM-SING.
 So bright a shining star in the gloom.

Fischer (1992:211) points out that some of these expressions appear in the 13th century and Rissanen (1992) remarks that by the Early Modern period *so/as* and *too* plus an adjective are regularly followed by the article. Example (24) below is from the end of the 16th century:

- (24) Too low a mistress for so high a servant (*Two Gentlemen of Verona* II.iv)

However, all these expressions do not appear at the same time. In order to find the earliest examples of each, I did a quotation search in the OED for *this*, *that*, *how*, *too*, *so*, *what*, and *such* preceded or followed by the article. I found evidence that the article was introduced first. In the late 13th, early 14th century, *such* may be found following the article.

4.2.1 *such*

The earliest of the degree modifiers to precede the article is *such*. There is an additional complication when considering *such*, which is that there are two *such*'s, one that is a degree modifier and one with a demonstrative sense (Bolinger 1972; Altenberg 1994; Wood 2002):

- (25) We need a telescope equipped for solar photography. This is such a telescope. (demonstrative)
 (26) He is such a fool that I can't trust him. (degree)

The demonstrative sense of *such* occurs earlier than the degree sense but both the demonstrative and the degree modifier precede the article and sometimes they are ambiguous. The earliest example of *such* preceding the article is (27) below, early 13th century. Example (28) is more likely to be a demonstrative but it is somewhat ambiguous. The earliest examples of *such* as the degree modifier are 14th century as in (29):

- (27) þat fo Uðere Pendragune scal arisen **swilc** a sune (Layamon (C) 9423)
1225?
 that UP should beget such a son.
 (28) **Such** a wringer goþ to helle for litil gode þat nis no3t his. (a1300
Sarmun xxi).
 such an extortionist goes to hell for the little property that isn't his.
 (29) **Swich** a greet corage Hadde this knyght to been a wedded man.
 (Chaucer: *Merch. T*) (c1386).
 Such a great courage had this knight to be a married man.

All the examples above show the already grammaticalized form of the article.

In addition, there are several examples of *a such*, that is, *such* following the article, which would be ungrammatical in present-day English. This shows that the NumP, headed by the indefinite article, appears before movement of *such* to Spec-NumP. The variable form of *such* either before or after the article is found between 1290 and 1380 as shown below:

- (30) þis kni3tes þoþte wonþer gret þat **a such** heiward (*St. Eustace* 144 in *S.E. Leg.* 397) (c1290).
 (31) wonder it was þat strange men in is owe lond dude **a such** trespass (*R. Glouc. rolls*) (late 13th century)
 (32) Wel longe we mowe clepe & crie, Er we **a such** kyng han y-founde! (*Elegy on Edw. I*, ix) (1307).

The other word that patterns with *such*, *what*, is much later in developing its degree sense. The first clear examples are not until the 15th century. The article would be well in place before then, and examples of *what* following the article would not be expected. Example (33) below is one of the earliest examples with *what*:

- (33) Lo **what** a mariage was this as to the comparison of that other (*Caxton Chron. Eng.* ccliii. 325) (1480).

To summarize, so far it has been seen that the indefinite article starts to reanalyze in the 12th century and the earliest examples of premodifying *such* appear at the beginning of the 13th century. There is also a period of uncertainty, up until the end of the 14th century, when *such* can follow the article.

4.2.2 *How, this, and that*

It will be recalled that *how*, *this* and *that* also must front. The first examples with *how* are from the 14th century and examples of *a how* were not found.

- (34) By **how comly** a kest he was clos ere (*E.E. Allit. P. B.* 1071) (14th century)
 by how pretty a kiss he was closer.
 (35) Bot se we noght **how schort** a day es here (*Hampole Pr. Consc.* 8114) (1340)
 But see we not how short a day is here.

Also, historical uses of *this* and *that* as degree modifiers were not found. Example (36) below, a modern one, is from Quirk et al. (1985):

- (36) We took them to a circus and then to a zoo and gave them lots of ice-cream and chocolate. They haven't had **that good a time** in years

Interestingly, *this* and *that* show the same change as *such*, a degree sense developing from a demonstrative but several hundred years later.

4.2.3 *so* and *too*

It will be recalled that, in PDE, *so* and *too* optionally move to precede the article. The search for *too* preceding the article revealed that the earliest examples appear fairly late, in the sixteenth and seventeenth century, as a in (24) above and in (37) and (38) below:

- (37) **Too holy a** profession, for **so hollow a person** (Lyly *Euphues* (Arb.) 113) (1579).
 (38) Dispositions not despicable, if they had not been sauaged with a **too** carelesse rudenesse. (Speed *Hist. Gt. Brit.* IX. viii. 563) (1611).

Finally, *so* is found as a degree modifier much earlier than *too* and about the same time as *such*. Example (39) below is from the early 13th century with *so* following the article and (40) from the beginning of the 14th century with *so* plus adjective preceding the article.

- (39) þu eært a swa hende gome (Layamon (C) L.1903) (early 13th century)
 you are a so worthy fellow
 (40) Make not thy soule **so wykked a wem** (R. Brunne *Handl. Synne* 3111)
 (1303)
 Make not your soul so wicked a stain (of sin)

In addition, I found a use of *so* that, as far as I am aware, is not mentioned in PDE grammars, fronting of *so* without piedpiping of the adjective. This means it behaves in a similar way to *such*.

- (41) Ther roose **so a grete** torment in the see (1471 CAXTON *Recuyell* (Sommer) 540)

We find this use in PDE without the adjective, a fairly new colloquial use:

- (42) Gosh, I'm **so a slacker** anymore when it comes to my journal.
 (43) **I'm so a fall/winter** person.
 (44) This was the movie where I finally got what people saw in George Clooney-- **he's so a movie star** now.

5 Conclusion

The parallels between clauses and nominals have been outlined, and it is proposed that similar changes occur in clauses and nominals, in particular that

new categories arise in the nominal through grammaticalization, just as new categories arise in the clause. The grammaticalization of the indefinite article from the numeral *one* is a change from a lexical to a functional category. In nominals, fronted premodifiers like *such* and *so* (plus adjective) have moved to Spec-NumP in PDE. These expressions may be used to indicate the presence of a NumP with *a* as its head, in earlier English. The data reveal a period of uncertainty in the 14th century when the degree modifier *such* may follow the article. This indicates that the category is formed first, before degree modifier movement takes place. Fronting of expressions with *what*, *too*, *this* and *that* occur too late to be useful as evidence for a newly emerged NumP. Further research is needed into the reasons for changes occurring with *so*.

Notes

¹ This *such* is “identifier” *such* and has a demonstrative function, as opposed to “intensifier” *such* which is a degree modifier (see Bolinger 1967, Wood 2002). In general, degree expressions are incompatible with definiteness.

² I have not shown DP in this tree, since these expressions can never be definite.

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Complex Predication in Modern Persian: A Minimalist Approach¹

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Within the scope of the present article lies the attempt to analyze and explain complex predicate² (CP) formation in Modern Persian using the Minimalist Program and possibly further the latter's cause. It is based on standard spoken and written dialect of contemporary Modern Persian as used by educated inhabitants of Tehran.

The general outline of the paper constitutes 5 sections: (1) an overview of four recent works on CPs in Persian (2) preliminary remarks including empirical evidence in need of closer investigation (3) complex predication in Persian revisited (4) analysis and (5) conclusion.

1 Overview

Many investigations, employing different theoretical frameworks and positions, have been carried out to deal with and account for CPs in different languages³, which demonstrate the magnitude and diversity of forms and functions of CPs in natural languages and the multiplicity of phenomena under investigation. The most recent ones regarding CPs in Persian are Dabir-Moghaddam (1997), Vahedi-Langrudi (1996), Karimi-Doostan (1997) and Karimi (1997)⁴.

Dabir-Moghaddam (1997) is the only analysis of Persian complex predicates/compound verbs which explicitly makes a distinction between two productive mechanisms involved in their formation: *incorporation* and *combination*, which are both claimed to belong to the domain of lexicon. With

regard to combination, Dabir-Moghaddam (1997) recognizes 5 types of compound verbs: (1) adj + auxiliary verbs of stative, inchoative and causative types (2) noun + simple verbs e.g. *kardan* (3) prepositional phrase + verb (4) adverb + verb and (5) past participle + passive auxiliary. With regard to incorporation, he only gives recognition to two types: (1) incorporation of the direct object and (2) incorporation of a prepositional phrase with the result of the elimination of the preposition after incorporation.

Examining the argument structure and formation of complex verbal structures in Modern Farsi (MF), Vahedi-Langrudi (1996) considers MF complex predicates as “verbal complexes consisting of a non-verbal element followed by a [light] verbal element.” (1996:1). Describing both the morphological and syntactic properties of CPs, Vahedi-Langrudi (1996) points on the one hand to the morphological properties indicating that they have the characteristics of lexical X^0 elements, showing syntactic atomicity—a property which is of lexically-formed compound words—and on the other hand to their syntactic behavior which is indicative of their phrasal nature. He then claims to have resolved this double nature of CPs by postulating two isomorphic syntactic levels of representation and formation in the syntax and lexical/morphological components for CPs.

Adopting a lexical approach to the analysis of CPs in Persian (and occasionally Kurdish), Karimi-Doostan (1997) argues that (1) complex/compound verbs in Persian are basically light verb constructions (LVCs), which consist of a non-verbal preverb (PV) and a light verb (2) light verbs (LVs) differ from both auxiliary verbs and heavy/lexical verbs: LVs possess defective LCS--i.e. only aspectual information—and a partially specified a-structure, and (3) PVs are either predicative or non-predicative. If LVs combine with predicative PVs—e.g. verbal nouns and process nouns—they form compositional LVCs. When combined with non-predicative PVs, LVs constitute idiom-like non-compositional LVCs.

This is while the essence of Karimi’s (1997)⁵ proposal is that Persian complex verbs (CVs) consist of a light verb (LV) and a nonverbal element (NV)—therefore light verb constructions—and receive either an idiomatic or a compositional interpretation. They are argued to be *idiomatically combining expressions* of Nunberg, et al (1994) whose LVs and NVs are separately generated in syntax, but become semantically fused at LF by means of the Safirian (1996) *covert incorporation* of NV’s head into LV IFF (1) the lexical specifications of NV and LV are compatible and (2) NV and LV are dominated by a node *CV* at LF to satisfy the locality condition on incorporation.

2 Preliminary Remarks⁶

1. Some words are derived from phrasal constructs which are neither incorporated nor combining complex predicates:

be/dar dām ?oftādeh to/in trap fallen 'fallen in a trap'	be/dar dām ?oftādan to/in trap to fall 'to fall into a trap'
dast bāf hand knitted 'hand-knitted'	bā dast bāftan with hand to knit 'to knit with hands'

All cases of this type are derived from verb phrases that are both semantically and syntactically transparent; that is, in terms of their meaning, they demonstrate compositionality and in terms of their syntactic construction, they indicate combination of a heavy verb and either an internal argument or an adjunct.

2. There are some derived forms whose verbal counterparts are rarely used:

xāb ?ālude sleep contaminated 'drowsy'	be xāb ?āludan to sleep to contaminate 'to make drowsy'
pāk nevis clean write 'fair copy'	pāk neveštan clean to write 'to write cleanly'

3. There are some derived forms whose verbal counterparts are in use but with a meaning (somewhat) different from that of the derived form:

?aqab mānde back stayed 'retarded'	?aqab māndan back to stay 'to fall behind'
pas mānde behind stayed 'left-over'	pas māndan behind to stay 'to remain'

4. There are some seemingly incorporated cases which have thoroughly different meanings from the non-incorporated terms:

sim rā kešidan wire rā to pull 'to pull the wire'	sim kešidan wire to pull 'to wire a place'
xat rā kešidan line rā to draw 'to draw the line'	xat kešidan line to draw 'to draw a line'

5. There are many cases of interaction between incorporated and combined predicates for word-formation:

kolāh bardāštan hat to take off 'to take off the hat'	kolāh bardāri hat off-taking 'fraud'	kolāhbardāri kardan hat off-taking to do 'to do fraud'
sam pāšidan poison to pour 'to spray poison'	sampāši poison-spraying 'poison-spraying'	sampāši kardan poison to spray 'to do spray-poisoning'

In fact, in this case, the words in the middle column are nominal derivations which have been the output of the so-called incorporated forms on their left, and in turn have later combined with a light verb to result in combining compound predicates—on the right—which do not necessarily have the same meaning with the verbal structures to the left.

6. There are combining complex predicates formed out of earlier combining complex predicates:

soxan rāndan speech to drive 'to speak'	soxanrāni speech driving 'speech'	soxanrāni kardan speech-driving to do 'to deliver a speech'
qarz gereftan borrow to take 'to borrow'	qarzgiri borrow taking 'borrowing'	qarzgiri kardan borrow-taking to do 'to do the borrowing'

Here, also the meanings of the verbal structures on the right vary from those of the ones on the left.

7. There are gaps in many cases:

yād gereftan memory to take 'to learn'	yādgiri memory-taking 'learning'	* yādgiri kardan memory-taking to do 'to do learning'
yād dādan memory to give 'to teach'	yāddehi memory-giving 'teaching'	* yāddehi kardan memory-giving to do 'to do teaching'

8. There are incorporated complex predicates which do not necessitate non-incorporated counterparts with *rā*:

doruq goftan	rāst goftan
lie to tell	right to tell
'to tell lies'	'to tell the truth'

9. There are a number of complex forms, which were of use a while ago; however, they have lost their force now:

?afsus kardan	?āvāz kardan	ra?y zadan
regret to do	song to do	vote to hit
'to regret'	'to sing'	'to vote'

Based on the examples above, it seems inappropriate to consider incorporating and combining complex predication in Persian simply as belonging to either the domain of lexicon or that of syntax. In fact, the argument to be made here is that any theory that generalizes lexicality or syntacticity of all word-formation processes would not be feasible.⁷

CPs in Modern Persian also show some other properties to be considered:

1. There is a "degree of freedom" to be noted for the non-verbal element:

- Some tend not to project; that is, to remain both a minimal/maximal projection, and as such tend to remain as close as possible to the verb.

pasand kardan	*pasand-e dorost kard-am.	dorost pasand kard-am.
approval to do	approval-e right did-I	rightly approval did-I
'to approve'		'I made the right choice.'
panāh dādan	*panāh-e sādeqāne dād-am.	sādeqāne panāh dād-am.
shelter to give	shelter-e honest gave-I	honestly shelter gave-I
'to shelter'		'I honestly sheltered (him).'

- Some tend to project but not always:

da?vat kardan	?az ?u da?vat-e rasmi kard-am.
invitation to do	from him invitation formal did-I
'to invite'	'I formally invited him.'

- Some project but under certain inflectional/modificational circumstances:

tamiz kardan/šodan	tamiz-tar ?az X kardan/šodan
clean to do/to become	clean-er than X to do/to become
'to make/become clean'	'to make/become cleaner than X'

- Some project:

šekast dādan	?u rā šekast-e saxti dād-am
break to give	him rā defeat-e hard gave-I
'to defeat'	'I defeated him strongly/badly.'

2. There is a “degree of transparency” in the meaning of the constituent formed based on the compositionality index.

- Some complex predicates, and in fact all cases in the incorporating (argument-satisfying) type, are almost quite transparent:

qazā xordan	rāh raftan
food to eat	way to go
'to eat; to do the eating'	'to walk'

- Some are less transparent:

qarār dādan	qosse xordan
stay to give	grief to eat
'to locate; to put'	'to grieve'

- Some are not transparent at all:

da?vat kardan/šodan	šekast dādan/xordan
invitation to do/to become	break to give/to eat
'to invite, to be invited'	'to defeat, to be defeated'

- Some are totally idiomatic, yet syntactically transparent:

xar kardan	bālā kešidan
donkey to do	up to pull
'to fool'	'to steal; to embezzle'

Therefore, two issues need to be distinguished from each other: syntactic transparency and semantic transfer. For instance, take *xar kardan* above. This complex verb is syntactically as transparent as *garm* 'warm'/*kutāh* 'short' *kardan*. It shows the same transitivity alternation as the latter ones: *xar šodan* 'to be fooled', *garm/kutāh šodan*. Yet, in terms of meaning, the former has undergone the process of transfer, making it mean “deceive, be deceived”, whereas the latter ones have not and have a thoroughly compositional meaning 'to become warm/short'. This issue will be dealt with more deeply when discussing the causative/inchoative alternation with *kardan/šodan* 'to do/to become'.

In other words, it is crucial to distinguish between semantic compositionality and syntactic transparency.

3. There is a “degree of frequency” for complex predicates:

- Some do not have unipartite/simplex counterparts; they are quite frequent

da?vat kardan
invitation do
'to invite'

- Some do have unipartite/simplex counterparts; however, their simplex forms have taken on a different stylistic function—e.g. *gerye kardan* ‘to cry’ vs. *geristan* ‘to cry’, which is more formal than its bipartite counterpart. They are also frequently used.
- Some have frequent simplex counterparts; they are used but not frequently if at all, or there is a social or individual preference for their use:

xande kardan	vs.	xandidan
laughter to do		to laugh
‘to make laughter’		‘to laugh’

4. Based on the “degree of freedom”, there is a “degree of (structural) case requirement”: the more the freedom/possibility of projection, the more the need for case requirement. Now, if case is not to be assigned, but is to be checked, and as such the non-verbal element is to be fully inflected when entering syntax, if a non verbal element is selected without a case, it is to be taken as a part of the verb – as an N not an NP.

Also in line with Lasnik (1999), Hornstein (1999) and unlike the assumption propounded by the standard Chomskyan minimalist theory in which θ -features are assigned, the Modern Persian data show a clear indication of the need to revise minimalism in this regard and postulate θ -roles as part of the lexical features rather than being assigned. The relevant issue is with regard to the postposition *’rā*. The argument here is (1) to take *’rā* as the PF realization of ‘specificity’ of a nominal as being ‘+specific’; thus, its lack of realization may be attributed to the nominal’s being ‘-specific’, as is the case of the nominal arguments of the verbs in incorporating/argument-satisfying complex verbs and (2) to subcategorize prepositions in line with Fukui (1999: 338) into at least two types:

type 1: [-functional, +lexical]

type 2: [+functional, +lexical]

2. A light verb and a non-predicative nominal element, the thematic structure of which is created as a result of the combination of the two elements with the light verbal element bearing the transition aspectual information, thus making the construction capable of partaking in the transitivity alternation.

ʔātaš zadan/gereftan
fire to hit/to catch
'to set/catch fire'

3. A light verb and a predicative nominal in which the thematic structures of the preverbal and the light verbal elements clash except for transitivity, thus creating an unergative reading.

mosābeqe dādan match to give 'to compete'	ʔehtemāl dādan continuation to give 'to continue'
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4. A light verb and a nominal preverbal, with the thematic structure of either percolating. Here, there is a true possibility of transitivity alternation.

ʔedāme dādan/yāftan continuation to give/to find 'to continue/to be continued'	xaridāri kardan/šodan purchasing to do/to become 'to purchase/to be purchased'
šekast dādan/xordan break/defeat to give/to eat 'to defeat/to be defeated'	rāhnamaʔi kardan/šodan guidance to do/to become 'to guide/to be guided'

5. A light verb and an adverbial preverbal with the transitivity alternation possible.

dir kardan/šodan
late to do/to become
'to be late/to become late'

6. A stative light verb and a nominal preverbal with basically a theme in its thematic grid.

ʔedāme dāštan continuation to have 'to continue'	qosse dāštan grief to have 'to grieve'
--	--

7. A verbal element and a nominal preverbal argument with the meaning of the combination undergoing transfer; here the verb casts its theta grid.

del bastan
heart to tie
'to bend one's heart'

8. A verbal element of causation and a non-predicative nominal preverbal with the meaning of the combination undergoing transfer, thus making it idiomatic and capable of having an inchoative variant.

xar kardan/šodan
donkey to do/to become
'to make a fool/to be fooled'

9. A verbal element (of causation) and an adjectival preverbal element with an inchoative/unaccusative alternation.

kur kardan/šodan	garm kardan/šodan
blind to do/to become	warm to do/to become'
'to make/to become blind'	'to make/become warm'

An interesting point is that at times the combination may not form a causative/inchoative counterpart; however, the combination will show an unaccusative counterpart:

xub kard-i / šod be man goft-i.
good do-you/ became to me said-you
'You did the right thing to tell me. / Good that you told me.'

10. A verbal element and a prepositional phrase basically undergoing transfer of meaning of various degrees depending on the transitive/intransitive nature of the verbal element.

be donyā āmadan	az donyā raftan
to world to come	from world to go
'to be born'	'to pass away'

11. A heavy verb combining with one of its internal arguments without letting it project—the so-called incorporated type.

qazā xordan	māhi gereftan
food to eat	fish to catch
'to eat'	'to fish'

4 Analysis

Following the types given in section 3 and to account for them, Persian complex predication will be analyzed as follows:

1. A complex predicate in Persian may form as a result of a merger between a heavy verb and its internal non-projecting argument which is [-specific]. As such it will trigger a Phonetic Form (PF)-strengthening⁹ effect. This type is an argument-satisfying/saturating form. The PF-strengthening effect is more specifically reinforced by the suppression of the separate realization of the θ -role by the argument. This piece of evidence is clearly indicative of the fact that θ -roles are not assigned by the verb configurationally—as suggested in Hale and Keyser (1993, 1997) and the mainstream minimalism e.g. Chomsky (1995, 1999 & 2000); rather they are to be postulated as θ -features to be checked in the course of derivation as offered and defended by Hornstein (1999) and Lasnik (1999).¹⁰

Therefore, there will be no need for a movement operation known in the literature as “incorporation”. When a heavy verb merges with its [-specific] and “thematically suppressed”—as suggested in Butt (1998) with regard to passivization—internal argument, which cannot as a consequence project, it projects its own label V rather than forming an intermediate V-bar category. As such, the non-projecting nominal requires no case either.

Since the nominal is [-specific], it does not trigger the manifestation of ‘*rā*’. As a result, another conclusion made in this paper is that ‘*rā*’ as a specificity/definiteness/topicality marker in Persian is essentially a PF-phenomenon.

2. A complex predicate can be formed via the merger of a non-verbal nominal element with a light verb that has a phonological matrix, yet in a fashion compliant with Bowers’s (1993)¹¹ proposal. In this case, the non-verbal element first merges with an abstract predicate-formation element—Pr in Bowers’s terminology; this can be an abstract verbalizer or a light verb similar to the one postulated in mainstream minimalism. Then, either it might merge with some internal arguments in the course of derivation especially if the non-verbal is by nature predicative—e.g. verbal and process nouns—and then merge with its phonetically non-null light verb, or it might merge with its light verb having a phonological matrix and together merge with their required internal arguments. The latter would be the case in which the nominal non-verbal is not predicative by itself.
3. A complex predicate might be formed by merging a truly adjectival non-verbal element with a light verb of causative/inchoative alternation such as *kardan/šodan* ‘to do/to become’ respectively as the best examples in this case. Here it is suggested that the non-verbal element directly merges

with its phonologically full light verb, especially since the adjective is bearing the [+V] categorial feature. A piece of evidence would be their transparency in terms of meaning: if the verb is *kardan*/causative type, the construction will be read as causative; if the verb is *šodan*/inchoative type, the construction will be interpreted as inchoative. This analysis, therefore, indirectly confirms Karimi-Doostan's (1997) claim that *kardan*/*šodan* causative/inchoative verbal markers are not fully light verbs. In this paper, it is argued that they are not heavy verbs. However, light verbs having a phonological matrix are to be categorized into two types:

- a. Those asymmetrically c-commanding¹² the non-verbal element
- b. Those c-commanding the non-verbal element.

The former is the case in which the non-verbal element is a noun; the latter is when it is an adjective.

por kardan	rahā šīše-rā ?az ?āb por kard.
full to make	Rahā glass-rā from water full did.
'to make full, to fill'	'Rahā filled the glass with water.'
	šīše ?az ?āb por šod.
	glass from water full became.
	'Glass (was) filled with water.'

Thus, this case indicates the ergative quality.

Sometimes it may be observed that an enclitic referring to the direct object is attached to the adjective or the verbal element:

rahā šīše-rā ?az ?āb por-eš kard.

Although cliticization requires a separate and detailed analysis of its own in Persian, it is claimed in this paper that such enclitic phenomena are also to be construed as PF-effects and as such determined as a consequence of the syntax-phonology interface.

4. A complex predicate in Persian might be formed as a result of the merger of a prepositional phrase and a verb. In this case, then:
 - a. The verb is not a light verb; it is a heavy one.
 - b. The merged construction on the whole receives a non-compositional meaning although it is syntactically transparent.
 - c. The prepositional element is [+functional, +lexical]—in line with Fukui (1999: 338). As such, it is not a fully contentive element; rather its existence is a requirement of the θ -feature

of the nominal element and, as a result, such prepositions can be argued to be fairly PF-phenomena as well.

5. A complex predicate may be formed as a result of the merging of an adverb with a verb. Here, there are two possibilities:
- a. The non-verbal adverbial element is combined with a causative/inchoative *kardan/šodan* light verb. This type is similar to case # 3.

rahā rāmin-rā ?az xāne-?aš birun kard.
 Rahā Rāmin-rā from house-his/her out did.
 'Rahā threw Rāmin out of his/her house.'

- b. The non-verbal adverbial element merges with a heavy verb and the whole phrase receives an idiomatic meaning although the syntactic structure is lucid. This type is similar to case # 4.

?u diruz dar gozašt.	rahā bā ?u dar oftād.
S/he yesterday in passed	Rahā with him/her in fell.
'S/he passed away yesterday.'	'Rahā fought with him/her.'

5 Conclusion

The study of complex predication in Modern Persian indicates that whatever the Lexico-Conceptual Structure (LCS) and Predicate Argument Structure (PAS) of the simplex/unipartite verbs, a similar situation may or may not apply for their equivalent complex/multipartite predicates.

Therefore, the model adopted to account for the argument structure of verbal elements such as the famous and oft-quoted Hale and Keyser's (1993) decompositional approach is not the real issue in providing an account for the complex predicate formation in general, and complex predication in Persian in particular. The important issue at stake is to explain how various components in a linguistic system are linked to one another. An instance of which may be to see how an agglutinative and at times fusional/suppletive verbal construction such as the unipartite verbs can be recast into a new analytical/multipartite construction.

In other words, neither a fully constructionist nor a fully projectionist view of syntax will be able to account for empirical differences within and across languages. Although syntax is a computational system of merge, move and check, through setting parameterized features such as degree of lexical composition, degree of PF-strength and how theta roles act in a language, it may have different constructionist and projectionist powers.

Complex predication continuum in Modern Persian is a clear indication and realization of such projectionist-constructionist balance.

Notes

1. The present article is partially based on Keivan Zahedi's (2002) unpublished PhD dissertation at Tarbiat Modarres University, Tehran, Iran, which was supervised by Professor Mohammad Dabir-Moghaddam.
2. Very broadly speaking, "complex predicates can be defined as predicates which are multi-headed; they are composed of more than one grammatical element (either morphemes or words), each of which contributes part of the information ordinarily associated with a head." (Alsina, et al 1997:1)
3. Among works in non-Persian languages one can cite the following as the most important ones: Du Ponceau (1819), Kroeber (1909 & 1911) and Sapir (1911) as the earliest dates for the study of noun incorporation in American languages, Woodbury (1975), Mardirussia (1975), Sadock (1980, 1986 & 1991) Mithun (1984 & 1986) and Spencer (1995), which all deal with incorporation merely, Baker (1988, 1996 & 1997), Sara Rosen (1989) Andrew Spencer (1995), Jerrold M. Sadock (1985, 1991), Hale and Keyser (1993 & 1997), Williams (1997), Alsina (1997), Ackerman and LeSourd (1997), Butt (1997 & 1998), Kiparsky (1997), Carol Rosen (1997), Dubinsky (1997), Tara Mohanan (1994, 1995 & 1997) and Saito and Hoshi (2000).
4. Among earlier analyses of Persian complex predicates mention could be made of works such as Phillot (1919: 274-280), Lambton (1953[1984]: 85-93), Khayampour (1347[1968]: 66), Bateni (1348[1969]: 58-80), Sadeghi (1349[1970]: 791-801), Moyne (1970: 43-83), Rubinchik (1971: 78-83), Sharifi (1975), Khanlari (1355[1976]: 176-8; 1365[1986]: 117-181), Soheili-Isfahani (1976: 110-138), Sheintukh (1976), Tabaian (1979), Windfuhr (1979: 113-128), Bashiri (1981: 139-154), Barjasteh (1983), Mohammad and Karimi (1992), Samiian (1983: 252-266), Meshqotteddini (1373[1994]: 158-163) and Ghomeshi (1994 & 1996: 253-284).
5. Karimi (1997) is very similar to Saito and Hoshi's (2000) analysis of light verb constructions in Japanese.
6. Simple verbs in Persian generally consist of a present verbal root, a past stem marker/extender suffix and what in Persian is called '*shenase*' – i.e. subject agreement marker. This form of verb construction is definitely indicative of an agglutinative origin. An illustrative example is *xordam*: *xor-* (present verbal stem/root), *-d* (past stem marker) and *-am* (first person singular subject agreement marker).

Of course, there are some cases in which the borderline between present root and past stem are not so clear and some inflectional fusion or sound change/alteration seems to have occurred:

raf	+	t	+	am
'ro/rav' is the present verbal root.				

Also, there are some so-called suppletive cases, in which there is no affixal/structural relationship between the present verbal root and the past stem:

bin	present verbal root
did	past stem
didan	infinitival

However, in the development of the Persian language, especially in the Middle Persian era, and after the great borrowings from Arabic, Persian seems to have adopted a new form at the first stage. Verb formation, not from present verbal roots but from non-verbal roots plus the augmentation of a "fake suffix" – i.e. "ja?li" in Persian – which is *-id*:

<u>jang 'war'</u>	+	<u>id</u>
noun		ja?li verb (past tense) marker

<u>torš 'sour'</u>	+	<u>id</u>
adjective		ja?li verb (past tense) marker

Here, the present verbal root is the same as the noun or adjective to which the “ja?li” verb marker is attached. In this regard and with respect to *intransitive* verbs in Persian, one can cite Zand (1991) arguing that:

- a. Deadjectival unipartite--i.e. simplex--verbs (e.g. *xoškidan* ‘to get dry’, *toršidan* ‘to get sour’) are unaccusative achievement while denominals are unergative activity verbs (e.g. *jangidan* ‘to fight’, *tarsidan* ‘to dread’).
- b. Unipartite deadjectival and denominal verbs have bipartite—i.e. complex/compound—counter-parts with the same aspectual properties.
- c. The unique argument of denominals is an agent and that of deadjectivals is a patient.

Plain verbs (e.g. *paridan* ‘to jump’, *jušidan* ‘to boil’)—i.e. those verbs whose roots are neither nominal nor adjectival—are ambiguous between achievement/unaccusative and activity/unergative predicates.

This way, the Persian language equipped itself with still another agglutinative mechanism to form verbs out of other syntactic categories, particularly nouns and adjectives. Yet, there was another development underway, making Persian less agglutinative and more analytical.

At the second stage, along with the process of grammaticalization of a number of frequent verbs of various aspectual structures – e.g. *šodan* ‘to become’, *kardan* ‘to do’, *zadan* ‘to hit’, etc. – instead of the agglutinative affixation – in fact suffixation – of the “ja?li” verb-marker, a separate verb is added to the non-verbal element, the now so-called “light verb”.

7. Also, taking lexicon in its strict Bloomfieldian sense that requires it to be ‘a list of exceptions’ would be another conception to be modified. Seen from another perspective, lexicon and syntax can have different types of interactions in different languages in accordance with their typological character. It may be argued that , morphology as word-formation – i.e. derivational morphology – could be mainly restricted to lexicon – as in basically inflectional/agglutinating languages – to syntax and at times even beyond– as in analytical- languages e.g. Chinese – and to both in polysynthetic/incorporating languages, since in these languages any word is extended to the sentence level and as such there is no boundary between morphology and syntax. Modern Persian, which is an analytical-becoming language, demonstrates variability in this respect as will be indicated in the present article.
8. Sorace (2001: 249) suggests that hierarchies be built on (potentially universal) aspectual parameters, identifying the notion of ‘telic dynamic change’ at the core of unaccusativity and that of ‘agentive nonmotional activity’ at the core of unergativity. “The extremes of the hierarchy thus consist of maximally distinct core verbs ... which consistently display unaccusative or unergative characteristically, respectively. In contrast, peripheral verbs types between the extremes are susceptible to variable syntactic behavior.”(ibid) Her proposal is made on the grounds that “(1) [a]cross languages some verbs tend to show consistent unaccusative-unergative behavior whereas others do not and (2) within languages some verbs are invariably unaccusative-unergative regardless of context, whereas others exhibit variation.” (ibid).
9. Interestingly, Ndayiragije (2000), in a slightly different context though, also argues that the concept of strength is necessary and that some of its effects are PF-driven.
10. In fact, languages may vary with regard to whether theta roles are lexical features to be checked or features to be syntactically assigned; thus the *theta role parameter*.
11. His theory constitutes basically the following proposals:
 - a. A new functional category namely *Pr*—for predication— is required to be postulated with the following basic properties:
 1. The canonical position for external arguments is [spec, Pr].
 2. Pr F-selects YP, a maximal projection, of any lexical category Y.
 3. PrP is F-selected either by I or by V as its complement.
 4. Pr serves the semantic function of predication.
 - b. Direct objects are generated in [spec, V], parallel to the position of subject in [spec, Pr]. As such, he called the former *secondary subjects*.
 - c. PrP is complete functional complex (CFC) in Chomsky’s (1999) terms; that is, it can stand as a complete unit of information by itself, whereas a VP cannot.

- d. Theta role assignment correlates with the syntactic structure: the innermost theta role is assigned within V-bar to V's complement whereas the next innermost theta role is assigned within VP to the secondary subject—that is the direct object—and the outermost theta role is assigned within PrP to the primary subject: [[[_____ θ_3] θ_2] θ_1]
- e. The argument structure of different verbs then vary:

The argument structure of the unaccusative verb is [[[_____] θ_2]].

The argument structure of the unergative verb is [[[_____]] θ_1].

The argument structure of the ergative verb is [[[_____] θ_2] (θ_1)].

12. In line with Kayne (1994).

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Pseudogapping and Gapping: Functional Equivalents

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1 Introduction

Pseudogapping (PG) first received detailed attention in Nancy Levin's seminal work (1979/86). In PG, a verb appears to delete under identity from a second clause (along with other material, on occasion), leaving a tensed auxiliary verb as a left remnant. The following gives typical examples (strikeout text shows "deleted" material):

1.
 - a. Sandy can't speak French, but she can ~~speak~~ Italian
 - b. You didn't like *Casablanca*, but you might ~~like~~ *Citizen Kane*
 - c. We read fewer mysteries than we do ~~read~~ westerns

Levin notes that not all instances of PG sound equally natural. Below we show three of her key observations; in each case the accompanying (a) form, which satisfies the given condition, sounds more natural than the (b) form, which does not:

2. **Polarity:** PG sounds more natural when the clauses are of differing polarity.
 - a. Robin doesn't like spiders, but she does ~~like~~ snakes
 - b. *Robin likes spiders, and she does ~~like~~ snakes
3. **Coreferential subject:** PG sounds more natural when the clauses have coreferential subjects.
 - a. Sandy can't speak French, but she can ~~speak~~ Italian
 - b. ?Sandy can't speak French, but Dana can ~~speak~~ Italian

4. **Comparatives:** PG sounds more natural in comparative constructions than in coordinated ones.
- a. Dana can understand Portuguese better than she can ~~understand~~ German
 - b. *Dana can understand Portuguese, and she can ~~understand~~ German

By and large, the above leads to a correct description of the facts. However, none of these factors has any explanatory power. This paper attempts to lead toward a principled answer to the question of why some PG forms sound better than others. We shall commit ourselves here to no particular syntactic analysis of PG (and continue to show ~~strikeout text for PGed verbs~~); we focus instead on the discourse function of PG. In particular, we offer the following:

5. **The “ideal” PG construction has exactly two points of contrast.**

In this regard, PG and Gapping are the same. In Gapping, a verb (at least) also appears to delete under identity; however, a subject rather than an auxiliary stands as the immediate left-remnant:

- 6. a. Robin likes mysteries, and Kim ~~likes~~ romances
- b. Sandy spoke Italian, and Dana ~~spoke~~ Russian

These canonical Gapping examples have two points of contrast; in (6a), for example, *Kim* contrasts with *Robin*, and *mysteries* contrasts with *romances*. Optimal PG cases have a similar pair of contrasts. PG and Gapping have the same discourse function.

We shall see that this single claim manages to subsume Levin’s observations, and in some cases accounts for the data more correctly.

2 Gapping

Kuno (1976:310) gives the Functional Sentence Perspective (FSP) of Gapping:

“Constituents deleted by Gapping must be contextually known...the two constituents left behind by Gapping necessarily represent new information, and, therefore, must be paired with constituents in the first conjunct...”

The first part given here corresponds to the notion of “delete under identity;” the second part speaks more directly to the fact that we find two points of contrast in the two clauses. The following forms prove grammatical because they obey the FSP, just as the forms in (6) did:

7. a. Kim wants to learn Italian, and Dana ~~wants to learn~~ French
 b. Merle gave a nickel to Sandy, and Kelly ~~gave a nickel~~ to Terry

These forms have slightly more complex Acontextually known \cong Gapped strings, but still show a pair of contrasts; for example, *Kim* with *Dana* and *Italian* with *French* in (7a). Kuno's FSP gives rise to a number of correct predictions as to when Gapping attempts will prove ungrammatical. When he points out that the remnants must represent new information, he underscores the contrastive nature of Gapping. As is well-known, a lack of contrast in the right-remnant causes Gapping forms to fail (though the non-Gapped forms would not):

8. a. *Robin likes mysteries, and Kim ~~likes~~ mysteries (too)
 b. *Kim wants to learn Italian, and Dana ~~wants to learn~~ Italian

Similarly, a lack of contrast of left-remnants in Gapping also causes ungrammaticality (though again, the following non-Gapped forms would prove perfectly acceptable):

9. a. *Robin likes mysteries, and Robin/(s)he ~~likes~~ romances (too)
 b. *Kim wants to learn Italian, and Kim/(s)he ~~wants to learn~~ Portuguese (too)

The forms of (8) and (9), then, demonstrate that a single contrast in Gapping causes stark illformedness. The following show Kuno's essential correctness in specifying two constituents left behind by Gapping. If a Gapping form has more than two points of contrast, degradation results (even if the "extra" remnant is selected by the verb, as in the (a) example below); as a generalization, the greater the number of contrasting elements, the greater the degradation:

10. a. ?Tracy placed the magazines on the counter, and Dana ~~placed~~ the books on the table
 b. ?Robin read Hamlet in May, and Kim ~~read~~ King Lear in June
 c. ?*Sandy ate chicken in the kitchen on Monday, and Merle ~~ate~~ fish in the dining room on Tuesday
 d. *I want to study Portuguese for a year in Brazil with my friends to help me with my job, and you ~~want to study~~ Spanish for two years in Mexico with your cousins just for fun

We agree with Kuno, then, that Gapping optimally shows two points of contrast. The second clause of a Gapping construction typically consists of merely Subject--(Ellipted) Verbal string--Verbal complement.

We claim that PG forms also optimally show two points of contrast; however, in a sense PG becomes more interesting, since it has a wider range of possible points of contrast. The next section shows some of these possibilities.

3 Possible Points of Contrast in PG Constructions

PG shares with Gapping the requirement that right-remnants must contrast:

11. a. *Kim can speak Italian as well as Dana can ~~spea~~k Italian
- b. *Sandy will chop onions before Merle will ~~chop~~ onions
- c. *Terry doesn't like parsnips, but I do ~~like~~ parsnips

The forms above may fail in part simply because they do not use a more appropriate process that deletes more non-contrastive material, namely Verb-Phrase Ellipsis:

12. a. Kim can speak Italian as well as Dana can ~~spea~~k Italian
- b. Sandy will chop onions before Merle will ~~chop~~ onions
- c. Terry doesn't like parsnips, but I do ~~like~~ parsnips

In any event, PG, like Gapping, must have as one of its points of contrast the verbal complement. The interesting question becomes: what can serve as the second point of contrast? Whereas Gapping has as its only possibility a contrast of subjects, PG shows a much wider range of possibilities. In the next subsections we investigate some of these differing possible contrasts separately.

3.1 Subject

Contrary to Levin's analysis, sometimes PG sounds relatively acceptable with noncoreferential subjects. Consider the following (here and subsequently, boldface indicates the second point of contrast in addition to the verbal complement):

13. a. *Kelly can speak Italian, and Kelly/(s)he can ~~spea~~k French
- b. (?)Kelly can speak Italian, and **Dana** can ~~spea~~k French

(13b), though perhaps not perfect, clearly improves on (13a) (an account for the marginal status of (13b) follows in §5). Although (13a) has coreferential subjects, it has but a single contrast (the direct object) and therefore fails. (13b) shows that contrasting subjects can participate in PG, and that Levin's observation does not fully suffice.

3.2 Modal Auxiliary

The two clauses of a PG construction can have different modals; this counts as the second point of contrast. Consider:

14. a. Max may read Hamlet, and (s)he (definitely) **will read** Lear
 b. You could study French, but you really **should study** Italian

Each of these sounds more or less acceptable, with sufficient emphasis on the modals. Note that if one gives only normal prosodic stress to the modals above, the forms degrade considerably, because the second point of contrast does not come through strongly enough.

As the analysis predicts, matters worsen if we add noncoreferential subjects to the mix, since that would lead to a total of three contrasts:

15. a. ??Max **will** read Hamlet, and Kelly **may** read Lear
 b. ??You **could** study French, but we really **should study** Italian

3.3 Polarity

As noted earlier, Levin (1979:28) observes that “[t]he two clauses of a pged structure frequently contrast in polarity.” The following examples all sound fully natural:

16. a. I don’t understand Milton, but I **do understand** Shakespeare
 b. They can’t read Latin, but they **can read** Greek
 c. Merle will eat parsnips, but (s)he **won’t eat** lima beans

Once again, further points of contrast leads to degradation:

- 17 a. ?I don’t understand Milton, but Sally does ~~understand~~
 Shakespeare
 b. ?They can’t read Latin, but we can **read** Greek
 c. ?Merle will eat parsnips, but (s)he shouldn’t ~~eat~~ lima beans

3.4 Coordinator

Thus far in this section, we have deliberately presented examples with only the coordinators *and* and *but*, because they do not in and of themselves connote a contrast; *but* suggests contrast elsewhere but does not provide it itself. Therefore, the second point of contrast for an optimal PG form with *and* or *but* must come elsewhere.

Consider now the coordinator *or*. Unlike *and* and *but*, *or* does introduce a contrast: truth-value. In a typical *Clause₁ or Clause₂* construction, one proposition holds true while the other does not. Therefore, the predictions follow that in PG forms with *or* as the coordinator, the *or* itself will stand as the indicator of the second point of contrast (in addition to that of the verbal complement), and that additional contrasts will lead to degradation. The facts bear this out:

18. a. I might select the chicken, or I might select the beef
 b. Dana can speak Latin--or perhaps s/he can ~~speak~~ Greek
 c. Tracy will read Hamlet, or perhaps s/he will ~~read~~ King Lear
19. a. ?Kim might select the chicken, or Robin might ~~select~~ the beef
 b. ?Dana can speak Latin—or perhaps Sam can ~~speak~~ Greek
 c. ?Tracy will read Hamlet, or Merle will ~~read~~ King Lear

Once we understand that *or* contributes a point of contrast itself, we have an explanation for the relative unacceptability of the forms in (19). For example, (19a) has three points of contrast: subject, verbal complement, and truth-value. So not all coordinators have the same effect in a PG construction; *and* and *but* pattern differently from *or*.

3.5 Subordinator

Some subordinators behave similarly to *or* and introduce a contrast of sorts; other subordinators do not. Consider as a first example temporal subordinators. *Before* and *after*, for instance, indicate a temporal contrast between the events of the two clauses; on the other hand, (one use of) *while* indicates a simultaneity or lack of temporal contrast. As expected, PG forms with *before* and *after* sound best when they have no additional points of contrast beyond the verbal complement:

20. a. I relied on Terry **before** I did ~~rely~~ on Max
 b. The students read Hamlet **before** they did ~~read~~ Lear
 c. I could complete step X only **after** I could ~~complete~~ step Y
21. a. ?Dana relied on Terry before Tracy did ~~rely~~ on Max
 b. ?The students read Hamlet before the teachers did ~~read~~ Lear
 c. ?I could complete step X only after you could ~~complete~~ step Y

Each of the degraded forms in (21) has three contrasts. We find the opposite situation with *while*, which suggests simultaneity or lack of temporal contrast:

22. a. ?Sandy tapped her right foot, while s/he did ~~tap~~ her left
 b. Sandy tapped her right foot, while **Merle** did ~~tap~~ her left

Turn now to the concessive subordinators *though* and *although*. Their meaning closely corresponds to that of *but*; they themselves do not contain a contrast, but they indicate the presence of one elsewhere (typically that of polarity). As expected, then, these subordinators pattern with *but* with respect to PG constructions:

23. a. I don't like lima beans, (al)though I **do like** parsnips
 b. *I like disco music, (al)though I do ~~like~~ opera music

Space limitations preclude a further investigation of subordinators, and so we now turn to comparatives.

4 PG and Comparative Constructions

Levin (1979:15) writes that “[t]he most common environment for PG is comparative clauses.” We give here some of her examples, all spontaneously produced (Levin 1979: 15-16):

24. a. They treated me with less consideration than they would ~~treat~~
 an animal
 b. I can find more mp's than I can ~~find~~ mt's
 c. I'm not citing their analysis so much as I am ~~citing~~ their data

We agree that PG occurs far most frequently in comparative constructions. This might result from syntactic considerations; perhaps the operation that creates PG (whatever it form it might take) happens to apply more readily to comparatives than noncomparatives. In any case, regardless of the syntax on PG in comparatives, the same basic findings regarding contrast hold, as we will show.

Consider first such examples of comparative markers such as *more than*, *less than*, and the like. These show a contrast of extent; in *Clause₁ - comparative marker - Clause₂*, the extent to which a condition applies in one clause exceeds the extent to which it applies in the other. So in the following examples, we take the comparison marker as the second point of contrast:

25. a. They treated me with **less** consideration **than** they would ~~treat~~
 an animal
 b. I can find **more** mp's **than** I can ~~find~~ mt's
 c. Merle plays the piano **more skillfully than** s/he does ~~play~~ the
 guitar

If we take examples such as the above but add a third contrast, such as that of subject, we end up with slightly degraded results:

26. a. (?)I can find more mp's than you can ~~find~~ mt's
 b. (?)Merle plays the piano more skillfully than Tracy does ~~play~~
 the piano
 c. (?)You will find comparative PGs more often than I will ~~find~~
 noncomparative ones

Granted, the degree of degradation resulting from the addition of a third contrast does not stand out as much as it did in previously inspected cases (which may result from the aforementioned possible syntactic preference for comparatives in PG generally), but the difference in judgments of the above two sets remains real.

Consider now comparative markers that suggest an equality. Examples include: *as much as*, *the way (that)*, and the like. In constructions of the type *Clause₁ - comparative marker - Clause₂*, the extent to which a condition applies in one clause equals the extent to which it applies in the other. We therefore expect to find perfectly grammatical PG constructions including this type of comparative marker that have an additional point of contrast, such as polarity or subject. This bears out:

27. a. I'm not citing their analysis so much as I am ~~eking~~ their data
 b. You don't get it with a negative in final position the way you
 do ~~get~~ this one in ~~final position~~
 c. Max can speak Italian as well as Tracy can ~~speak~~ French

In the (a,b) forms above, polarity provides the second contrast (in addition to the direct object) and the (c) form has contrasting subjects. The comparative marker does not count as a contrast here. As expected, adding an additional contrast to forms of the type above leads to degradation:

28. a. ?You don't get it with a negative in final position the way you
 do ~~get~~ this one in initial position
 b. ?I can understand French now as well as you could ~~understand~~
 English as a kid
 c. ?I like mysteries as much as you don't ~~like~~ romances

5 Gapping vs. Pseudogapping

Both Gapping and PG achieve the same purpose: to highlight a contrast of two elements. Yet the two do so in different ways. As is well known, Gapping

obtains only under coordination, and never under subordination or in comparative constructions:

29. a. Robin read Hamlet, and Kim ~~read~~ King Lear
 b. *Robin read Hamlet before Kim ~~read~~ King Lear
 c. *Robin read Hamlet more quickly than Kim ~~read~~ King Lear

PG, of course, obtains in subordinate and comparative constructions alike. When it comes to coordinate constructions, we have seen that PG works well if a polarity difference provides the second point of contrast, but less well if the subject does:

30. a. I'll eat parsnips, but I won't ~~eat~~ lima beans
 b. (?)Robin can speak French, and Kim can ~~speak~~ Italian

As noted earlier, Gapping contrasts two elements: subject and verbal complement. The oddness of the (b) form above, then, results from the fact that we have attempted to use PG in Gapping's stead:

31. Robin can speak French, and Kim ~~can speak~~ Italian

The above uses the best tool, Gapping, for the job. This has the effect of removing all non-contrastive material, which PG would not do.

The "best uses" of Gapping and PG, then, fall in complementary distribution. If you want to delete a main verb, here are your best choices:

Gapping: For coordinate constructions with contrasting subjects

PG: For coordinate constructions with a second point of contrast
besides subject; for all subordinate and comparative constructions

6 A Quick Return to Levin's Observations

Let us return now to Levin's original observations and demonstrate how the current analysis predicts them. First consider the general preference for a noncoreferential subjects in coordinated PG forms with *and* and *but*. This results because, as noted above, Gapping proves a better tool for the job. PG provides a good environment for polarity differences in coordinated PG forms, though, because the polarity creates the second point of contrast. Gapping, of course, does not work to achieve the same ends, because the English sentence-level negator *not* requires an auxiliary, which Gapping by definition lacks. As for the preference for comparative forms, perhaps the fact that comparative

markers such as *better than* so clearly show a contrast makes them so felicitous in PG constructions. This final point obviously needs further thought.

7 Conclusion

PG and Gapping have the same discourse function. This simple idea leads to a several benefits. Most importantly, the idea that PG optimally contrasts two elements enables a wide range of correct predications as to whether a give PG form will prove acceptable or less acceptable. Furthermore, this single discourse condition makes these predictions more elegantly (and in some cases more correctly) than Levin's generalizations do. Finally, the analysis leads to an understanding as to whether Gapping or PG will prove a more appropriate strategy.

Though we have not taken a stand on the syntactic machinery involved in PG, the present work suggests a direction to take. The most widely accepted syntactic PG analysis of Lasnik (1995) shows PG as a special instance of Verb Phrase Ellipsis. On the other hand, Zoerner and Agbayani (2000) give an analysis of PG as a marked type of Gapping. The present work suggests that the latter might prove preferable, given the functional connection between PG and Gapping that PG does not have with Verb Phrase Ellipsis.

In any case, though some empirical problems remain, we believe that the current work presents a meaningful advance in our study of Pseudogapping.

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Remnant Movement, Last Resort and Greed: A Minimalist Account of Bulgarian Cliticsⁱ

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The class of clitic elements cannot be defined based on immediately obvious syntactic properties. Clitics belong to different syntactic categories: pronouns, auxiliaries, and sentential particles with a range of functions. In contrast, all clitics fall into the phonological category of non-stressed elements. That is why their ordering has been traditionally viewed as a phonological phenomenon. Wackernagel's law of second position claims that non-stressed elements agglomerate after the first prosodic constituent of the sentence, as in (1)ⁱⁱ (clitics in bold).

- (1) Suseda **li si e** kupil bilet ot tototo?
Neighbor-Def li self is bought ticket from lottery-Def
'Was it the neighbor who bought himself a lottery ticket?'

While it is true that clitics are not members of a single syntactic category, their distributional properties are not independent from their syntactic specification. For example, the sequence of clitics in (1) cannot be randomly rearranged, even though their position would still satisfy Wackernagel's law (2).

- (2) *Suseda **e li si** kupil bilet ot tototo?
Neighbor-Def is li self bought ticket from lottery-Def
'Was it the neighbor who bought himself a lottery ticket?'

Wackernagel's law, by virtue of its phonological character, has nothing to say about why the auxiliary *e* is not allowed to precede the question particle *li*. These observations give rise to the currently prevalent view: that clitic position is decided by a non-modular interaction of syntax and phonology. On one view, clitics are allowed to violate certain syntactic principles in order to satisfy phonological requirements on their position (e.g. Legendre 1998). Alternatively, the phonological features of a clitic force another constituent to move to a position supporting the clitic (e.g. Montapanyane 1997). Even though such approaches hold promise, they should be postponed until it is

shown conclusively that clitics cannot be handled by a modular syntactic theory, because abandoning the modular theory of language results in a loss of natural limitations on the set of admissible theoretical explanations.

Constructing a syntactic account of the second-position effect is easy if we make just one simplifying assumption: that the prosodic constituent preceding a Wackernagel clitic is always a full phrase. Compare the grammatical examples where the clitic *li* is preceded by the subject DP *suseda* (3) or the PP *ot tototo* (4) to the ungrammatical case of initial *li* (5).

- (3) *Suseda li specheli ot tototo?*
 Neighbor-Def *li* won from lottery-Def
 'Is the neighbor the one who won the lottery?'
- (4) *Ot tototo li specheli nagrada?*
Li won from lottery-Def prize
 'Is the neighbor the one who won the lottery?'
- (5) **Li suseda specheli ot tototo?*
 Won *li* neighbor-Def from lottery-Def

The distinction in grammaticality between the first two examples and the last is due to the obligatory presence of an XP before *li*. We can formulate this distinction in structural terms by a principle in the spirit of X' theory that requires the presence of an XP in the specifier of a clitic projection (I).

I. Full Specifier: The specifier of the projection headed by a clitic must be filled.

The same intuition may be captured in minimalist terms if we assume that clitics are lexically marked with a category-unspecific EPP feature that forces a targeted MERGE of some phrasal category XP and the clitic. If MERGE fails to occur, the derivation involving a clitic would crash as a result of the presence of the uninterpretable EPP-feature.

The major difficulty for the EPP-style account lies in the fact that clitics do not always follow a full phrase. For example, Serbo-Croatian permits clitics to split DPs (6) - a fact generally regarded as evidence for phonological movement (Halpern 1995, Schutze 1996).

- (6) *Taj joj ga e chovek poklonio.* (Serbo-Croatian, see Franks 1998)
 This-Nom her-Dat it-Acc is man-Nom bought
 This man bought it to her.

Franks (1998) notes that allowing topicalization of partial constituents accounts for the facts in Serbo-Croatian without phonological movement. Phonological explanations are largely based on the assumption that XP-movement of partial constituents is impossible.

We choose to abandon this assumption in favor of an analysis featuring remnant movement. Remnant movement has been proposed in relation to partial topicalization in German and Hungarian successive head movement (Besten and Webelhuth 1987; Muller 1998; Koopman and Szabolsci 2000). These phenomena provide considerable

support for the hypothesis that phrases can move as partial constituents even after some or all of their arguments have moved out. Furthermore, we show that remnant movement can replace the non-minimal head movement invoked to derive certain Bulgarian focus constructions. Most importantly, remnant movement allows us to preserve the simplicity of the EPP-style account of clitic placement formulated above even in the face of evidence involving split constituents. We propose a revised version of the EPP-style account in which the EPP feature of a second-position clitic sometimes attracts a partial constituent instead of a full phrase. We establish that all movement of full or partial constituents invoked in the analysis is subject to the locality conditions on feature-driven movement as formulated in Chomsky (1995).

We build our case on evidence for the syntactic movement of a partial constituent in constructions involving the clitic interrogative marker *li*. Yes-no questions in Bulgarian can be formed either with the clitic interrogative marker or with one of its non-clitic counterparts: *dali* ('is it the case that') or *nali* ('isn't it the case that'). Under neutral prosody, the non-clitic markers question the truthfulness of the proposition as a whole (3), while the clitic marker may focus the query on the constituent preceding it (7).

- (7) Dali/nali suseda specheli ot tototo?
 Dali/nali neighbor-Def won from lottery-Def
 'Is it/isn't it the case that the neighbor won the lottery?'

The non-clitic markers appear to be complementizers introducing the interrogative clause without inducing any movement upon its constituents. We agree with the overwhelming assumption that *li* resides in C, because of its interrogative function and because it does not co-occur with other complementizers (Rudin et al. 1997; Montapanyane 1997; King 1996; Rivero 1993). If this is the case, the clitic complementizer differs from its non-clitic counterparts in its ability to introduce features in C that attract a focused phrasal constituent to SpecCP.

Focus-driven movement is central to most previous accounts of the second-position effect with *li* (e.g. Rudin et al. 1997, Montapanyane 1997, Izvorski et al. 1997). However, focus-driven movement cannot derive neutral yes-no questions. Neutral yes-no questions are introduced either by a full complementizer *dali/nali* or by the clitic *li*. Since the questions are by definition neutral in meaning, they do not contain a focused constituent moving to SpecCP. This leads us to expect that a neutral *li* question should look just like a neutral *dali* question with the complementizer filling up the highest (first) position in the clause. It is precisely the unexpected ungrammaticality of this sentence that allows us to describe *li* as a second-position clitic. *Li* cannot remain the first word of the sentence but must attract some constituent, namely the verb (8).

- (8) Specheli li suseda ot tototo?
 Won li neighbor-Def from lottery-Def
 'Did the neighbor win the lottery?'

Focus-raising accounts can accommodate this data with some additional assumptions. For example, the structure of (8) could result from Last Resort V-to-C raising. According to Rudin et al. (1993), V raises to check an interrogative feature in C only if there is no focus feature to be checked. In this account, it is unclear where the complimentary quality of these two types of movement stems from. As an alternative, Montepanyane suggests that V-to-C raising is an obligatory part of all *li* questions subsequently masked in focused *li* questions by the phonological movement of *li* to the first stressed CP element. Presumably, the phonological movement is a last resort operation to save the derivation. However, there is ample evidence against this account. Consider for example multiple wh-questions. While wh-questions do not normally include the question particle *li*, it may surface in marked contexts (such as rhetorical questions) for emphasis. Bulgarian is (in)famous in linguistic literature for exhibiting obligatory multiple wh-movement (9). A version of (9) with emphatic interpretation is included in (10).

- | | | | |
|-----|---|------|---|
| (9) | Koj kakvo na kogo e dal?
Who what to whom is given
'Who gave what to whom?' | (10) | Koj kakvo na kogo li e dal?
Who what to whom li is given
'Who gave what to whom?' |
|-----|---|------|---|

If we maintain that the wh-phrases move to CPⁱⁱⁱ and we accept Montepanyane's claim that *li* cliticizes to the first stressed CP-element, the following data is surprising (11).

- (11) *Koj li kakvo na kogo e dal?
Who what to whom li is given
'Who gave what to whom?'

Since the first stressed element of CP is *koj*, we would expect (11) to be grammatical and (10) ungrammatical. However, we observe the opposite pattern.

Even if focus-raising accounts can handle particular cases with somewhat cumbersome additional assumptions, they don't present a unified approach to yes-no questions in Bulgarian. This becomes evident when we consider two types of *li* questions, which, to our knowledge, have not been discussed in the literature to date. In one type of questions, *li* is preceded by one or more XPs together with the verb. We will call these the XP⁺_V_*li* questions (12).

- (12) Suseda nagrada specheli li?
Neighbor-Def prize won li?
Translation 1: 'Was it the neighbor that won a prize?'
Translation 2: 'Was it a prize that the neighbor won?'
Translation 3: 'Was it the neighbor who won and was it a prize that he won?'
Translation 4: 'Did the neighbor win a prize?'

In the other type, *li* is preceded by potentially many XPs without the verb. We will call these XP⁺_li_*V* questions (13).

- (13) Suseda nagrada li specheli?
 Neighbor-Def prize li won
 ‘Was it a prize that the neighbor won?’

A crucial difference between the two types of questions is that in $XP^+_V li$ questions, all XPs can be interpreted as foci while in $XP^+_li V$ questions, only the last one (the one closest to *li*) is. There is no reasonable means by which focus-raising accounts as formulated so far can handle the word order of the $XP^+_V li$ questions and their interpretation.

The very existence of questions with multiple elements preceding *li* is somewhat surprising if we take the label “second-position” literally. However, note that “second-position” refers not to an absolute position from the left edge of the sentence, but to a position within some domain. We abstract away from elements in positions external to that domain. For example, German is taken to be verb-second in main clauses, even though certain topicalized adjuncts appear to push the verb to third position, technically speaking (14).

- (14) Wie gesagt, das kann ich nicht machen. (German)
 As said, this can I not do.
 ‘As was said before, I cannot do this.’

Similarly, we assume that in Bulgarian, phrases can adjoin to the left of CP without having an effect on the second-position quality of the clitic *li*. It is clear that if this is so, these adjuncts cannot enter into a checking relation with the semantic feature of *li*, and consequently cannot be interpreted as foci. This assumption allows us to subsume $XP^+_li V$ questions under the standard focus-raising accounts. In these cases, the closest XP is in SpecCP and is therefore interpreted as focus, while the other XPs are simply adjoined as topics and do not receive focus interpretation. However, this line of reasoning is not enough to handle the $XP^+_V li$ questions. Even though we could account for the word order by assuming that these are neutral *li* questions with adjunct XPs, we would not be able to derive the focus interpretation on the XPs. Such an assumption would lead us to predict incorrectly that the NPs preceding *li* are topicalized, rather than focused. Loosely defined, topic and focus represent information as old/certain and new/uncertain, respectively. An appropriate answer to a question refers to its focus (Swart and Hoop, 1995)^{iv}. That all NPs in (12) are possible foci is evident by the fact that (15) and (16) are grammatical answers to (12).

- | | |
|---|--|
| (15) Ne, samo pari.
No, just money.
‘No, just money.’ | (16) Ne, samo zhen a mu.
No, just wife his.
‘No, only his wife won.’ |
|---|--|

Furthermore, the XPs in an $XP^+_V li$ question can be subject to contrastive focusing^v:

- (17) Nagrada poluchi li suseda ili samo pari?
 Prize got *li* neighbor-Def or just money
 ‘Did the neighbor get a prize or just money?’

We could attempt to account for the fact that all of the XPs can be interpreted as foci by positing multiple SpecCPs for focused constituents. However, this analysis does not posit an interaction between the V-to-C movement and the movement of focused XPs. Hence, it predicts that the NPs in (13) could also be interpreted as multiple focused constituents. In reality, only the lowest of them gets a focus interpretation (18).

- (18) a. *Suseda nagrada li specheli?* b. *Ne, samo pari.* c. **Ne, samo zhen a mu.*
 Neighbor-Def prize li won No, just money. No, just his wife.
 ‘Did the neighbor win a prize?’ ‘No, just money’ ‘No, only his wife won’

This suggests multiple CP-specs are not the answer to the question why multiple NPs can be moved together with the verb to a position higher than *li*. Furthermore, PF movement cannot explain the interpretative contrast between the $XP^+ _V _li$ and $XP^+ _li _V$ constructions.

Instead, let us assume that these types of questions involve the syntactic mechanisms of multiple focusing. Multiple focusing in Bulgarian declaratives can be analyzed as movement of the focused constituents to SpecIP (or SpecTP, Montapanyane 1999), as illustrated in (19).

- (19) [_{IP} *Suseda ot tototo nagradi pecheli t_{NP} t_{PP}*], (no ot chesten trud pari ne).
 Neighbor-Def from lottery-Def prizes wins, (but from honest work money not).
 ‘The neighbor wins prizes from the lottery, (but doesn’t earn money for honest work).’

Logically, questions involving multiple focused constituents could be derived by first adjoining all focused constituents to IP, then moving the complement of IP to a landing site out of IP, and finally, moving the IP to SpecCP (20).^{vi}

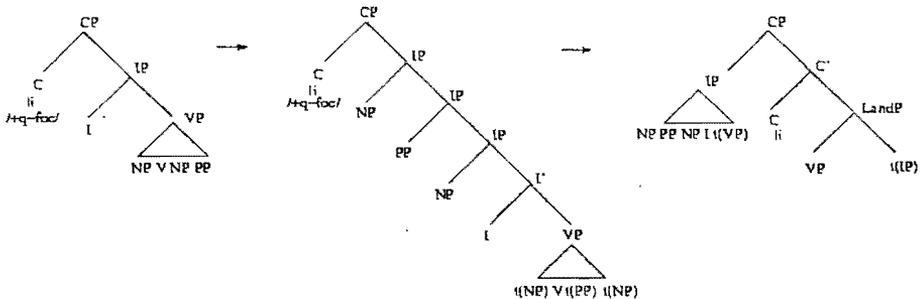


Figure 1: Deriving $XP^+ _V _li$ questions.

- (20) a. [_{CP} [_C *li* +*q-focus* [_{IP} [_{I'} +*focus* [_{VP} *Suseda pecheli nagradi ot tototo*]]]]]
 b. [_{CP} [_C *li* +*q-focus* [_{IP} *Suseda ot tototo nagradi* [_{I'} *pecheli* [_{VP} *t_{NP} t_V t_{NP} t_{PP}*]]]]]]]
 c. [_{CP} [_{IP} *Suseda ot tototo nagradi* [_{I'} *pecheli t_{VP}*]] [_{C'} *li* [_{LP} [_{VP} *t_{NP} t_V t_{NP} t_{PP}*] [_{IP}]]]]]

The proposed derivation crucially relies on an instance of remnant XP movement where the adjuncts have remained in IP while its complement has moved out. Since the constituents focused in IP receive a focused interpretation, it is easy to maintain that

further movement of IP to SpecCP preserves this interpretation. Thus, appealing to remnant movement of IP allows us to reconcile the word order and the interpretation of the $XP^+ _V_li$ questions.

Once we have adopted remnant movement as a mechanism deriving clitic positions, we can eliminate the need for positing phonological movement of either the verb or the clitic. That we can effectively substitute remnant movement for head movement is shown by Koopman and Szabolsci's (2000) account of problematic phenomena related to Hungarian head movement. The key to their analysis is the observation that the result of remnant movement looks exactly like head-movement if all arguments have moved out of the remnant phrase. If we assume that Last Resort V-to-C is in fact degenerate remnant movement of this sort, we can devise a parallel account of the structures in 0 and 0. In both cases, the clitic head cancels a feature by attracting a phrasal constituent. In the case of verb-initial *li* questions, we need to move the remnant IP with the verb sitting in I, while stranding the VP complement of I (21).

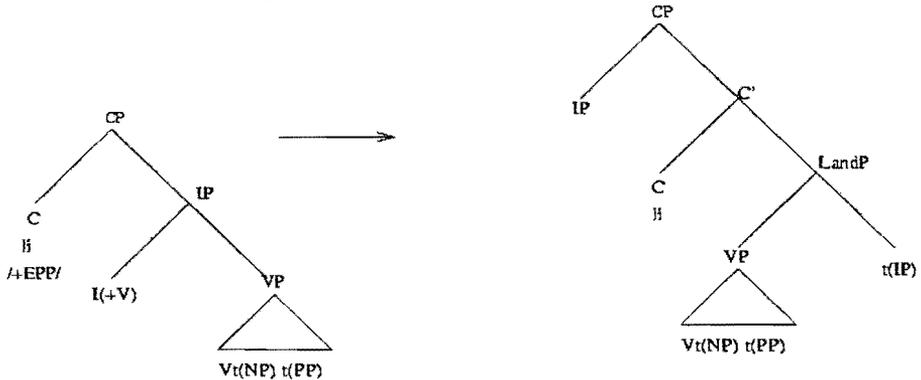


Figure 2: Deriving the neutral *li* questions.

- (21) a. $[_{CP} [_{C} \textit{li} \textit{+EPP}] [_{IP} [_{I'} \textit{Specheli} [_{VP} \textit{tv} \textit{nagradi} \textit{ot} \textit{tototo}]]]]]$
 b. $[_{CP} [_{IP} [_{I'} \textit{Specheli} \textit{t}_{VP}]]] [_{C'} \textit{li} [_{LP} [_{VP} \textit{tv} \textit{nagradi} \textit{ot} \textit{tototo}]]]]]$
 Won *li* prizes from lottery-Def
 'Did he win prizes from the lottery?'

The resulting derivation closely resembles that given in (20) because they are based on the same mechanism. Appealing to Last Resort V-to-C and phonological movement is meant to explain the apparent complementary distribution of the head movement of the verb and the XP movement of the focused constituent. Since remnant movement of the IP targets the specifier of the clitic projection, it is necessarily in complimentary distribution with full XP movement.

Apart from theoretical elegance, the remnant movement account of V-*li* questions has a great empirical advantage because it can be extended to handle cases of apparent verb

movement that violate the Head Movement Constraint (HMC). Such constructions abound in Bulgarian *li*-questions as well as in declaratives.

- (22) *Ot tototo beshe spechelil nagrada.* (23) *Spechelil si nagrada ot tototo.*
 From lottery-Def were won prize. Won are prize from lottery-Def
 ‘It is the lottery you had won prize from’ ‘You had won a prize from the lottery’

For instance, the two sentences above differ in that one imposes a focus reading of *ot tototo* (23), while the other is neutral (22). Typically, the sentence in (23) has been analyzed as the result of NP movement to SpecIP, while the sentence in (22) is claimed to involve either head movement of the verb or phonological movement for the sake of providing support for the clitic *si*. Positing head movement here violates the HMC (Shortest Move), as noted by Rivero (1993) who terms it Long Head Movement. Head movement complying with Shortest Move would have to raise the auxiliary, not the verb. Proposals aiming at circumventing this counterevidence for HMC are based either on clitic lowering or on phonological movement of the verb *spechelil* (Rivero 1993, Halpern 1995). The first option is flawed on theoretical grounds (Rivero 1993), so adopting phonological movement appears to be a more sophisticated trick preventing an apparent violation of Shortest Move. Yet, it becomes evident from the example in (24) that this trick cannot be the whole story. V-to-C movement is grammatical even with the non-clitic auxiliary *beshe* in place of the clitic *si*. However, it has a special focus interpretation:

- (24) *Spechelil beshe nagrada ot tototo.*
 Won were prize from lottery-Def.
 ‘You had WON a prize from the lottery.’

Since *beshe* is not a clitic, we cannot appeal to phonological movement to derive (24).

If we do not want to allow violations of HMC, we can turn to remnant VP movement. In the case involving a clitic auxiliary, let us assume that, just like *li*, *si* heads a functional projection and is marked with an unspecific EPP feature. In the case involving a non-clitic auxiliary, the VP could be marked with some contextual prominence feature that induces movement. In both cases, the VP moves after stranding its arguments *nagrada* and *ot tototo*. The target site is the specifier of the projection headed by the auxiliary. The resulting construction mimics the surface order that would result from head movement of the verb alone. However, the fact that the VP moves to a phrase position rather than to a head position helps explain why the presence of the auxiliary in a higher head position does not block the verb from moving. Under the analysis explored here, the HMC is irrelevant because remnant movement is phrasal movement.

By replacing head movement with remnant movement, we have essentially argued that movement to the specifier of a clitic projection can be of two types. The first type of movement is triggered by the needs of the moving phrase to check its focus features. The second type is caused by the feature-checking requirement of the clitic head itself. Chomsky (1995) argues that these two types of movement are subject to different economy considerations. When remnant movement to a specifier of a clitic projection

the examples in (25), that the auxiliary *shtjal* precedes *bil* but the reverse order is unacceptable.

- (25) a. [_{AuxP1} Shtjal [_{AuxP2} bil [_{IP} da specheli ot tototo]]]].
 Would-have bil to win- 3rd Pers Sg from lottery-Def
 'He would have had supposedly won the lottery.'
 b. * [_{AuxP1} Bil [_{AuxP2} shtjal [_{IP} da specheli ot tototo]]]].
 Bil would-have to win-3rd Pers Sg from lottery-Def
 'He would have had supposedly won the lottery.'

This suggests *shtjal* is generated higher than *bil*. Thus, if *li* attracts a constituent, it should be able to 'see' the AuxP headed by *shtjal* but not the AuxP headed by *bil*. The data below is consistent with this hypothesis: the raising of *shtjal* 0 is grammatical, while that of *bil* is not (27).

- (26) [_{CP} [_{AuxP1} Shtjal t_{AuxP2}] [_{C'} *li* [_{AuxP2} bil [_{IP} da specheli ot tototo]]]].
 Would-have *li* bil to win- 3rd Pers Sg from lottery-Def
 'Would he have supposedly won the lottery?'
 (27) * [_{CP} [_{AuxP2} Bil t_{AuxP2}] [_{C'} *li* [_{AuxP1} shtjal [_{LP} [_{IP} da specheli ot tototo] t_{AuxP2}]]]].
 Bil would-have to win-3rd Pers Sg from lottery-Def
 'Would he have supposedly won the lottery?'

Although the locality restriction on ATTRACT in these cases is equivalent to that imposed by the HMC, it is relaxed enough to allow the grammatical cases discussed earlier, which the HMC rules out. Recall that one instance of LHM involved the verb moving past a clitic auxiliary. In the example below, this movement targets a position within the CP headed by *li*.

- (28) Spechelil *li* si nagrada ot tototo?
 Won are prize from lottery-Def
 'Have you won a prize from the lottery?'

While we must invoke a violation of the HMC if we postulate head movement in this case, we can maintain the locality of remnant movement by ATTRACT. According to our hypothesis, the auxiliary *si*, by virtue of being a clitic, also requires a full specifier in its projection. Since there are no semantic features to trigger independent movement of an eligible constituent, the auxiliary *si* must use ATTRACT of the projection closest to itself. This is of course the projection headed by *spechelil*, immediately below *si*. Thus, at an intermediate step of the derivation of (28), *li* is still not merged with AuxP while the specifier of *si* contains the remnant VP (29).

- (29) [_{CP} *Li* [_{AuxP} [_{VP} spechelil t_{NP} t_{PP}] [_{Aux'} *si* [[_{LP} nagrada ot tototo] t_{VP}]]]]]

At the point when *li* merges, AuxP and VP are equally close for the purposes of ATTRACT. To prevent the AuxP from raising, we can adopt the admittedly clumsy stipulation that clitic projections cannot move. Alternatively, and perhaps more elegantly, we can argue that attracting the VP is more economical since it has already abandoned its arguments. Thus, the resulting construction is (30).

(30) $[_{CP}[_{VP} \text{Spechelil } t_{NP} t_{PP}]] [_{C'} \text{li } [_{Aux'} \text{si } [[_{LP} \text{nagrada ot tototo}] t_{VP}]]]]?$

As a result, the remnant VP has raised to the highest projection due to two separate instances of local ATTRACT.

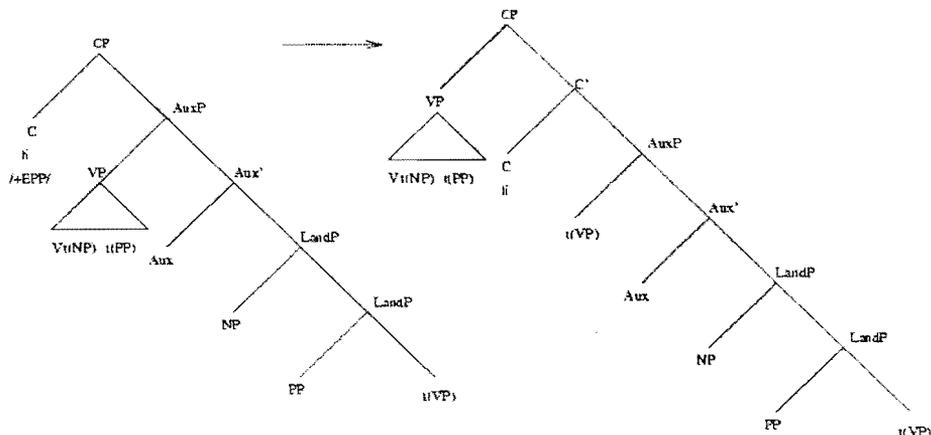


Figure 3: Deriving neutral *li* questions with a clitic Aux.

If a neutral *li* question contains a non-clitic auxiliary, our theory would predict that *li* would only attract AuxP as remnant, since it is the closest. Note that since the auxiliary is non-clitic, there is no reason for the VP to move to the specifier of AuxP. Hence, the VP would not be visible to ATTRACT. Data in (31) is consistent with this prediction.

- (31) Bi li spechelil suseda ot tototo?
 Would li won neighbor-Def from lottery-Def
 'Would the neighbor win the lottery?'

Indeed, whenever the VP is raised past the non-clitic Aux, the result is a highly marked sentence with contrastive focus connotation on the VP.

- (32) ? Spechelil li bi suseda ot tototo (ili samo bi zagubil)?
 Won li would neighbor-Def from lottery-def. or only lost
 'Would the neighbor (ever) WIN the lottery (or would he only lose)?'

The focused interpretation is expected because the only reason VP would raise to CP in such a case is to check its focus features.

On the face of it, the placement of negation looks like counterevidence to any syntactic account of *li*, including ours. If present, the negation invariably precedes *li* **along with** the highest IP head. Interestingly, it cannot precede *li* by itself. This behavior is problematic for syntactic accounts because it is not clear what (if any) constituent might the negation and the highest head of the IP form, especially since a

variety of heads may turn up as the highest in a Bulgarian IP, including Dative and Accusative clitic projections (AgrOP and AgrIOp). However, if we accept the possibility that the highest head of IP is attracted to CP as remnant, half of this problem is already solved. To account for the negative *li* questions in particular, we need to make only one additional assumption: that the negation is head-adjoined to the highest IP head. This is supported by the fact that the negation always interferes between the subject and that head (33). On the assumption that the subject of 0 is in SpecIP, the negation must be either head-adjoined or an I' adjunct. Since nothing can interfere between the negation and the inflected verb, we assume it is head-adjoined (34).

- | | | | |
|------|--|------|---|
| (33) | Suseda ne specheli.
Neighbor-Def not won.
'The neighbor didn't win.' | (34) | *Ne otново specheli.
Not again won.
'He didn't win again' |
|------|--|------|---|

This assumption ties in nicely with the rest of our analysis. First, let us look at the derivation of the simple case in (35).

- (35) [[_{IP} Ne specheli t_{VP}] li [_{LP} [_{VP} t_V suseda ot tototo]] t_{IP}]?
Not won li neighbor-Def from lottery-Def
Didn't the neighbor win the lottery?

The negation and the verb move together. This is exactly what we would expect if they form a complex head of the IP attracted by *li* as remnant. Similarly, in a clause containing an auxiliary, C attracts the negation and the auxiliary because they form the closest XP head. This results in the structure in (36).

- (36) [_{CP} [_{AuxP} Ne bi t_{VP}] li [_{LP} [_{VP} spechelil nagrada ot tototo] t_{AuxP}]]?
Not would li won prize from lottery-Def
'Wouldn't he win a prize from the lottery?'

Notice that the case derived via non-local movement of the remnant VP to SpecCP is ungrammatical, because a closer projection (AuxP) is available:

- (37) * [_{CP} [_{VP} Spechelil t_{NP} t_{PP}] li [_{AuxP} ne bi [_{LP} nagrada ot tototo t_{VP}]]]?
Won li not would prize from lottery-Def

Interestingly, the adjunction of negation to a clitic head seems to eliminate the EPP-feature of that clitic. In the context of negation, both clitic and non-clitic auxiliaries behave the same. In declaratives, a clitic auxiliary cannot begin a sentence (38), but in negated declaratives it can (39). It is therefore not surprising that the presence of the negation obliterates the need for the VP to move to SpecAuxP in interrogatives, and consequently blocks VP raising CP. The negation clitic AuxP just as its non-clitic counterpart, is the single closest projection to *li* and therefore the only candidate for raising (40).

- (38) *Si spechelil. (39) Ne si spechelil.
 You won. Not you won.
 You have won. You haven't won.
- (40) $[_{CP} [_{AuxP} Ne\ si\ t_{VP}] li [_{LP} [_{VP} spechelil\ nagrada\ ot\ tototo] t_{AuxP}]?$
 Not are li won prize from lottery-Def
 'Haven't you won a prize from the lottery?'

The negated construction involving VP raising (41) is ungrammatical unlike its positive counterpart (42):

- (41) * $[_{CP} [_{VP} Spechelil\ t_{NP}\ t_{PP}] li [_{AuxP} ne\ si [_{LP} nagrada\ ot\ tototo\ t_{VP}]]]?$
 Won li not are prize from lottery-Def
- (42) $[_{CP} [_{VP} Spechelil\ t_{NP}\ t_{PP}] [_{C'}\ li [_{Aux'}\ si [_{LLP} nagrada\ ot\ tototo] t_{VP}]]]?$
 Won li are prize from lottery-Def
 'Have you won a prize from the lottery?'

To our knowledge, the proposal discussed here provides the first purely syntactic account of negative *li* interrogatives to date. Previously, the problem has been dealt with by relying heavily on phonological movement and prosodic constraints (Rudin et al. 1997). In contrast to the numerous assumptions necessary in these accounts, remnant movement handles these types of questions with relative ease.

In summary, we have shown that remnant movement in conjunction with a non-specific EPP-feature on second-position clitics can overcome many arguments for phonological movement of Bulgarian clitics and address the semantics of clitic questions better than traditional accounts. However, we are faced with a new problem: when is remnant movement possible and why. Apparently there is significant linguistic variation in this respect. For example, neutral *li* questions in Macedonian can be analyzed as full IP movement to CP (43), even though full IP movement in Bulgarian happens only in highly marked contexts (44).

- (43) $[_{CP} [_{IP} Go\ vide] li\ t_{IP}]?$ (Macedonian) (44) ?? $[_{CP} [_{IP} Ti\ go\ vidja] li\ t_{IP}]?$ (Bulgarian)
 Him saw li You him saw li
 'Did you see him?' 'Did you see him?'

Similarly, to explain why the Serbo-Croatian examples in (45) are grammatical unlike their Bulgarian counterparts, we must allow DP remnant movement in Serbo-Croatian, but prohibit it in Bulgarian (46).

- (45) $[_{DP} Taj\ t_{NP}]joj [t_{DP}\ ga [t_{DP}\ e [_{LP} [_{NP}\ chovek] t_{DP}] poklonio].$ (Serbo-Croatian)
 That her it is man bought.
 'This man bought it to her.'
- (46) * $Tozi\ i\ go\ e\ chovek\ kupil.$ (Bulgarian)
 That her it is man bought.
 'This man bought it to her.'

Assuming the determiner *taj* heads a DP with the NP *chovek* as its complement, allows us to derive (45) from remnant movement of DP to the specifiers of the second-position clitics *e*, *ga* and finally, *joj*. The fact that the corresponding construction is ungrammatical in Bulgarian is likely due to the fact that remnant DP-movement is prohibited, in favor of the full-DP movement.

- (47) Tozi chovek i go e kupil.
That her it is man bought.
'This man bought it to her.'

However, not all differences in constructions involving clitics are due to the remnant movement typology. Another important factor is the presence of EPP-features on other clitic-like elements. It is often the case that a second-position clitic in one language is etymologically related to a word in another language, which occupies sentence-initial positions. Both Bulgarian and Macedonian have an agreement particle *go* referring to masculine/neutral (and possibly null) direct object. For independent reasons, we can assume that *go* is the head of a functional agreement projection in both languages. However, while *go* is a second-position clitic itself in Bulgarian, it is not in Macedonian (as evident in (43) where *go* is sentence initial). Obviously, in Macedonian, *go* has no EPP feature. In the Bulgarian example, the EPP feature of *go* attracts the VP-remnant to a position from which it is eligible to raise to CP and check the EPP-feature of *li* (48).

- (48) [_{CP} [_{VP} Vidja] li [_{AgrP} t_{VP} [_{go} t_{VP}]]]? (Bulgarian)
Saw li him
'Did you see him?'

In contrast, the Macedonian *go* does not attract the VP-remnant to its specifier. Consequently, the VP-remnant cannot be attracted by C in the presence of AgrP (49).

- (49) * [_{CP} [_{VP} Vide] li [_{AgrP} go t_{VP}]]? (Macedonian)
Saw li him
Did you see him?

The fact that the verb can raise beyond C if there are no agreement or auxiliary projections above it shows that the difference is truly traceable to the head of AgrP (50).

- (50) Zboruvate li angliski? (Macedonian)
Speak li English
'Do you speak English?'

Since VP remnant movement is available in Macedonian, 0 must be excluded on the basis of the interfering agreement projection. The contrast between 0 and 0 is not due to a difference in the availability of VP-remnant movement but to the lack of an EPP-feature on the head of that projection.

Whether or not phrases are required to move as remnants or full phrases within a particular language could be determined either by free cross-linguistic variation or indirectly by other principles at work in the individual languages. While a cross-linguistic analysis would obviously require touching upon a wider range of issues, we believe that ultimately, variation on the surface order of clitics will be reducible to the question: What kind of phrases are allowed or required to move as remnants within languages? The answer to this question could pave the way towards a cross-linguistic account of clitics that would transform them from morpho-phonological accidents into a syntactic regularity.

Notes

¹ I am grateful to Bob Frank whose advice was timely and to the point. I am also indebted to Geraldine Legendre, whose work on clitics inspired this project; to Marina Todorova and Paul Hagstrom who provided relevant literature; and to all my informants: Christina Kotchemidova, Iana Milanova, Alexi Savov, Maria Stamatova, Darin Stephanov, whose time and patience I perused.

² All data in this paper comes from Bulgarian, unless otherwise specified.

³ The abandoning of this assumption will lead to various problems not worth discussing here, but see Richards (1997).

⁴ E.g. The question: 'At six o'clock, did John leave?' is awkwardly answered with "No, at five"

⁵ Contrastive focusing: the intention to contrast the arguments of the predicate to some other possible arguments of the same predicate.

⁶ For simplicity, we have maintained that V moves to I as a head in these examples although the type of movement is not crucial. This assumption is for notational purposes only. On a more technical view, in the absence of auxiliaries, the VP *is* the highest IP. Alternatively, if Koopman and Szabolsci (2000) are right, verb movement could also be a remnant VP movement to IP occurring for independent reasons. Throughout the paper, we have assumed that there is V movement to IP in the absence of auxiliaries.

⁷ Of course, this is only true if we assume that the auxiliaries in question cannot undergo focus-driven movement. Given that auxiliaries are light verbs without much semantic content, this assumption is not unreasonable to make.

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