The size of things II

Movement, features, and interpretation

Edited by

Zheng Shen

Sabine Laszakovits

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Introduction: The size of things, Volume II

Zheng Shen[a] & Sabine Laszakovits[b,c]

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Size in grammar, broadly construed, is the focus of this two-volume collection, *the size of things.* Under the umbrella term "size" fall the size of syntactic projections, the size of feature content, and the size of the reference sets. Papers in Volume I share the focus of structure building while Volume II presents papers looking into size effects in movement, agreement, and interpretation. By bringing together a variety of research projects under the common theme, we hope this collection could inspire new connections and ideas in generative syntax and related fields.

Contributions in Volume II are grouped into three parts. The first seven papers explore various interaction between size and movement. Despić discusses two approaches to Left Branch Extraction in Serbo-Croatian and Japanese and argues that LBE involves movement of a smaller, rather than a larger constituent. Hattori links the availablity of *tough*-movement with the size of the nominal domain and argues that NP-languages like Japanese and Serbo-Croatian lack English-type *tough* constructions. Laszakovits, Quadros, Noschese and Lillo-Martin explore object-shift constructions in ASL and Libras and show how syntax and PF interact in triggering movement of the object into higher verbal projections. Harðarson compares movement of genitive possessors of two different sizes in Icelandic – with and without modifiers – and proposes a head movement analysis for the former and an overt quantifier raising analysis for the latter. Travis looks into head movement, a movement unique in the size of its moved element, and proposes that it has a natural place in narrow syntax in a feature-based locality system. Lohninger investigates multiple-wh questions and argues that A' wh-movement, A wh-movement, and cross-clausal A-dependencies target different CP projections. Bailyn argues that multiple-wh-fronting and topic-focus con-

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structions in Slavic languages pose challenges to the strict cartography approach to sentence structure.

The next group of five papers looks into agreement and morphology-related matters like allomorphy. Baker and Camargo Souza account for same-subject markers in complement clauses of aspectual verbs in Yawanawa and Shipibo-Konibo by proposing that these complement clauses lack the CP-layer, making agreement with matrix subjects possible. Wood's contribution provides a feature-bundle-based analysis to an exceptional ameliorative effect in dative-nominative construction involving the syncretic form *-st* in Icelandic. Calabrese proposes a syntactic truncation analysis of full-fledged and reduced motion verb constructions in the Campiota vernacular. Kalin looks into affixal morphemes in Nancowry with exponents whose distribution is sensitive to the prosodic size of the stem they affix to. Newell offers a phonological rather than a morphological analysis of Tamil pronominal alternations.

The last three papers explore semantic-oriented issues, in particular the size of reference domains and NPI licensing. Prinzhorn and Schmitt offer a semantic account for a restriction on the reference size involved in embedded predicates of partial control construction in German. Neubarth discusses several issues with strong and weak NPIs especially under comparatives. Sauerland and Yatsushiro's contribution shows that exceptive phrases in Japanese form strong NPIs, different from their English counterpart, and account for the contrast by proposing that the two languages select different exhaustification operators.

All the papers in these two volumes are influenced in various ways by the work of Susi Wurmbrand, who not only pioneers the investigation into clausal complements across languages from the lenses of binding, finiteness, movement, restructuring, tense, and verb clusters, but has also deepened our understanding of Agreement, Case, features, and quantifier raising. Furthermore, Susi has had a direct personal impact on the work of all contributors and editors, and so we dedicate this book to her not only in recognition of her achievements, but also in gratitude of her generosity to us.

Part I

Size and movement

Chapter 1

Size of the moving element matters: LBE is not Scattered Deletion

Miloje Despić
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In this paper I investigate the size of the moving element in Left Branch Extraction (LBE). On the traditional, Direct Extraction approach (e.g., van Riemsdijk 1978, Corver 1990, Bošković 2005 etc.) a left branch element (e.g., adjective, possessor, demonstrative etc.) is directly extracted out of an argument. I compare this type of analysis to the so-called Scattered Deletion approach, on which the entire nominal argument containing the left branch element moves and leaves behind a copy. Then, at PF, the operation of copy-deletion takes place and deletes copies in such a way that the non-left branch portion of the phrase is deleted in the higher copy, while the left branch element is deleted in the lower copy (e.g., Fanselow & Ćavar 2002, Pereltsvaig 2008, Bondarenko & Davis 2018 etc.). Thus, the two approaches differ in whether they involve syntactic movement of the whole nominal argument, and thus whether (a copy of) this argument is present at a high structural position in syntax and LF. I first examine LBE in Serbo-Croatian and I argue on the basis of variable binding, weak crossover effects and scope that there is no evidence that the nominal argument is located high in syntax/LF, which supports the Direct Extraction approach. What seems to be moving in syntax is just the left branch element, not the whole nominal containing it. I also extend my analysis to Japanese and show that apparent cases of LBE in this language (Takahashi & Funakoshi 2013) also do not involve Scattered Deletion.

1 Introduction

In this paper I investigate the size of the moving element in *Left Branch Extraction* (LBE hereafter). On the standard approach to LBE (e.g., van Riemsdijk, Corver, Bošković etc.) a left branch element (e.g., adjective, possessor, demonstrative etc.)

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is extracted out of the nominal argument, as shown in (1). I will call this type of analysis the *Direct Extraction* (DE) approach.

(1) *Direct Extraction*: [XP … [$_{YP}$ ~~XP~~ Y]

I will compare this approach to the so-called *Scattered Deletion* (SD) approach (or "copy-and-deletion" approach). On this analysis, the entire phrase containing the left branch element moves and leaves behind a copy. Then, at PF, the operation of copy-deletion takes place and deletes copies in such a way that the non-left branch portion of the phrase is deleted in the higher copy, while the left branch element is deleted in the lower copy (e.g., Fanselow & Ćavar 2002, Pereltsvaig 2008, Bondarenko & Davis 2018 etc.) This is illustrated in (2).

(2) *Scattered Deletion*: [[$_{YP}$ XP ~~Y~~] … … [$_{YP}$ ~~XP~~ Y]]

On this approach, the size of the moving element is actually bigger than it appears. In particular, the whole nominal argument undergoes syntactic movement, but this is obscured by the PF-deletion, which deletes everything but the left branch element in the higher copy. One advantage of the SD approach is that it can deal much more straightforwardly with the so-called *extraordinary* LBE (e.g., Bošković 2005). As illustrated in (3), this type of LBE involves non-constituent movement, since the fronted preposition and adjective do not form a constituent to the exclusion of the noun under any analysis.

(3) U veliku on uđ-e sobu. (Bošković 2005: 78)
in big he entered room
'He entered the big room.'

While structures like (3) require additional assumptions for the DE approach, they are handled easily on the SD approach. Namely, what is being moved in (3) is the whole PP *u veliku sobu* 'in big room', after which the noun *sobu* is deleted at PF. Thus, there is no constituency issue on this analysis.[1] On the DE approach, on the other hand, one would have to assume that the preposition in (3) adjoins to the adjective by some process. Borsley & Jaworska (1988) implement this a as a restructuring operation, Corver (1992) assumes that the preposition undergoes lowering, while Bošković (2005) suggests the AP moves to a position

[1]The constituency issue does not arise on the *Remnant Movement* approach to LBE (Franks & Progovac 1994, Bašic 2005 etc.) either, since on this analysis (3) involves remnant PP movement. I do not discuss this approach here, but see Murphy (2020) for a recent criticism of this approach to LBE.

c-commanding the preposition (within the PP), after which the preposition adjoins to the adjective. Despite this initial attractiveness and simplicity of the SD approach, I will argue in this paper that the DE approach is actually correct. The logic of my argumentation is quite simple: the two approaches differ in whether they involve syntactic movement of the *nominal argument*, and thus whether (a copy of) this argument is present at a high structural position in syntax and LF. I argue on the basis of variable binding, weak crossover effects and scope that there is no evidence that the nominal argument is located high in syntax/LF. What seems to be moving in syntax is just the left branch element, not the whole noun phrase containing it. In §2, I will present data from Serbo-Croatian, a well-studied LBE language, in favor of the DE approach.[2] In §3, I will show that the apparent case of LBE in Japanese (Takahashi & Funakoshi 2013) also does not involve Scattered Deletion. §4 is the conclusion.

2 LBE in Serbo-Croatian

In Despić (2011, 2013) I argued that Serbo-Croatian (SC hereafter) does not project DP and that the possessor in (4a) is a simple adjunct which c-commands into the clause and thus violates Condition C.[3]

(4) a. * Njegov$_i$ najnoviji film je zaista razočarao Kusturicu$_i$.
His latest film is really disappointed Kusturica$_{\text{ACC}}$
'His$_i$ latest film really disappointed Kusturica$_i$.'

b. ✓ Kusturicu$_i$ je njegov$_i$ najnoviji film zaista razočarao *t*.
Kusturica$_{\text{ACC}}$ is his latest film really disappointed

[2]Bondarenko & Davis (2018) provide an interesting argument in favor of the SD approach on the basis of the behavior of LBE in parasitic gaps constructions in Russian. In particular, they argue that not only movement of the whole *wh*-phrase, but also movement of the *wh*-modifier via LBE, can license a parasitic gap. I do not discuss this argument here for space reasons and because SC does not have these constructions, which are constrained by factors like aspect and negation even in Russian. Bondarenko and Davis also note that there is a case-matching requirement, whereby only an accusative object can license an accusative gap. They also note that in case of certain QP objects, parasitic gaps can be licensed even without any overt movement whatsoever.

[3]I assume here the approach to c-command under which the segment of NP does not block the c-command relation in question (e.g., Kayne, Despić 2011 etc.) , as in the definition below:

(i) (i) X c-command Y iff X and Y are categories, X excludes Y, and every category that dominates X dominates Y (X excludes Y if no segment of X dominates Y).

Now, whether or not SC has DP is actually not relevant for the main point of this paper. The important observation is the contrast between (4a) and (4b). That is, (4b) in which the R-expression is fronted is acceptable on the given co-indexation, unlike (4a). I argued that in (4b) *njegov* 'his' does not c-command *Kusturicu*, so no Condition C violation arises. Also, there is no Condition B violation in (4b) either since the pronoun is free in its binding domain (i.e., NP), given the definition of Condition B in (5), which I adopted:

(5) Condition B: a pronoun is free in its own predicate domain (i.e., phrase). An element is free if it is not c-commanded by a coindexed NP.

Again, regardless of whether or not SC has a DP or whether my assumptions about binding in SC were correct, the simple observation is that structures like (4a) which exhibit Condition-C-like effects become acceptable when the nominal in the object position is fronted. The clearest example of this effect is the following SC idiom, in which the fronted quantifier can bind the pronominal possessor in the subject:

(6) Svakome$_i$ je njegova$_i$ muka najveća t$_i$.
Everyone$_{\text{DAT}}$ is his$_{\text{NOM}}$ trouble$_{\text{NOM}}$ greatest
'To everyone$_i$ his$_i$ trouble is the greatest.'
('Everyone$_i$ thinks that his$_i$ trouble is the greatest.')

This binding is of course impossible if the quantifier stays in situ:

(7) * Njegova$_i$ muka je najveća svakome$_i$.
His trouble is greatest everybody$_{\text{DAT}}$

The same contrast can be observed between (8a) and (8b) which involve object QPs like *svakog generala* 'every general':

(8) a. Svakog generala$_i$ njegovi$_i$ vojnici vole t$_i$.
Every$_{\text{ACC}}$ general$_{\text{ACC}}$ his$_{\text{NOM}}$ soldiers$_{\text{NOM}}$ love
'Every general is loved by his soldiers.'

b. * Njegovi$_i$ vojnici vole svakog generala$_i$
His$_{\text{NOM}}$ soldiers$_{\text{NOM}}$ love every$_{\text{ACC}}$ general$_{\text{ACC}}$

Importantly, quantifiers like *svaki* 'every' can undergo LBE in SC, just like adjectives or demonstratives:

(9) Svaku$_i$ je Milan pročitao [t$_i$ knjigu].
Every$_{\text{ACC}}$ is Milan$_{\text{NOM}}$ read book$_{\text{ACC}}$
'Milan read every book.'

The question is then what happens if instead of fronting the whole QP *svakog generala* 'every general' as in (8a), only the quantifier 'every' moves via LBE, as in (10). The two approaches to LBE discussed here make different predictions about this example. On the SD approach, there should be no difference in acceptability between (8a) and (10) (on the given co-indexation), since they look identical in syntax and LF – the fact that the only left branch element appears fronted in (10) is a consequence of a PF operation. The DE approach, on the other hand, predicts (10) to be ungrammatical on the given reading, since the whole QP 'every general' is at no point of the derivation in position from which it can bind the pronominal possessor in the subject. It stays in the object position throughout the derivation and in that sense should be ungrammatical, just like (8b). As indicated in (10), the DE approach makes the correct prediction (although grammatical, (10) disallows the bound variable reading):

(10) * Svakog$_j$ njegovi$_i$ vojnici vole [t$_j$ generala]$_i$
Every$_{\text{ACC}}$ his$_{\text{NOM}}$ soldiers$_{\text{NOM}}$ love general$_{\text{ACC}}$
'His soldiers love every general.' (Cannot be interpreted: for every general x, x's soldiers love x)

The following contrast also supports the DE approach. In (11) there is a Condition C violation, as in (4a), since the pronominal possessor c-commands the R-expression *Emira Kusturice*. There is no improvement in (12), in which the adjective modifying the object NP in which the R-expression is embedded undergoes LBE. This is expected under the DE approach, since just like in (11), the pronoun c-commands the R-expression. This is not quite expected on the SD analysis, because the whole object NP, with the R-expression in it is assumed to be moving in syntax to the position in which the R-expression is no longer c-commanded by the pronoun. Thus LBE cannot ameliorate Condition C effects, in contrast to the movement of the whole object, which apparently can, as illustrated in (13) (see also 4b). I thank one of the reviewers for suggesting checking this contrast.

(11) * Njegov$_i$ najnoviji film je razočarao velikog prijatelja Emira Kusturice$_i$.
His latest film is disappointed big friend Emir$_{\text{GEN}}$ Kusturica$_{\text{GEN}}$
'His$_i$ latest film disappointed a great friend of Emir Kusturica$_i$.'

(12) * Velikog je njegov$_i$ najnoviji film razočarao prijatelja Emira Kusturice.
Big is his latest film disappointed friend Emir$_{\text{GEN}}$ Kusturica$_{\text{GEN}}$
'His$_i$ latest film disappointed a great friend of Emir Kusturica$_i$.'

(13) Velikog prijatelja Emira Kusturice$_i$ je njegov$_i$ najnoviji film razočarao.
Big friend Emira Kusturice$_{\text{GEN}}$ is his latest film disappointed
'His$_i$ latest film really disappointed a great friend of Emir Kusturica$_i$.'

A potential problem for this particular argument would be that (12) seems to be already degraded regardless of the co-indexation. This is still a problem for the SD approach, which in principle predicts that any time the movement of the whole nominal creates a grammatical structure (i.e., 13), the corresponding LBE should as well (i.e., 12), all else being equal. A separate question for the DE approach (which I have to leave for future work) is then why (12) would be degraded to begin with; that is, why would LBE out of a complex nominal be more constrained.

Another argument in favor of the DE approach comes from scope interpretation. For many speakers (including myself), SC seems to be rigid scope language.[4] For those speakers a sentence like (14a) has only the surface scope. To get the inverse scope, the object must overtly move for those speakers, as in (14b):[5]

(14) a. Jedan student je pročitao svaku knjigu. ✓$\exists > \forall$ *$\forall > \exists$
One student is read every book
'A student read every book.'

b. Svaku knjigu je jedan student pročitao. ✓$\exists > \forall$ ✓$\forall > \exists$
Every book is one student read
'A student read every book.'

Focusing on those speakers, the question is what happens if instead of moving the whole object as in (14b), only the quantifier *svaku* 'every' is fronted as in (15).

[4]A fair number of speakers I consulted share the judgments reported here. However, there are also speakers who seem to allow both readings in (14a), which indicates that there might be two dialects of SC in this respect. At this point I leave a more careful examination of this split to future work and focus here on judgments from the first group.

[5]Note that in (14b) the reading where the existential quantifier takes scope over the universal quantifier is not easily available to all speakers. The situation is further complicated by the existence of the distributer *po* in SC, which some speakers require to get the distributed reading.

The SD approach predicts that this sentence should have the same interpretation as (14b), as on this analysis they would have identical LF representations; i.e., the whole QP object moves in syntax, just like in (14b). On the DE approach, the sentence in (15) can only have the low scope of 'every book' since the extracted quantifier 'every' is uninterpretable in the fronted position. It can only be interpreted in its original, lower position via reconstruction, which would make it similar to (14a). Speakers for which the contrast in (14) exists, can only have the low interpretation of the universal quantifier in (15), as predicted by the DE approach. Specifically, there is one student and s/he read every book. Fronting of *svaku* 'every' has the effect of emphasizing that the student in question read every book and not perhaps just one half or two thirds of the books.

(15) Svaku$_i$ je jedan student pročitao [t$_i$ knjigu]. ✓$\exists > \forall$ *$\forall > \exists$
Every is one student read book
'A student read every book.'

Why is the quantifier *svaku* 'every' not interpretable in the fronted position? This is quite straightforward on Heim & Kratzer's (1998) approach to quantifier interpretation and scope. In fact they directly discuss examples like (16):

(16) John fed every bird.

Regarding structures like (16), according to Heim & Kratzer (1998: 212): "…we are not dealing with an interpretable structure here in the first place. The trace's type e meaning combines with the noun's type ⟨e,t⟩ meaning to yield a truth-value (!) as the meaning of the DP "t$_1$ bird". This cannot be composed with the type ⟨e,et⟩ meaning of the verb, and thus the VP and all higher nodes are uninterpretable" (see Figure 1).

But even if we assumed that the trace left by movement of *every* is of type ⟨⟨e,t⟩,⟨⟨e,t⟩,t⟩⟩, just like every (and that the type mismatch with the transitive verb can be resolved in a usual way via some local movement), we would still have a problem with the highest S node. As shown in (17), the whole sentence would not be of type t, but rather of type ⟨⟨e,t⟩,t⟩⟩ (see Figure 2). Thus the only position in which the quantifier can be interpreted is the low, object-internal position, as expected on the DE approach.[6]

[6] One of the reviewers reports that even though they find (14a) ambiguous, they find (15) unambiguous – universal quantifier still must have low scope. We can assume that the speakers of the dialect who find (14a) ambiguous have covert QR, which can apparently apply freely in sentences like (14a). In (15), on the other hand, the overtly moved modifier must reconstruct at LF, as discussed above, which apparently bleeds further QR of the whole object. I leave exploration of this possibility for further research.

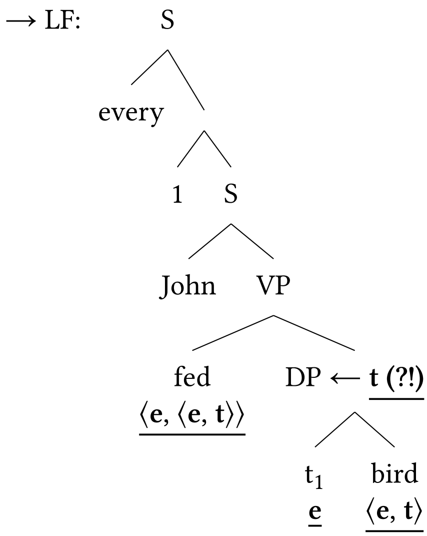

Figure 1: Direct extraction of ’every’, version A

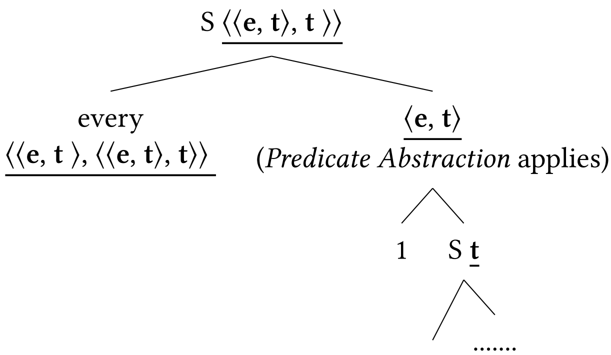

Figure 2: Direct extraction of ’every’, version B

3 LBE in Japanese

As discusses in Takahashi & Funakoshi (2013) (T&F hereafter), Japanese in general does not allow LBE, which is shown in (17).

(17) a. Taroo-ga [dare-no tegami]-o sute-ta-no?
Taro-NOM who-GEN letter-ACC discard-PST-Q
lit. 'Taro discarded whose letter?'

b. * Dare$_i$-no Taroo-ga [t$_i$ tegami]-o sute-ta-no? (T & F: 237)
who-GEN Taro-NOM letter-ACC discard-PST-Q
lit. 'Whose$_i$, Taro discarded [a letter t_i]?'

However, T&F observe that a PP within a nominal *can* undergo LBE:

(18) a. Taroo-ga [dare-kara-no tegami]-o sute-ta-no?
Taro-NOM who-from-GEN letter-ACC discard-PST-Q
lit. 'Taro discarded a letter from who?'

b. Dare-kara$_i$-no Taroo-ga [t_i tegami]-o sute-ta-no? (T & F: 237)
who-from-GEN Taro-NOM letter-ACC discard-PST-Q
lit. 'From who$_i$, Taro discarded [a letter t_i]?'

T&F also show that (18b) is a result of syntactic movement. In particular, this PP LBE is island sensitive. First, (19) shows that PP LBE can take place across a clausal boundary.

(19) a. Hanako-ga [$_{CP}$ Taroo-ga [dare-kara-no tegami]-o
Hanako-NOM Taro-NOM who-from-GEN letter-ACC
sute-ta]-to omottei-ru-no?
discard-PST-that think-PRS-Q
lit. 'Hanako thinks that Taro discarded [a letter from who]?'

b. Dare-kara$_i$-no Hanako-ga [$_{CP}$ Taroo-ga [t_i tegami]-o
who-from-GEN Hanako-NOM Taro-NOM letter-ACC
sute-ta]-to omottei-ru-no? (T & F: 239)
discard-PST-that think-PRS-Q
lit. 'From who$_i$ Hanako thinks that Taro discarded [a letter t_i]?'

However, the extraction out of the relative clause island is not possible:

(20) a. Hanako-ga [[$_{RC}$[dare-kara-no tegami]-o sute-ta]
Hanako-NOM who-from-GEN letter-ACC discard-PST
hito]-o sagasitei-ru-no?
person-ACC be.looking.for-PRS-Q
lit. 'Hanako is looking for a person that discarded a letter from who?'

b. * Dare-kara$_i$-no Hanako-ga [[$_{RC}$[t_i tegami]-o sute-ta
who-from-GEN Hanako-NOM letter-ACC discard-PST
hito]-o sagasitei-ru-no? (T & F: 239)
person-ACC be.looking.for-PRS-Q
lit. 'From who$_i$ Hanako is looking for a person who discarded [a letter t_i]?

In a nutshell, T&F explain the contrast between (17b) and (18b) in the following way. They assume (i) that K(ase)P (i.e., projection of a Case-particle) is projected above NP in Japanese and (ii) that nominals and PPs are adjoined to host NPs (cf. Bošković 2005, Cheng 2011) (see Figure 3). Thus, genitive elements within nominals are all NP adjuncts. T&F propose that while KPs with nominals are phases, KPs with genitive PPs are not phases (Figure 3).

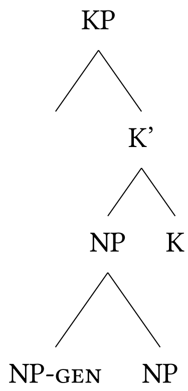

Figure 3: KaseP in Japanese

There are two potential options to consider with phasal KPs: (i) direct movement of the genitive nominal out of the KP (option 1) and (ii) successive cyclic movement of the genitive nominal through the KP edge (option 2). They are both ruled out by the combination of the PIC and Antilocality. Option 1 is excluded via the PIC (Chomsky 2000), which states that an element that is moving out of the phase must move to the edge of the phase. Option 2 is also excluded because of the *antilocality* (Abels 2003, Bošković 2005). That is, the moving element cannot move to the edge of the phase (thus satisfying the PIC), because that movement would be *too* local; i.e., the first XP that actually dominates the adjunct NP-GEN in Figure 3 is KP.

In the case of PP LBE, however, KP is not a phase by assumption, and the PP be can extracted without violating any of the above conditions.

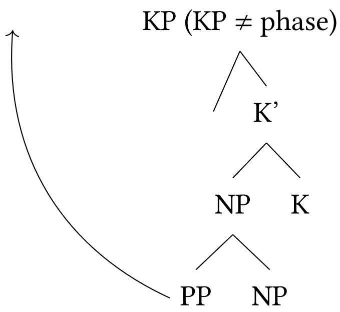

Figure 4: PP-extraction out of KaseP in Japanese

T&F also assume that *-no* in (17) is structural Case assigned by K while *-no* in (18) is a linking element, attached to a PP by the Mod-Insertion rule (e.g., Kitagawa & Ross 1982, Saito et al. 2008).

3.1 Japanese PP LBE and Weak Crossover

(21) illustrates standard Weak Crossover effects, which characterize A'-movement:

(21) a. * Who$_i$ does his$_i$ mother love t_i?
b. Who$_i$ t_i seems to his$_i$ mother t_i to be intelligent?

T&F observe that PP LBE in Japanese behaves as A'-movement in this respect:

(22) a. * Kinoo *soko$_i$*-no syain-ga **[dono-kaisya$_i$-kara-no**
yesterday it-GEN employee-NOM which-company-from-GEN
syootaizyoo]-o uketot-ta-no?
invitation-ACC receive-PST-Q
lit. 'Its$_i$ employees received [invitations from which company$_i$] yesterday?'

b. * **Dono-kaisya$_i$-kara-no** kinoo *soko$_i$*-no syain-ga [t_i
which-company-from-GEN yesterday it-GEN employee-NOM
syootaizyoo]-o uketot-ta-no?
invitation-ACC receive-PST-Q
lit. 'From which company$_i$, its$_i$ employees received [invitations t_i] yesterday?'

c. **Dono-kaisya$_i$-kara-no** kinoo Toyota-no syain-ga [
which-company-from-GEN yesterday Toyota-GEN employee-NOM
t_i syootaizyoo]-o uketot-ta-no? (T & F: 243)
invitation-ACC receive-PST-Q
lit. 'From which company$_i$, Toyota's employees received [invitations t_i] yesterday?'

The acceptability of (22c) indicates that (22b) is unacceptable because of the bound variable reading, since in (22c), the pronoun *soko* 'it' is replaced by the referential expression *Toyota*. Also, the unacceptability of (22b) is not due to the presence of *kara* 'from'. In (23a), *kara* 'from' is a matrix element, and if it is moved (via scrambling) to the sentence-initial position (as in 23b), the bound variable construal of the pronoun becomes possible.

(23) a. * Kinoo *soko$_i$*-no syain-ga **dono-kaisya$_i$-kara**
yesterday it-GEN employee-NOM which-company-from
[syootaizyoo]-o uketot-ta-no?
invitation-ACC receive-PST-Q
lit. 'Its$_i$ employees received [invitations] from which company$_i$ yesterday?'

b. **Dono-kaisya$_i$-kara** kinoo *soko$_i$*-no syain-ga t_i
which-company-from yesterday it-GEN employee-NOM
[syootaizyoo]-o uketot-ta-no? (T & F: 244)
invitation-ACC receive-PST-Q
lit. 'From which company$_i$, its$_i$ employees received [invitations] t_i yesterday?'

Furthermore, T&F show that the presence of *-no* in (22b) has nothing to do with its unacceptability. As shown in (24), genitive marked PPs can bind a variable pronoun if LBE does not apply to them:

(24) Kimi-wa **[dono-kaisyai-kara-no** *soko*$_i$-no syain-e-no
you-TOP which-company-from-GEN it-GEN employee-to-GEN
syootaizyoo]-o mi-ta-no? (T & F: 244)
invitation-ACC see-PST-Q
lit. 'You saw [an invitation from which company$_i$ to its$_i$ employees]?'

Now, although PP LBE results in weak-cross-over-like effects, moving the whole phrase containing the PP does not. This is the crucial contrast for the purposes of this paper:

(22b) * **Dono-kaisya$_i$-kara-no** kinoo *soko*$_i$-no syain-ga [t_i
which-company-from-GEN yesterday it-GEN employee-NOM
syootaizyoo]-o uketot-ta-no? (T & F: 243)
invitation-ACC receive-PST-Q
lit. 'From which company$_i$, its$_i$ employees received [invitations t_i] yesterday?

(25) **[Dono-kaisya$_i$-kara-no** syootaizyoo]-o kinoo *soko*$_i$-no
which-company-from-GEN invitiation-ACC yesterday it-GEN
syain-ga uketot-ta-no?
employee-NOM receive-PST-Q

All Japanese speakers I consulted agree with the contrast between (22b) and (25) (see also Arano & Oda 2019). Again, this is surprising on the SD approach to LBE, because on this analysis in both (22b) and (25) the whole phrase containing the PP is moved in syntax.

One of the reviewers points out correctly that (25) should not be grammatical, given T&F's structure of Japanese nominals. KP dominates the PP *dono-kaisyai-kara-no* 'from which company', which is adjoined to the NP, so since the PP does not c-command the pronoun, it should not be able to bind it, contrary to fact. But this seems to be a more general property of variable binding from the NP modifier position in Japanese. According to my informants, in both (26) and (27) *dono-kaisya*$_i$ 'which company' embedded in the subject binds the possessive pronoun modifying the object, regardless of whether the *wh*-possessor is an NP possessor (e.g., 26) or a PP possessor (e.g., 27).

(26) **[Dono-kaisya$_i$-no** shacho]-ga soko$_i$-no syain-o shikat-ta-no?
which-company-GEN CEO-NOM it-GEN employee-ACC scold-PST-Q
'Which company$_i$'s CEO scolded it$_i$'s employees?'

(27) **[Dono-kaisya$_i$-kara-no** syootaizyoo]-ga soko$_i$-no shacho-ni
which-company-from-GEN invitation-NOM it-GEN CEO-DAT
todoi-ta-no?
arrive-PST-Q
'An invitation from which company$_i$ arrived to it$_i$'s CEO?'

It seems to me that either KP (regardless of whether it is a phase or not) does not count as a category for purposes of c-command (the first category that properly dominates *wh*-possessors in (26) and (27) would actually be the first one that properly dominates KP), or that the *wh*-possessor always moves out at LF to a position from which it could bind the pronoun and, crucially, this movement would not be constrained by the PIC and Antilocality, as the overt LBE movement in (17) is. This assumption would be necessary to account for (26). The latter option would very similar to Kayne's (1994) treatment of variable binding in similar English construction and the contrast between (28) and (29):

(28) Every girl$_i$'s father thinks she$_i$ is a genius.

(29) * Every girl's father admires herself.

Kayne (1994) argues that the possessor QP moves to a higher DP position at LF from which only variable-binding, but not anaphor-binding, is possible. This is, however, somewhat orthogonal to the main goal of this paper, which is to show that there are deep difference between LBE and movement of the whole nominal, which I believe, the contrast between (25) and (22b) illustrates well.

Note finally that SC exhibits a similar contrast. Just like in the case of QP fronting from §2, binding is possible only if the whole *wh*-phrase moves overtly, as in (30b). If the *wh*-phrase stays in situ (e.g., 30b), or if *kog* 'which' undergoes LBE (e.g., 30c), binding is not possible.

(30) a. * Njegovi$_i$ roditelji su izgrdili kog dečaka$_i$?
His parents are scolded which boy
'Which boy$_i$ did his$_i$ parents scold?' (ungrammatical on this coindexation)

b. [Kog dečaka]$_i$ su njegovi$_i$ roditelji izgrdili t_i ?
Which boy are his parents scolded
'Which boy$_i$ did his$_i$ parents scold?'

c. * Kog$_i$ su njegovi$_j$ roditelji izgrdili [t_i dečaka]$_j$?
Which are his parents scold boy
'Which boy$_i$ did his$_i$ parents scold?' (ungrammatical on this coindexation)

As noted by a reviewer, (30a) should be ungrammatical regardless of the coindexation, since the *wh*-phrase stays in-situ. To control for this, we can add another *wh*-phrase, which does not have to move, as below.

(31) a. [Kog dečaka]$_i$ su njegovi$_i$ roditelji izgrdili t_i kad?
Which boy are his parents scolded when
'Which boy$_i$ did his$_i$ parents scold when?'

b. * Kog$_i$ su njegovi$_j$ roditelji izgrdili [t$_i$ dečaka]$_j$ kad?
Which are his parents scold boy when
'Which boy$_i$ did his$_i$ parents scold when?' (ungrammatical on this coindexation)

In (31), at least one *wh*-phrase moves to the front and there is still a contrast in binding. Even if all *wh*-elements move to the front, as in (32), the pronominal possessor cannot be bound if *dečaka* 'boy' does not move (32b).

(32) a. Kad su [kog dečaka]$_i$ njegovi$_i$ roditelji izgrdili t_i ?
When are which boy his parents scolded
'Which boy$_i$ did his$_i$ parents scold when?'

b. * Kad su kog$_i$ njegovi$_j$ roditelji izgrdili [t_i dečaka]$_j$?
When are which his parents scold boy
'Which boy$_i$ did his$_i$ parents scold when?' (ungrammatical on this coindexation)

4 Conclusion

In this paper I have investigated the size of the element that undergoes LBE. On the DE approach, what moves is exactly what we see overtly fronted – a left branch element (e.g., adjective, demonstrative, possessive etc.) and nothing more. On the SD approach, the size of the moving element is actually bigger then what is overtly evident. In addition to the left branch element (and the phrase immediately dominating it, such as AP), the modified nominal is also moved in the syntax, but it is not pronounced (overly realized) at PF. But in terms of its syntactic and semantic properties, LBE structures should not differ from structures in which the whole object is overtly moved on this analysis – the only difference between them is whether or not the moved noun is overtly realized. I have tried to show, using these two types of structures, that the SD approach in its basic form is not on the right track. That is, there are significant syntactic and semantic differences between the LBE structures and those in which the whole object moves. I have used variable binding, weak crossover effects and scope properties to make this point. Empirically speaking, I have focused on data from SC, a well-studied LBE language, but I have shown that the same point can be made even in a language like Japanese.

Abbreviations

ACC	accusative	GEN	genitive	PRS	present	Q	question
DAT	dative	NOM	nominative	PST	past		

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Chapter 2

Size of Op in *tough*-constructions

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Following Hicks (2009), the availability of the complex operator with D layer is the pre-requisite for English-like *tough* constructions. Based on the NP/DP parameter, I claim that the size of the null operator (Op) is bigger in languages with articles (so called DP languages) with D layer while Op in languages without articles (so called NP languages) is missing the D layer. Hence English-like *tough* constructions should be available only in DP languages. Through a cross-linguistic survey of 13 languages, I will show that this is in fact borne out.

1 Complex null operator

1.1 Problems in analyses of *tough* construction

The analyses of the *tough* constructions have encountered difficulties with at least one of the core theoretical concepts of Case, locality constraints, and θ-role assignment. For example, the raising analysis of the *tough* subject from the embedded object position by A-movement (e.g. Rosenbaum 1967, an A-movement account) leads to a problem with respect to Case assignment, i.e. the *tough* subject should not be able to avoid accusative Case assignment by the infinitive verb in the embedded clause.

(1) He$_i$ is easy [$_{CP}$ [$_{TP}$ PRO to please t$_i$]].

On the other hand, Chomsky's (1977) account based on A'-movement of a null operator (Op) assumes that the *tough* subject is base-generated in situ. This analysis, however, appears to leave the matrix subject without a θ-role, since the *tough* predicate is claimed to not assign a θ-role to its subject. This is indicated by the

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grammaticality of the *tough* constructions with expletive/sentential subjects in (2), which is contrasted with other complement object deletion configurations as with *pretty* in (3)

(2) a. It is tough to please linguists.
    b. To please linguists is tough.

(3) a. * It is pretty to look at these flowers.
    b. * To look at these flowers is pretty.

Thus, this A'-movement analysis has to explain how a single θ-role assigned by the embedded verb is apparently "shared" between two arguments, i.e. the null operator in the infinitival clause and the *tough* subject.

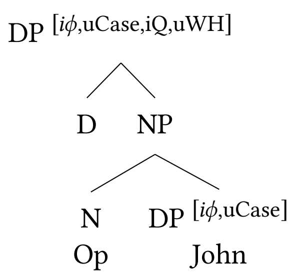
Postal (1971), Postal & Ross (1971), Rosenbaum (1967) and Brody (1993), among others, propose a composite A/A'-movement analysis by claiming that A'-movement of the *tough* subject is followed by A-movement as shown below.

(4) John$_i$ is easy [$_{\text{CP}}$ t$_i$ [$_{\text{TP}}$ PRO to please t$_i$]].

However, the problem of this approach is the Case mismatch of the subject (Accusative vs. Nominative). Another issue is that movement from an A-position to an A'-position that is followed by A-movement, referred to as Improper Movement, is typically assumed to be disallowed (see Chomsky 1973, 1981, May 1979).

1.2 The CNO analysis

Hicks (2009) proposes a new analysis which incorporates both A-movement and A'-movement but without the problems of the previous approaches noted above, using smuggling (Collins 2005a, 2005b). He claims that a null operator in *tough* constructions is a wh-phrase with a more complex internal structure than is typically assumed, i.e. a complex DP with an internal DP as the *tough* subject (e.g. *John*) as shown below.

(5)


Based on this complex null operator (henceforth, CNO) analysis, the derivation of the *tough* construction *John is easy to please*, for example, proceeds as follows. First, the CNO merges with the V *please* as an object and the patient θ-role from *please* is assigned to the whole complex DP. Second, the derived VP is merged with v, and the complex null operator enters into ϕ-feature agreement with v, [uϕ] (uninterpretable ϕ-feature) on v being the relevant probe. As a reflex of ϕ-feature agreement, v checks [uCase] on the CNO, i.e. the whole DP at this point, as shown in Figure 1.

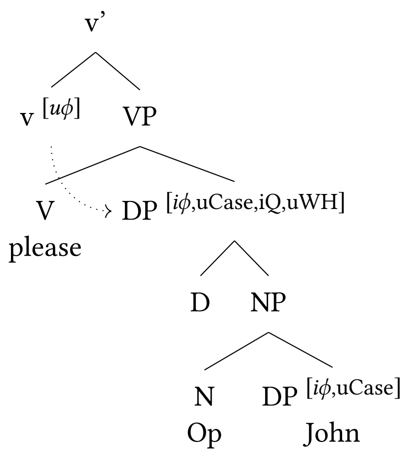


Figure 1: Case assignment to the CNO

After V-to-v movement of *please* and the merger of PRO as the external argument, the CNO must move to the phase edge (outer vP-spec) since it bears [iQ, uWH] feature, where crucially, the operator pied-pipes the inner DP *John*, allowing [uCase] on it to escape. The null operator therefore serves to "smuggle" (Collins 2005a,b) the *tough* subject.

The PRO, then, moves into Spec, TP of the embedded clause, and the C is merged with [uQ] which is checked with [iQ] on the CNO while the [uWH] is checked as a reflex, as shown in Figure 2. The [EPP] on C then drives movement of the CNO into the phase-edge position, allowing the unchecked [uCase] on *John* to escape. At this point, as shown in Figure 3, the remaining interpretable features in the CNO are now inactive. In other words, the phrase (i.e. the full CNO) is frozen in place and thus is not accessible to further movement, following Rizzi (2006, 2007).[1]

[1]The details of the feature checking relations assumed by Hicks (2009) will actually not be important below.

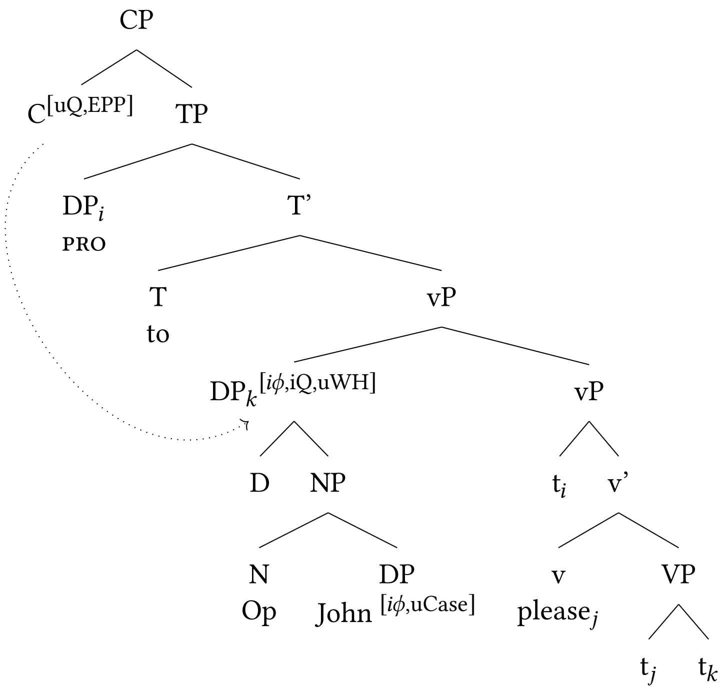


Figure 2: Probe-goal agreement on the CNO

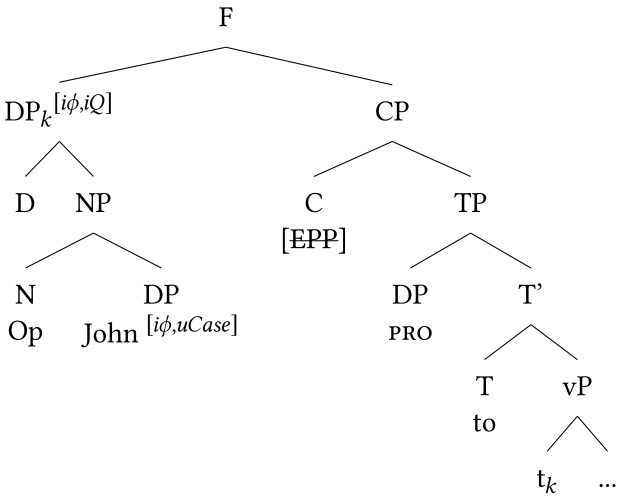


Figure 3: Freezing effect of the CNO

Finally, when the main clause T merges into the structure, T, which has [uϕ], probes for [iϕ]. As a reflex of ϕ-agreement, a nominative Case value is assigned to the goal *John*, which moves to Spec, TP to satisfy [EPP], and its [uCase] is checked.

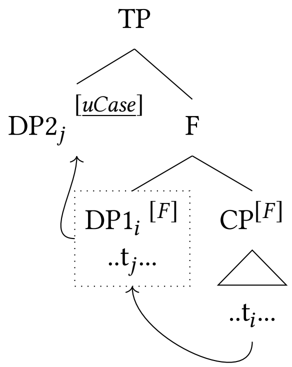


Figure 4: Smuggling of the tough subject

In short, based on this analysis, when the CNO merges with the V as an object, the patient θ-role is assigned to the whole complex DP1, and after the CNO merges with a CP, the inner DP2 is smuggled (Collins 2005a,b) into the matrix subject position without being assigned an accusative Case prior to that movement. The shared feature F is projected here (based on the Labeling Algorithm in Chomsky 2013), which I assume is a D-related feature.

This CNO analysis avoids the problems of the previous analyses in that (a) the CNO shields the *tough* subject from Case assignment in the lower clause by the infinitival verb, and that (b) it does not involve improper movement. Crucially, there has to be a DP which embeds Op within it, smuggling the *tough* subject from the complement position of the Op in (5).

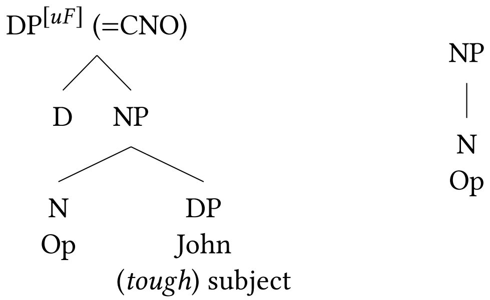
1.3 The NP/DP parameter and a prediction

The crucial issue here is that languages without articles have been argued not to have the category D, hence the DP projection (Corver 1992, Zlatić 1997, Bošković 2005, 2012, Despić 2013, Takahashi 2011, among others). For example, Bošković (2012) establishes a number of generalizations based on wide-ranging syntactic and semantic phenomena that correlate with the presence or absence of articles in the languages, based on which Bošković argues that languages without articles lack the DP layer. Furthermore, he proposes an NP/DP parameter where languages with articles like English are DP languages and languages like Japanese which do not have articles are NP languages.

Given this, I claim that the Op has a more complex structure in DP languages while it does not have the DP layer in NP languages, as shown in (6). In other words, the size of Op is different among languages.

(6) Null Operators in *tough* constructions

a. DP languages: b. NP languages:



Based on the CNO analysis of *tough* constructions (Hicks 2009) in (4), the *tough* subject is smuggled out of the lower infinitive clause by the complex DP (CNO). If this is the case, then it is predicted that English-like *tough* constructions would not be available in NP languages, since in NP languages Op is not complex and the uninterpretable [F] feature, which is necessary for the smuggling to take place, is missing.

In order to check this prediction, I will look at the cross-linguistic variation in "*tough* constructions", and conduct a cross-linguistic survey of the availability of "*tough* constructions" in 13 languages in the following sections, which establishes a correlation between the availability of the "*tough* construction" and being a DP language.

2 *Tough* constructions without the CNO

Japanese, an NP language, appears to allow *tough* constructions, as in (7). However, Takezawa (1987) claims that (7) should not be analyzed in accordance with the English *tough* construction (Chomsky 1977), as there is no island effect, which is shown by (8). (As the English translation here shows, (8) involves a complex NP configuration and should be ruled out due to movement out of the complex NP.)

(7) John$_i$ -ga [$_{AP}$ [$_{S'}$ Op$_i$ [$_S$ PRO t$_i$ yorokobase]] yasu -i]]
-NOM please easy -PRS
'John is easy to please.'

(8) a. [kono te-no hanzai]$_i$ –ga (keisatu-nitotte) [$_{NP}$ [$_{S'}$ e$_j$ e$_i$
This kind-of crime -NOM police-for
okasi-ta] ningen$_j$]-o sagasi-yasu-i
commit-PST man-ACC search-easy-PRS
'*[This kind of crime]$_i$ is easy (for the police) to search [$_{NP}$ a man [$_{S'}$ who committed e$_i$]]'

b. [kooitta itazura]$_i$ -ga (senseigata-nitotte) [$_{NP}$ [$_{S'}$ e$_j$ e$_i$ sita]
This-kind-of trick -NOM teachers-for do-PST
seito$_j$]-o mituke-yasu-i
pupil-ACC find-easy-PRS
'*[This kind of trick]$_i$ is easy (for the teachers) to find [$_{NP}$ a pupil [$_{S'}$ who played e$_i$]]'

c. [Sooiu ronbun]$_i$ -ga (watasi-nitotte) [$_{NP}$[$_{S'}$ e$_j$ e$_i$ kai-ta]
That-kind-of paper -NOM me-for write-PST
gakusei$_j$]-o hyookasi-niku-i
student-ACC evaluate-difficult-PRS
'*[That kind of paper]$_i$ is difficult (for me) to evaluate [$_{NP}$ a student [$_{S'}$ who wrote e$_i$]]' (Takezawa 1987: 203)

Takezawa explains this difference by claiming that Japanese *tough* constructions do not involve movement of Op but involve an empty pronominal (Japanese independently allows empty pronominals) in the gap position and the "aboutness relation" which correlates the pronominal and its antecedent, just as claimed for the derivation of relativization and topicalization by Saito (1985) based on Kuno's (1973) observation. He further points out that when *tough* constructions have PP subjects, which cannot be coindexed with an empty pronominal, they observe Subjacency, as shown in (9). Thus, Takezawa concludes that only *tough* constructions with PP subjects must be derived by movement of a null operator as in their English counterparts.

(9) a. * [$_{PP}$ Anna taipu -no zyosei-to]$_i$ -ga (John-nitotte) [$_{NP}$[$_{S'}$ e$_j$ e$_i$
that type of woman-with -NOM John-for
kekkon-site-i-ru] otoko$_j$]-to hanasi-niku-i.
marry-PRS man-with talk-hard-PRS
(lit.) '[With that type of woman]$_i$ is hard (for John) to talk to [$_{NP}$ the man [$_{S'}$ who marry e$_i$]].'

cf. [$_{PP}$ Anna taipu -no zyosei-to]$_j$ -ga (John$_i$-nitotte) [$_{S'}$ pro$_i$
that type of woman-with -NOM John-for
e$_j$] kekkonsite-mo-i-i to] tomodachi-ni ii-niku-i.
marry-may-PRS COMP friend-to say-hard-PRS
(lit.) '[With that type of woman]$_i$ is hard (for John$_j$) to say to his friends [$_{S'}$ that he$_j$ may marry e$_i$]'

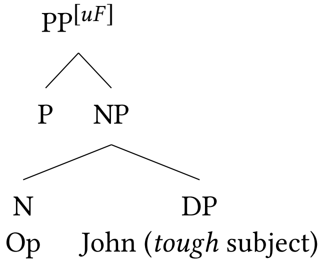
b. ?* [$_{PP}$ Sooiu kin'yuukikan-kara]$_i$ -ga (John-nitotte) [$_{NP}$ [$_{S'}$ e$_j$
such financial.agency-from -NOM John-for
itumo e$_i$ okane-o takusan karite-i-ru] hito$_j$]-o
always money-ACC a.lot borrow-PRS person-ACC
sin'yoosi-niku-i.
trust-hard-PRS
(lit.) '[From such a financial agency]$_i$ is hard (for John) to trust [$_{NP}$ a person [$_{S'}$ who always loans a lot of money t$_i$]].'
cf. [$_{PP}$ Sooiu kin'yuukikan-kara]$_j$ -ga (John$_j$-nitotte) [$_{S'}$ pro$_i$ e$_j$
such financial.agency-from -NOM John-for
okane-o takusan karite-i-ru to] ii-niku-i
money-ACC a.lot borrow-PRS COMP say-hard-PRS
(lit.) '[From such a financial agency]$_i$ is hard (for John) to say [$_{S'}$ that he has loaned a lot of money e$_i$]'

I will argue that this PP subject *tough* construction is irrelevant to our expectation that NP languages do not have a *tough* construction since PP itself may bring in richer structure for the Op, enabling the smuggling of the subject, regardless of the presence of DP layer here.

(10) [Annna taipu –no zyosei-to]$_j$ –ga [$_{CP}$ [$_{PP}$ Op t$_j$]$_i$ John-nitotte t$_i$ kekkon si yasui]

Thus, I will focus on nominal *tough* constructions where NP/DP distinction is crucial for the availability of *tough* construction. Recall that the Op does not have any uninterpretable features in *tough* construction; a DP above the Op is necessary for smuggling the subject in DP languages. The availability of *tough* construction with PP subject in Japanese then is explained by saying that PP functions as the DP and has an uninterpretable feature [uF] that is needed for the smuggling of the *tough* subject.

(11)



The necessity of the CNO analysis comes from the nominative Case marking on the *tough* subject in English; i.e. the subject needs to be smuggled into the TP spec position in order to avoid getting assigned the accusative Case in the complement position of the infinitive, instead getting the nominative Case from the higher T. If there are languages where the apparent subject of *tough* construction is assigned a Case other than nominative, CNO will then not be needed. I will therefore focus on nominative subjects of *tough* constructions below.

3 Cross-linguistic survey of availability of CNO in *tough* constructions

3.1 Diagnostics

Before looking at the data, we need to clarify the diagnostics a little more. Regarding the Case marker of the *tough* subject, as noted above, it is crucial to check if it is a Nominative or another Case such as Accusative/Dative (or the Case normally assigned by the infinitive verb). If the matrix subject has a Nominative Case, then in that language the CNO can be involved in the derivation. However, there is another possibility when the language has no island effect (thus no *tough*-movement) because of a resumptive pronoun as in the case of Japanese *tough* constructions. If the *tough* subject has the Case assigned by the lower verb, it is an indication that the CNO analysis is not necessary since there is no need for the subject to avoid Case assignment by being smuggled; this also suggests that the subject was base-generated in the object position of the infinitive, and moved to the surface position without any Op movement. There should, however, still be an island effect here.[2] The diagnostics are then summarized below.

[2]We could be dealing here either with quirky subject movement to Spec TP or movement of the object to a position above TP for topicalization/focalization. Either way, the movement does not result in Case assignment.

(12) Diagnostics to follow

a. The subject has a nominative Case or a Case assigned by the embedded infinitive verb?

b. If nominative Case, then check subjacency effects; if yes, smuggling of the subject with the CNO as in (i); if no, base-generated subject with a null resumptive pronoun in the gap position without Op movement as in (ii).

(i) Subj(NOM)$_j$ is tough [$_{\text{CNO}}$...t$_j$...]$_i$ to please t$_i$, e.g. English

(ii) Subj(NOM)$_i$ is tough to please pro$_i$, e.g. Japanese

c. If no nominative, with Case assigned by the infinitive verb, then the object of the infinitive verb is moved as in (iii) by e.g. focalization; and there is no need for Complex Op analysis, but there should be a subjacency effect for the movement.

(iii) Subj(DAT/ACC)$_i$ is tough to please t$_i$

In short, there are three types, i.e. English-like *tough* construction with a nominative subject with the CNO, Japanese-like *tough* construction with a nominative subject without the CNO, and the one without a nominative subject or the CNO.

In order to check the subjacency effect, I will use the translation of Chomsky's (1977) examples regarding the locality in English *tough* constructions, i.e. (13c).[3]

(13) a. John$_i$ is easy (for us) to please t$_i$

b. i. John$_i$ is easy (for us) [to convince Bill [to do business with t$_i$]]

ii. John$_i$ is easy (for us) [to convince Bill [that he should meet t$_i$]]

c. i. * John$_i$ is easy (for us) [to describe to Bill [a plan [to assassinate t$_i$]]] (Complex NP)

ii. * Which sonatas$_i$ are the violin$_j$ easy [to play t$_i$ on t$_j$] (Wh-island)

d. i. The violin$_j$ is easy [$_{\text{CP}}$ [$_{\text{CNO}}$ Op t$_j$]$_k$ ~~for~~ PRO to play sonatas on t$_k$].

ii. * Which sonatas$_i$ are the violin$_j$ easy [$_{\text{CP}}$ [$_{\text{CNO}}$ Op t$_j$]$_k$ ~~for~~ PRO to play t$_i$ on t$_k$].

Based on this, I have conducted a cross-linguistic survey of the availability of "*tough* constructions" in 13 languages. I will show some examples (of each of the three types) below.

[3] In (13c-ii), *which sonatas* is moving past a null *wh* operator (i.e. CNO in our analysis), resulting in a *wh*-island constraint violation.

3.2 Example of type (i): German

There are *tough* constructions with a nominative subject in several languages. Thus, the literature discusses the *tough* construction (also often referred to as the *easy-to-please* construction) in German or some Romance languages (e.g. see Mario et al. 1982, Cinque 1990, Roberts 1993, Wurmbrand 2001).

In German,[4] *tough* constructions have the subject that is nominative-marked but it is interpreted as an object of the infinitival verb as in (14a).

(14) a. Dieser Konflikt ist leicht zu lösen t_i
This.NOM conflict.NOM is easy to solve
'This confict is easy to solve.'

b. Es ist leicht, diesen Konflikt zu lösen.
it is easy this.ACC conflict.ACC to solve
'It is easy to solve this conflict.'

c. John hat den/diesen Konflikt gelöst.
John has the.ACC/this.ACC conflict.ACC solved
'John solved the conflict.'

Here, crucially the verb *lösen* 'solve' used in the infinitival clause in (14b) and in the main clause in (14c) normally takes an accusative Case object, which means that the subject *dieser Konflikt* 'this conflict' in the *tough* construction in (14a) is not assigned a Case by the infinitival verb.

When an inherent Case assigning verb is used as the infinitive in *tough* constructions in German, however, the *tough* subject seems to retain the inherent Case from the infinitives, as shown below.

(15) a. Ihm ist leicht zu helfen.
he.DAT is easy to help
'He is easy to help.'

b. Es ist leicht, ihm zu helfen.
it is easy he.DAT to help
'It is easy to help him.'

(16) Bitte hilf mir
Please help me.DAT
'Please help me.'

[4]German sentences in this subsection were checked by a consultant, Sabine Laszakovits.

Here I assume that the preverbal oblique NP *Ihm* 'he.DAT' is not a grammatical subject and thus not in spec TP position, following Zaenen et al. (1985), who show that German does not have quirky subjects. Thus, for example, the sentence-initial oblique NP in German passives cannot be deleted under identity with a (nominative) subject, which is contrasted with the oblique NP in Icelandic, which has quirky subjects.

(17) German

a. Er kam und (er) besuchte die Kinder.
he.NOM came and (he) visited the children

b. Er kam und (er) wurde verhaftet. (Zaenen et al. 1985: 477)
he came and (he) was arrested

c. * Er kam und ___ wurde geholfen.
he came and was helped

(18) Icelandic

a. þeir fluttu líkið og þeir grófu það.
they.NOM moved the-corpse and they buried it

b. þeir fluttu líkið og ___ grófu það

c. Hann segist vera duglegur, en ___ finnst verkefnið of þungt.
he.N says-self to-be diligent, but ___.D finds the-homework too hard
'He says he is diligent, but finds the homework too hard.' (Zaenen et al. 1985: 453-454)

For this subjecthood test, the sentence-initial oblique DP in German *tough* construction behaves similarly, which is contrasted with the nominative DP in (20) as shown below.[5]

(19) * Er hat überlebt und ___ war leicht zu helfen.
he.NOM has survived and was easy to help
'He survived and ___ was easy to help.'

(20) Dieser Konflikt verschlechtert sich und ___ ist schwierig zu lösen.
this.NOM conflict worsened REFL and is difficult to solve
'This conflict worsened and is difficult to solve.'

[5]It is still not clear, though, what is blocking the derivation where the CNO gets the inherent Case and the matrix subject gets smuggled to the specifier of TP to get nominative, in the case of e.g. (15a).

Also, as in English, German *tough* constructions observe the island effect, as shown below (p.c. Sabine Laszakovits and Roman Reitschmied).

(21) a. Es ist leicht den Plan zu beschreiben, John zu töten
It is easy the.ACC plan to describe John to kill
'It is easy to describe a plan to kill John.'

b. * Der John ist leicht den Plan zu beschreiben, _ zu töten.
the.NOM John is easy the.ACC plan to kill to describe
'*John is easy (for us) to describe a plan to kill.'

Therefore, German is categorized as type (i) in our diagnostics where the CNO movement is involved with the smuggling of the subject which gets nominative Case in the matrix TP spec position. In other words, German has the relevant *tough* construction.

3.3 Example of type (ii): Thai

As another example of Japanese-like *tough* construction with base-generated subject and a null resumptive pronoun in the gap position without Op movement, I now turn to Thai.[6] As shown below, there are morphemes *–ngai/–yak* '-easy/-difficult' corresponding to Japanese *-yasui/-nikui* '-easy/-tough'.

(22) nang sue nian -yak.
book this read difficult
'This book is difficult to read.'

(23) khao deejai -ngai.
he happy easy
'He is easy to make happy.'

Another similarity is that there is no island effect, as in its Japanese counterpart.

(24) achyakrrm ni jab [khon [t_i tam *e*]] -ngai.
crime this arrest person who did easy
'This (type of) crime is easy to arrest the person who did it.'

Also, Thai can have resumptive pronouns in e.g. relative clauses. A pronoun referring to the head noun may appear in some relative clauses. Here the resumptive pronoun /kháw/ is associated with the head nouns /khon/ and /nák-lian/.

[6]Thai sentences are checked with two consultants, Panat Taranat and Sidney Mao.

(25) khon [thîi khǎw pay yùu kan taam roŋrian].
people C they go stay REC at school
'People who want to stay at school...' (Iwasaki & Ingkaphirom 2005)

(26) mây-chây pen acaan kháp, pen náklian [thîi khǎw fùk maa].
NEG is teacher SLP is student C they train come/ASP
'(Dorm directors) are not teachers. They are students who have been trained.'

I assume the island effect is voided by the presence of a null resumptive pronoun in (24), which enables the aboutness relation between the fronted element and the gap, just as in the case of its Japanese counterpart.

Now, as the following sentences show, when a PP subject is used for the *tough* construction, the island effect is observed. This is another similarity with Japanese.

(27) a. ?? [jak tanakhan ni] waijai [khon [ti gu ngen yeu t_i]] yak.
from bank this trust person who loans money much hard
'[from this bank] is hard to trust a person who loans a lot of money t_i'

b. waijai [khon [ti gu ngen yeu jak tanakhan ni]] yak.
trust person who loans money much from bank this hard

In short, Thai *tough* constructions pattern with Japanese, i.e. type (ii) in the diagnostics (12), in that there is no island effect despite the subject being nominative Case-marked, because of the existence of a null pronoun in the infinitival object position.

3.4 Example of type (iii): Serbo-Croatian

The survey found that some languages have *tough* constructions with the noun in the apparent subject position being assigned a Case other than nominative. This means that the CNO is not needed in their derivations. In examples corresponding to the *tough* construction in Serbo-Croatian (SC)[7] in (28), the element in the apparent subject position has the Case which is assigned by the infinitival verb *ugoditi* 'please'/*otpustiti* 'fire'.

(28) a. Njemu/*On je lako ugoditi.
him.DAT/he.NOM is easy.ADV please.INF
'He is easy to please.'

[7] Serbo-Croatian data in this subsection are from two consultants, Aida Talić and Ivana Jovović.

b. Njega/*On je lako otpustiti.
him.ACC/he.NOM is easy.ADV fire.INF
'He is easy to fire.'

(29) a. Ivan je ugodio njemu.
Ivan is pleased him.DAT
'Ivan pleased him (but not her).'

b. Šef je otpustio njega.
boss is fired him.ACC
'The boss fired him (but not her).'

The pronouns can also be placed in the canonical object position as shown below, where the matrix subject is phonologically null.

(30) a. Lako je ugoditi njemu.
easy.ADV is please him.DAT
'It is easy to please him (but not her).'

b. Lako je otpustiti njega
easy.ADV is fire.INF him.ACC
'It is easy (for the boss) to fire him (but not her).'

All this suggests that in the "*tough*" constructions in (28), the sentence initial object of the infinitive verb undergoes topicalization/focalization/scrambling into the matrix clause, the real subject being null.

(28′) a. Njemu$_i$ [je lako ugoditi t$_i$]
him.DAT is easy.ADV please.INF
'Him, it is easy to please.'

b. Njega$_i$ [je lako otpustiti t$_i$]
him.ACC is easy.ADV fire.INF
'Him, it is easy to fire.'

Furthermore, the movement of the object is island-sensitive, as shown below.

(31) a. Lako nam je Borisu prepričati trač da su ubili *njega.*
easy us.DAT is Boris.DAT retell gossip that are kill him.ACC
'It is easy for us to retell to Boris a gossip that they killed him.'

b. * *Njega$_i$* je nama lako Borisu prepričati trač da su ubili t$_i$.

Therefore, in Serbo-Croatian, the object moves directly from the complement of the infinitive without involving smuggling and CNO. In sum, the sentences that correspond to the *tough* constructions in SC are classified as type (iii) in the diagnostics (12), i.e. Serbo-Croatian does not have the relevant *tough* construction. Through the survey, I found that other languages like Slovenian, Russian and Polish all follow the same pattern as SC.

3.5 Summary

Based on the diagnostics (12), the *tough* constructions in the 13 languages surveyed are categorized into 3 types (Table 1).

Table 1: Types of *tough* constructions

Languages	Type
English	i
German	i
Spanish	i
Italian	i
French	i
Bulgarian	iii
Hungarian	iii
Thai	ii
Japanese	ii
SC	iii
Slovenian	iii
Polish	iii
Russian	iii

As shown in Table 1, the type (i) "*tough*" constructions (where the CNO movement is involved) are available in a limited number of languages including English. Recall now that our prediction was that English-like *tough* constructions are available only in DP languages based on the CNO analysis of *tough* constructions where the presence of the DP layer is crucial for the CNO to smuggle the *tough* subject. In this regard, the NP/DP distinction and the availability of the type (i) *tough* constructions in the languages under consideration are summarized in Table 2.

Table 2 confirms that *tough* constructions are indeed allowed only in DP languages. Here, we can establish a one-way correlation, i.e. *tough* constructions

Table 2: NP/DP distinction and availability of type (i) *tough* construction

Languages	NP/DP	*Tough* (i)
English	DP	Yes
German	DP	Yes
Spanish	DP	Yes
Italian	DP	Yes
French	DP	Yes
Bulgarian	DP	No
Hungarian	DP	No
Thai	NP	No
Japanese	NP	No
SC	NP	No
Slovenian	NP	No
Polish	NP	No
Russian	NP	No

with (Complex) Op movement are allowed only in DP languages. This is accounted for under the proposed analysis where only DP languages can have the complex null operator, which is needed for the derivation of *tough* constructions.

Note that the correlation between the availability of *tough* constructions and DP languages is a one-way correlation, because of Hungarian or Bulgarian. A remaining question is, then, what makes Hungarian and Bulgarian different among DP languages regarding the availability of *tough* constructions. I suggest here that other independent factors are involved. In the case of Bulgarian, its *tough* formation utilizes a subjunctive complement, as infinitive is rarely used in this language.

Even in English, *tough*-formation movement is very local, i.e. it can only cross an infinitival clause but not a finite clause, which was pointed out by Stowell (1986).

(32) a. * Betsy$_i$ is easy [Op$_i$ [PRO to expect [t$_i$ fixed the car]]].

b. * John is easy [Op$_i$ [PRO to believe [t$_i$ kissed Mary]]].

c. ?? This car is hard [Op$_i$ [PRO to claim [[Betsy fixed t$_i$]]]].

d. ?? That language is impossible [Op$_i$ [PRO to say [[Greg will learn t$_i$]]]].

(Stowell 1986: 477)

I suggest then that the movement across a subjunctive clause boundary in Bulgarian is prohibited in the same way, which blocks the possibility of the relevant *tough* constructions.

Turning now to Hungarian, it has been argued that the Op movement in *tough* constructions in some languages like German is more local than in English, in that it is not even allowed out of all infinitives (Wurmbrand 2001, Kayne 1989, Roberts 1997), more precisely it is allowed only out of "small" infinitives (i.e. restructuring). While I will not address the issue here, it is worth noting that it may be related to Hungarian. Kenesei (2005) and Dalmi (2004) argue that infinitival constructions in Hungarian project a full-fledged CP by pointing out that it has typical left peripheral projections with the strict order that is also found in finite clause. This property of infinitival constructions in Hungarian may be the reason why *tough* construction is not allowed in Hungarian; *tough* formation movement may not be allowed to cross the Hungarian infinitive clause.

4 Conclusion

In conclusion, I have argued for the CNO analysis (Hicks 2009) of *tough* constructions in English, with smuggling of the nominative *tough* subject. This analysis resolves the problems of the previous analyses by blocking the *tough* subject from Case assignment in the infinitival clause, and it also avoids the Improper Movement issue. The smuggling of the *tough* subject is what resolves both issues. Crucially, for the smuggling to take place, there has to be a DP layer above a bare Op. Based on this, a prediction was made that *tough* constructions involving nominative subjects as well as Op movement will be possible only in DP languages. This prediction was borne out through a survey of 7 DP languages and 6 NP languages, which showed that *tough* constructions are indeed possible in only DP languages. Under the proposed analysis, the null Op does not have any uninterpretable features that would enable it to smuggle the *tough* subject. In DP languages, there is a DP above the null Op. It is this DP that smuggles the *tough* subject. The only difference between DP languages and NP languages is then that there is a DP above the null Op in DP languages. The lack of (type (i)) *tough* constructions in NP languages was attributed to the inability of Op to smuggle the *tough* subject. It was also noted that Japanese and Thai, which are NP languages, have the relevant *tough* construction when its subject is a PP. This is captured under the proposed analysis because PP itself brings in a richer structure for the Op, enabling the smuggling of the subject, regardless of the presence of the DP layer.

Abbreviations

Abbreviations in this chapter follow the Leipzig Glossing Rules, with the following adaptions:

A	argument	OP	operator
AP	adjective phrase	PP	preposition
ASP	aspect	PRO	pronominal anaphor
CNO	complex null operator	REC	reciprocal
CP	complementizer phrase	S	sentence
D	determiner	SC	Serbo-Croatian
DP	determiner phrase	SLP	speech level particle
EPP	extended projection principle	T	tense
iQ	interpretable question feature	TP	tense phrase
N	noun	uF	uninterpretable feature
NP	noun phrase	VP	verb phrase

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Chapter 3

Object shift in ASL and Libras

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ASL and Libras have an object-shift construction by which the canonical SVO order is changed to SOV. In both sign languages, this ordering is mandatory for V marked with durative/continuative aspect (reduplicated movement), optional for V that agrees with O in locus, and not allowed with plain V. When V agrees with O in handshape, ASL requires OV ordering whereas Libras allows both OV and VO ordering. We present an analysis that derives these data with a combination of syntactic movement of O and violable, equally-ranked PF-constraints as proposed by Bobaljik & Wurmbrand (2012). Unlike Matsuoka's (1997) and Braze's (2004) proposals, we do not move V to a head on the right in violation of the Final-over-final constraint (Biberauer et al. 2014, Sheehan et al. 2017).

1 Introduction

The underlying word order in modern American Sign Language (ASL) and Brazilian sign language (Língua Brasileira de Sinais, Libras) has often been argued to be subject-verb-object (SVO; see Fischer 1975, Liddell 1980, Padden 1983/1988 for ASL; Müller de Quadros 1999, 2003 for Libras), which we adopt here. However, in both languages, word order variations are possible. In this paper, we focus on the construction with the word order SOV, which has been termed "object shift". This construction differs from topicalization structures like O'SV, VO'S, S'VO, or S'O'V in that the latter contain a prosodic break after the topic (indicated here by an apostrophe) and may contain nonmanual marking (raised brows and a slight upward chin tilt; Liddell 1977, 1980, Padden 1983/1988) during the utterance of

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the topic.[1] We restrict our attention to verbs that take a direct object (such as 'buy X') and possibly an indirect object (such as 'send X to Y'), but do not discuss verbs that denote movement to or from a location (such as 'put X on Z').[2]

There are three main triggers for object-shift in ASL and Libras: 1. durative/continuative aspect on the verb, which makes object-shift obligatory; 2. verbal agreement in handshape with the object, which makes object-shift optional in Libras and obligatory in ASL; and 3. verbal agreement in locus with the object, which makes object-shift optional in both languages. The effect of durative aspect on word order is illustrated in (1–2).[3,4]

(1) a. IX1 WINE DRINK[asp]. ✓ASL, ✓Libras
'I drank wine continuously.'

b. * IX1 DRINK[asp] WINE. *ASL, *Libras

(2) a. MY SISTER LETTER SEND[asp]. ✓ASL, ✓Libras
'My sister repeatedly sent a/the letter(s).'

b. * MY SISTER SEND[asp] LETTER. *ASL, *Libras

[1] Fischer (1990) argues that object-shift constructions in ASL involve "mini-topicalization" of O to some intermediate specifier position. She corroborates this analysis by reporting a definiteness effect found in SOV orders, which is typical of topics. However, unlike typical topicalizations, SOV constructions lack a prosodic break after O and cannot mark O with nonmanual topicalization marking. Our analysis is similar to Fischer's in that we think O moves to some intermediate specifier position. However, we have not been able to reproduce this definiteness effect for ASL, and we see no reason to call this movement topicalization.

[2] Furthermore, we distinguish object-shift from locative constructions of the form location-subject-predicate, which have been taken as instances of the word order OSV because, like object-shift, they lack the prosodic break of topicalization structures (Liddell 1980). Locative constructions differ from object-shift constructions at least in the following properties: (i) the word order is OSV (vs. SOV), (ii) the predicate is restricted to 'is located at' (vs. any verb), and (iii) there is no minimally different derivation with the word order SVO (which there is for object-shift; see e.g. (4–7) and throughout the paper).

[3] Following standard practice in sign linguistics, signs are glossed using English words in all caps. Most of our examples represent sign sequences that are grammatical in both ASL and Libras, though the actual signs are of course different. 'IX' is the gloss used for a pointing indexical sign which serves pronominal functions. '[asp]' indicates an aspectual marker involving reduplication of the sign root. '[hs:_]' indicates the use of a classifier handshape. '[loc:_]' indicates that a sign is produced using a spatial locus other than default ('a', 'b', etc. indicate distinct loci but not physical location). '[dir:_→_]' indicates that a sign moves from one locus to another.

In the English translation, past tense is used although neither ASL nor Libras has grammatical tense marking; similarly, we often use 'a/the' for nouns because in both of these sign languages either translation is possible.

[4] When a source is not provided, the judgments primarily come from the 2nd and 3rd co-authors, who are native signers of Libras and ASL respectively.

Verbal agreement can target the object's noun-class[5], whereby V changes its handshape ('hs') to a classifier as illustrated in (3), or it can target the object's referent, whereby V changes the end-point of its movement ('dir') to the object's locus ('loc'), as seen in (4).[6]

(3) The handshape of 'GIVE' changes to the handshape indicative of handling an apple.

a. SALLY APPLE GIVE[hs:]. ✓ASL, ✓Libras

b. SALLY GIVE[hs:] APPLE. ✓Libras

c. * SALLY GIVE[hs:] APPLE. *ASL

all: 'Sally gave someone a/the apple.'

(4) The direction of 'HELP' changes to the locus of 'ANA'.

a. IX[loc:*a*] MARIA[loc:*a*] IX[loc:*b*] ANA[loc:*b*] HELP[dir:*a*→*b*]. (from Müller de Quadros et al. 2004: 6) ✓Libras, ✓ASL

b. IX[loc:*a*] MARIA[loc:*a*] HELP[dir:*a*→*b*] IX[loc:*b*] ANA[loc:*b*]. (from Müller de Quadros et al. 2004: 5) ✓Libras, ✓ASL

both: 'Maria helped Ana.'

For some verbs, locus agreement involves signing the verb at the object's locus as illustrated in (5) (termed "locationality" by Fischer & Gough 1978, "spatialization" by Müller de Quadros et al. 2004, and "co-localization" by Lourenço & Wilbur 2018; see also Bergman 1980, Liddell 1980, Costello 2015, Smith 1990, i.a.; ASL & Libras), or by adding an auxiliary as in (6) (Libras only; Müller de Quadros 1999). We will treat all of these options as locus-agreement strategies and postulate a uniform syntax.

(5) Spatialized plain verbs

a. MAN BICYCLE[loc:*a*] BUY[loc:*a*]. ✓ASL, ✓Libras (from Müller de Quadros et al. 2004: 9)

b. MAN BUY[loc:*a*] BICYCLE[loc:*a*]. ✓ASL, ✓Libras (from Müller de Quadros et al. 2004: 9)

both: 'The man bought a/the bicycle.'

[5] In this sense we follow Benedicto & Brentari's (2004) proposal, whereby classifiers are treated as a type of agreement between V and O/S.

[6] Fischer (1975) proposed that object-shift is also licensed if the relation between V and O is established in the semantics, such that SOV is possible only if it is clear from the semantics of V, S, and O which argument is the agent and which is the patient. However, Liddell (1980) showed that this approach makes incorrect predictions, and that syntactic agreement is a better way to go.

(6) Auxiliary

a. IX[loc:*a*] JOÃO[loc:*a*] IX[loc:*b*] MARIA[loc:*b*] AUX[dir:*a*→*b*] SUPPORT. ✓Libras
'Joao supported Maria.' (from Müller de Quadros et al. 2004: 7)

b. IX[loc:*a*] MARIA[loc:*a*] SUPPORT IX[loc:*b*] LULA[loc:*b*]. ✓Libras
'Maria supported Lula.' (from Müller de Quadros et al. 2004: 5)

The object-shift construction is not possible if neither trigger is present, i.e., when the verb is "plain", as in (7).

(7) a. * MAN NUMBER FORGET[plain]. *ASL

b. MAN FORGET[plain] NUMBER. ✓ASL
'The man forgot a/the number.' (from Liddell 1980)

c. * IX JOHN SOCCER LIKE[plain]. *Libras

d. IX JOHN LIKE[plain] SOCCER. ✓Libras
'John likes soccer.' (from Müller de Quadros 1999: 61)

Table 1 presents a summary of the acceptability judgments for the basic order SVO and for the object-shift construction SOV for both ASL and Libras.

Table 1: Comparison of judgments for SVO and OSV

	V[plain]	V[loc:_]	V[hs:_]	V[asp]
ASL	✓SVO ✗SOV	✓SVO ✓SOV	✗SVO ✓SOV	✗SVO ✓SOV
Libras	✓SVO ✗SOV	✓SVO ✓SOV	✓SVO ✓SOV	✗SVO ✓SOV

Several proposals have been made regarding the syntax of object-shift in ASL resp. Libras. The difficulty in providing a satisfactory analysis of this phenomenon seems to stem from the disparate nature and the disparate obligatoriness of the constructions that trigger object shift.

For durative-aspect marking of V, Matsuoka (1997) and Braze (2004) have proposed that object shift arises because aspectual morphology sits on an Asp head, and V must move there, and AspP is right-headed. In Section 3 we will show that there is an empirical and a conceptual problem with this analysis.

An alternative proposal is based on the fact that durative-aspect marking is expressed by reduplication of the verb's movement (Klima & Bellugi 1979). The complexity of a sign's movement corresponds to its phonological heaviness (Brentari

1998), and we know from several spoken languages that there is a preference for phonologically heavy elements to appear late in a sentence (Ross 1967, Williams 2003, i.a.). Brentari (1998) has argued that this preference also applies in the object-shift construction with heavy verbs, but remains agnostic whether the inversion is realized by V moving to the right, or by O moving to the left triggered by V's heaviness, as Liddell (1980) proposed.[7]

However, as we have seen, object shift is also related to agreement between V and O, both noun-class (classifier) agreement (3); and referential (locus) agreement (4–5). These agreement-data are difficult to unify with the aspect-data. If one follows a syntactic proposal for the aspect-data like Matsuoka (1997) or Braze (2004), one has to explain why aspect-marking makes the OV order obligatory, while agreement-marking allows both the OV and the VO order. On the other hand, if one follows a phonology-driven proposal for the aspect-data like Liddell (1980) or Brentari (1998), one needs an independent account for the agreement-data, because changes to V's direction or locus or handshape do not influence V's heaviness (Brentari 1998).

Should the aspect-construction receive an analysis independent of the agreement-construction, then, or is there a way to unify them? We will propose a unified analysis that takes into account both phonological heaviness and syntactic agreement projections. We use Bobaljik & Wurmbrand's (2012) proposal that, for any given derivation and its resulting LF, a combination of inviolable and violable, but equally ranked, PF-constraints determine the best realization of this LF. We will introduce four independently attested PF-constraints and show that they derive the data presented here perfectly. In this way, we demonstrate that object shift in ASL and Libras arises from the interaction of syntax and PF, and we strengthen current assumptions about the size of the verbal domain by making explicit the postulated projections.

The rest of the chapter is structured as follows: In Section 2, we present our analysis in detail and show that it makes the correct predictions. In Section 3, we discuss the alternative proposals by Fischer & Janis (1992), Matsuoka (1997), and Braze (2004), who argue for rightward-movement of V. Section 4 concludes.

[7] Note that according to Brentari's (1998) analysis, locus-agreement per se does not constitute "complex movement", neither if it modifies the locus in which V is signed, nor if it modifies the locus of V's endpoint or starting point. In section 6.5 she discusses how phonological weight units interact with the order of syntactic constituents. In Brentari's model, movement corresponds to prosodic features, and each branching prosodic feature constitutes a weight unit. In ASL, 'GIVE' usually contains only a "direction"-movement, that is one weight unit. Both VO and OV ordering are allowed. When habitual aspect is added, 'GIVE' contains an additional "trill" movement, a total of two weight units. OV ordering is preferred over VO. Exhaustive aspect adds both a "trill" movement and an "arc" movement, totallying three weight units. Now, due to V's heaviness, VO is unacceptable.

2 Analysis

2.1 Phrase structure

Our analysis extends the proposals made by Müller de Quadros et al. (2004), Müller de Quadros & Lillo-Martin (2010), and Gökgöz (2013), who follow the common analysis of object shift in spoken languages (Holmberg 1986 and much work since) and suggest that in object-shift constructions, the order of V and O is inverted by movement of O to the left. Further, we adopt the following insights from the literature:

As stated before, we follow Fischer (1975), Liddell (1980), Müller de Quadros (1999) and many others in assuming that the underlying order of ASL and Libras is SVO. In other words, VP is left-headed.

Regarding agreement with noun-classes, we adopt Benedicto & Brentari's (2004) proposal: For classifier-agreement with O, there is a dedicated phrase ClassOP immediately dominating VP, where the handshape-feature on V is set by V moving to the head of ClassOP and O moving to Spec,ClassOP, followed by Agree between O and V.[8] If the classifier expressed on V is a handling classifier, there is a second, higher ClassSP responsible for agreement between V and S (Benedicto & Brentari 2004).

For agreement with loci, we adopt the proposal that loci are the realization of morphosyntactic features, similar to the proposals by Neidle et al. (2000), Kuhn (2016), and Pfau et al. (2018). We call the phrase where V agrees with O in locus AgrOP, and assume that it dominates ClassOP or, in its absence, VP.[9] Similarly,

[8]The feature value that O shares with V is not the handshape feature of O's sign, but O's sign's noun-class resp. information about the shape of O's referent.

[9]Gökgöz (2013) argues that the phrase that objects shift to is in the TP-domain. He elicited word order data where in SOV sentences in ASL, manual sentential negation in preverbal position is rated better between O and V (SONegV) than before O (SNegOV): Assuming that manual negation appears in a NegP and that this NegP marks the edge of the VP-domain, O must raise beyond.

We note that in his Experiment 3, the most accepted placement of manual negation is in sentence-final position for plain V, classifier-agreeing V, locus-agreeing V, and ditransitives agreeing in classifier and locus. (He does not discuss durative/continuative aspect.) We tentatively suggest that the realization of manual (and non-manual) negation may follow similar PF-constraints as the realization of O as discussed in this paper, but we consider an investigation of negation outside the scope of the present proposal.

Gökgöz also presents examples where shifted O has a presuppositional reading, which indicates, in line with Diesing (1992), that O moves out of the VP. This presuppositional effect is also observed in Napoli et al. (2017). We have not collected further data on presuppositional readings of O, but we did test for a definiteness effect of O in ASL (parallel to Scandinavian object-shift; Holmberg 1986) and did not find one.

for directional verbs that contain movement from one locus to another, the endpoint referring to S is established by agreement between V and S in a projection AgrSP.

For aspect-marked verbs, we adopt parts of Matsuoka's (1997) and Braze's (2004) analysis of the syntax of aspect: When the verb displays durative-aspect agreement (reduplication), V moves to an Asp head. However, we differ from these proposals in the headedness of AspP: We contend that Asp is left-headed, like all verbal projections in ASL and Libras. This allows our proposal to be consistent with the Final-over-Final Constraint (FOFC; Biberauer et al. 2014, Sheehan et al. 2017) as will be discussed in Section 3.2.

The tree in Figure 1 illustrates our assumptions about the phrase structure of ASL and Libras for transitive verbs. Regarding ditransitives like GIVE, which agree with the direct object in handshape, but with the indirect object in locus, we tentatively assume that the phrase that introduces the indirect object is projected between ClassOP and AgrOP. In this way, ClassO will probe down and find O, while AgrO will find IO because it is structurally higher than O.[10,11]

2.2 Verbal agreement

We make the following assumptions about verbal agreement: In sentences where V agrees in handshape/locus/aspect, V moves to the respective syntactic head (Class/Agr/Asp). This movement is covert. In other words, there is an inviolable constraint at PF stating that it is always the lowest copy of V that will be realized. This is similar to English, where V agrees with T, but fully lexical verbs are never realized in T. Another example of such an inviolable constraint is in Bobaljik & Wurmbrand's (2012) analysis of Quantifier Raising in English: English syntax has scrambling just like German and Japanese, and this movement is visible at LF in all languages, but in contrast to German and Japanese, English PF never pronounces the higher copies, giving rise to QR.

That V does not move overtly is corroborated by the fact that we never see V move past manual negation (8) or adverbs of frequency (9) in ASL and Libras:

(8) a. IX[loc:*a*] MARIA[loc:*a*] **NOT** HELP[dir:*a*→*b*] IX[loc:*b*] JOHN[loc:*b*].
'Maria did not help John.' ✓Libras, ✓ASL
(Müller de Quadros et al. 2004: 6)

[10]We follow Müller de Quadros et al. (2004) in the assumption that the projections ClassOP, AgrOP, AspP, and ClassSP are only present when the verb shows the respective marking, but nothing in our analysis hinges on this.

[11]See also the discussion in Pfau et al. (2018) of Nevins's (2011) proposal.

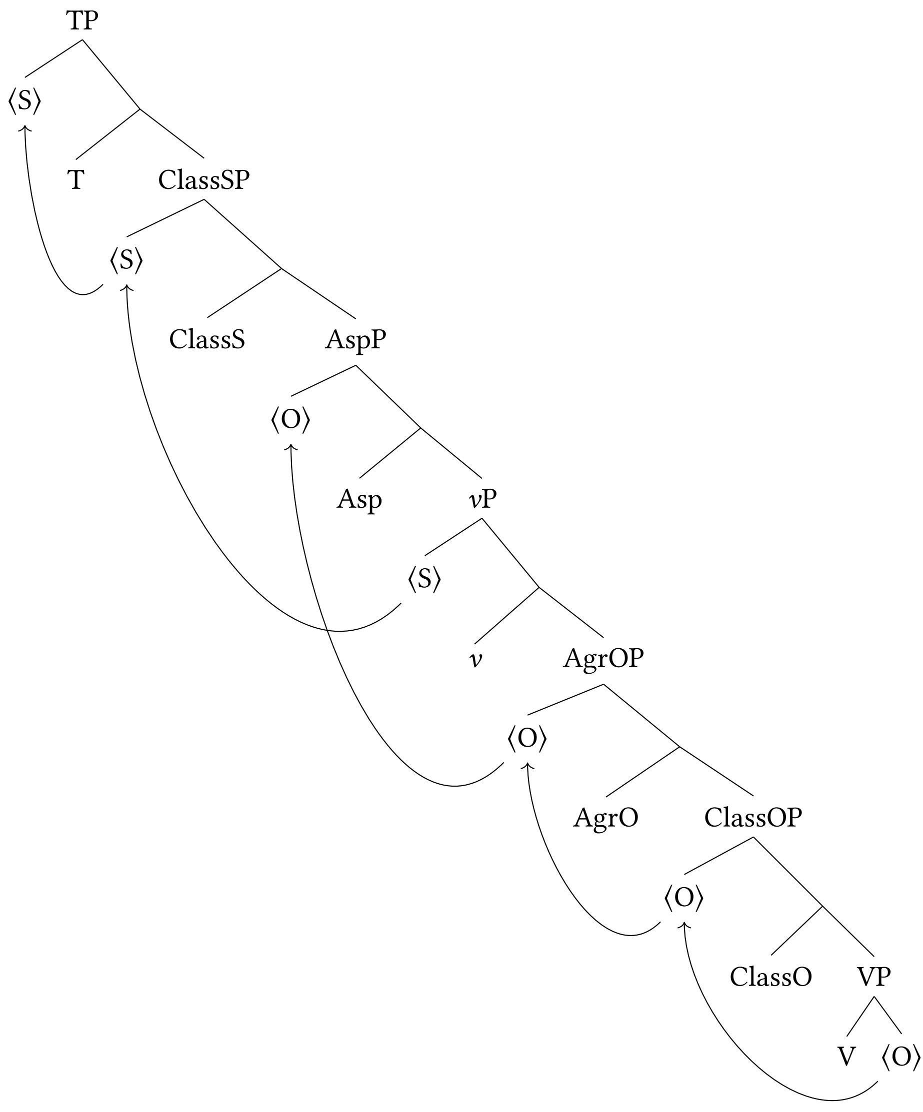


Figure 1: Phrase structure of ASL and Libras

b. * IX[loc:*a*] MARIA[loc:*a*] HELP[dir:*a*→*b*] **NOT** IX[loc:*b*] JOHN[loc:*b*].
(Müller de Quadros et al. 2004: 6) *Libras, *ASL

(9) a. IX[loc:*a*] MARIA[loc:*a*] **SOMETIMES** HELP[dir:*a*→*b*] IX[loc:*b*] JOHN[loc:*b*]. ✓Libras, ✓ASL
'Maria sometimes helped John.' (Müller de Quadros et al. 2004: 6)

b. * IX[loc:*a*] MARIA[loc:*a*] HELP[dir:*a*→*b*] **SOMETIMES** IX[loc:*b*] JOHN[loc:*b*]. ✓Libras, ✓ASL
(Müller de Quadros et al. 2004: 6)

When V moves to agree, this triggers syntactic movement of O to the respective specifier position. That is, when V agrees in handshape with O, O moves to the specifier of ClassOP. When V agrees in locus with O, O moves to the specifier of AgrOP. When V agrees in aspect, O moves to the specifier of AspP. Whether this movement of O is overt or covert, i.e. which copy of O gets realized, depends on PF-constraints as we will discuss below. When agreement doesn't take place, the agreement-phrase becomes vacuous, and we assume here that vacuous phrases are not projected at all, but nothing hinges on this assumption.

When V is plain, there is no position for O and V to move to.

2.3 Determining PF

Syntax will thus yield a representation where V has copies in the functional heads it agrees with, and O has copies in the specifiers of the same functional phrases. In line with Bobaljik & Wurmbrand's (2012) framework (which builds on Bobaljik 1995, 2002, Brody 1995, Erteschik-Shir 1997, a.o.), this representation is first sent to LF, and LF decides which copies to interpret, and this will always be the highest copies. Then possible PF-realizations of this LF are evaluated. PF-candidates differ in which copies of V to realize (which is trivial, given the inviolable constraint discussed above) and which copies of O to realize. We propose the following violable and equally-ranked constraints for PF to achieve this. Whichever PF-candidate(s) fulfil the most constraints will be grammatical realizations for this LF.

2.3.1 Scope Transparency ("ScoT")

Bobaljik & Wurmbrand (2012) investigate the connection between the scope of quantifiers and word orders in two sets of languages: one set allows QR and doesn't allow scrambling (e.g. English), and the other set allows scrambling and doesn't allow QR (e.g. German, Japanese). They argue that these properties are connected in the following way: all languages allow quantifier movement in the syntax and thus at LF, but the two sets of languages differ in which copy of the quantifier they pronounce. Pronouncing the high copy amounts to scrambling and is not available in English, while it is available in German and Japanese. To capture the distribution of QR, Bobaljik & Wurmbrand introduce the violable constraint Scope Transparency (10), which, given an LF with a moved quantifier, favors pronouncing the high copy of the quantifier (scrambling) over pronouncing the low copy of the quantifier (QR). In English, where scrambling is not an option for PF (this is an inviolable constraint), Scope Transparency can be violated, giving rise to QR.

(10) Scope Transparency (ScoT; Bobaljik & Wurmbrand 2012: 373):
If the order of two elements at LF is $A \gg B$, the order at PF is $A \gg B$.

> We use the symbol ≫ to represent the canonical manifestation of hierarchical order at the relevant level: roughly, scope at LF […] and linear precedence at PF […]. (ibid.)

Bobaljik & Wurmbrand (2012) proceed to phenomena where, given two LF choices and two PF choices, 3 out of the 4 possible combinations are grammatical. They call this the "¾ signature" and argue that this is the characteristic pattern of the interaction of ScoT with another violable constraint. If both constraints favor the same PF-candidate, this PF will be the "best" PF of the given LF. If the constraints disagree, however, this results in a tie, and both PF candidates are the "best" choice. This pattern is illustrated in Table 2.

Table 2: The ¾ signature (Bobaljik & Wurmbrand 2012: 385f.)

LF	PFs	ScoT	Another constraint	Prediction	
$A \gg B$	$A \gg B$	✓	✓	2/2	☜
	$B \gg A$	*	*	0/2	
$B \gg A$	$A \gg B$	*	✓	1/2	☜
	$B \gg A$	✓	*	1/2	☜

Regarding object-shift in ASL and Libras, we assume syntactic movement of O as explained above, which results in two (or more) copies of O. Since LF always interprets the highest copy of O, we take ScoT to be fulfilled when PF realizes the highest copy of O as well.

2.3.2 Canonical complement order ("CCO")

We also adopt Bobaljik & Wurmbrand's second violable constraint called Canonical complement order (CCO), which captures the "cost" of movement that is otherwise "free", i.e., not required for the derivation to succeed, not feature-driven. Bobaljik & Wurmbrand note (p. 390) that the idea for such a constraint is a fairly old one and used to be called "Case Adjacency" in early GB-models. In the present work, this constraint represents favoring the surface order SVO, which we understand as the underlying order of ASL and Libras, over the derived order SOV.

2.3.3 If O values V, O precedes V ("Value")

Napoli & Sutton-Spence (2014) have conducted a survey of the order of major constituents in 42 sign languages and discovered one generalization and five tendencies regarding the word order variation between SVO and SOV. We take our cue from their cross-linguistic tendency in (11) ("Generalization 2").

(11) If an argument affects the phonological shape of V, it precedes V. (Napoli & Sutton-Spence 2014)

Napoli & Sutton-Spence understand "affecting the phonological shape of V" to include classifier predicates, agreeing verbs, pointing verbs, spatial verbs, and argument-sensitive verbs. Only plain verbs are exempt. Our data for ASL and Libras, as presented above, show that (11) holds only partially in these languages. We certainly observe that O interacting with V enables the word order SOV, which aligns with (11). However, we also observe a distinction between classifier-agreement and locus-agreement, which Napoli & Sutton-Spence bundle together. Let us briefly turn to a discussion about the differences in syntax between these two types of agreement, and why – in ASL – classifier-agreement is more strict (only OV) than locus-agreement (OV or VO). With respect to why Libras differs from ASL here, we remain agnostic at this point, and leave possible consequences of this seemingly parametric difference to future research.

We assume that classifier-agreement and locus-agreement both happen in dedicated phrases as Specifier-Head agreement, such that O moves to the Specifier and V moves to the Head (Benedicto & Brentari 2004, Kuhn 2016). As illustrated above, we term the phrase for locus-agreement AgrOP, and the phrase for classifier-agreement ClassOP. Our proposal is that there is a difference between these two types of agreement in the direction of feature valuation. For classifier-agreement, what determines V's handshape is information about O's noun-class. Valuation must thus always proceed from O to V. For locus-agreement, on the other hand, we argue that valuation can in principle proceed in either direction. The value of the locus (*a*, *b*, *c*, …) is not inherent to either O or V; all that matters for agreement is that they share the same value. In (12) we see that the value does not have to originate from O: V introduces the locus *b* associated with the indirect object of GIVE, while the IO itself is a body-anchored sign that is not assigned a locus (as it might be via IX, eyegaze, head-tilt or shoulder-shift). We interpret this to mean that the locus-feature on the IO is unvalued.

(12) BOOK, FATHER GIVE[dir:$a \rightarrow b$] MOTHER.[12,13] ✓ASL, ✓Libras
(constructed after Kuhn 2016: 473)

2.3.4 Phonologically heavier elements come later ("Heavy")

Verbs marked with durative aspect have reduplicated movement (Klima & Bellugi 1979) and are thus phonologically heavier than non-aspect-marked verbs (Brentari 1998). However, verbs marked with locus-agreement or classifier-agreement are not phonologically heavier (Brentari 1998).

This is supported by the following data.[14] In SVO sentences, adverbs can appear in a position on the left (13), or on the far right of the clause (14).

(13) a. MY SISTER **QUICKLY** SEND[plain] LETTER. ✓Libras
'My sister quickly sent a/the letter.'

b. MY SISTER **SOMETIMES** SEND[plain] LETTER. ✓ASL
'My sister sometimes sends a letter.'

(14) a. MY SISTER SEND[plain] LETTER **QUICKLY**. ✓Libras
'My sister quickly sent a/the letter.'

b. MY SISTER SEND[plain] LETTER **SOMETIMES**. ✓ASL
'My sister sometimes sends a letter.'

[12] In this example, 'BOOK' is topicalized, as indicated by the comma following it.

[13] Note that the SOV word order is not possible here without locus-marking (eyegaze for Libras; shoulder-shift or eyegaze+headtilt for ASL):

(i) * BOOK, FATHER MOTHER GIVE[dir:$a \rightarrow b$].

We do not go into this further, but we note that there might be two possible reasons for this: 'FATHER' and 'MOTHER' might need to be differentiated grammatically to ensure that the predicate is non-reversible (which may prohibit the ordering SOV according to Fischer 1974), or 'MOTHER' (at least) might need to set the value of the locus feature when to the left of V.

[14] In our judgments of ASL, 'QUICKLY' is not expressed by a manual sign, so we substituted the ASL adverb 'SOMETIMES' for the Libras adverb 'QUICKLY'.

However, in SOV constructions with aspect-marked V, the adverb cannot appear on the right.

(15) a. MY SISTER **QUICKLY** LETTER SEND[asp]. ✓Libras
'My sister repeatedly sends letters quickly.'
b. MY SISTER **SOMETIMES** LETTER SEND[asp]. ✓ASL
'My sister sometimes sends letters repeatedly.'

(16) a. * MY SISTER LETTER SEND[asp] **QUICKLY**. *Libras
b. * MY SISTER LETTER SEND[asp] **SOMETIMES**. *ASL

In contrast to aspect-marking, this restriction on the placement of adverbs does not apply to classifier- (17) or locus-marking (18) of the verb.

(17) a. IX1 WINE DRINK[hs:] **QUICKLY**. ✓Libras
b. IX1 WINE DRINK[hs:] **SOMETIMES**. ✓ASL

(18) a. IX1 HOUSE[loc:*a*] BUY[loc:*a*] **QUICKLY**. ✓Libras
b. IX1 HOUSE[loc:*a*] BUY[dir:1→*a*] **SOMETIMES**. ✓ASL

2.4 Our account in action

Table 3 illustrates the application of these PF constraints for object shift in ASL and Libras. For any given LF (which differ in the position of where O and V have moved to), the PF candidates of pronouncing the sequence as SVO or SOV are evaluated. The columns labelled with a constraint show whether this constraint is fulfilled ("✓") or violated ("*"). The prediction is that all candidates with the highest number of constraints fulfilled (indicated with the selector symbol "☜") will be acceptable, and all candidates with a lower-than-highest count will be unacceptable. The final column displays the actual judgment. It matches the prediction for all rows.

Table 3 illustrates the different outcomes when a plain verb with no classifier-agreement is used, compared to verbs with classifier-agreement. The first two rows present the LF without agreement, i.e. the verb has plain inflection. Since there are no other copies of O and V, only one PF-candidate is available, namely the one with the ordering SVO.

The second two rows present the minimally different LF where classifier-agreement did happen. We see two PF-candidates: the first one spells out the copy of O

[15] There is no higher copy of O at LF that PF could spell out. This PF-candidate does not exist and is only given for completeness to illustrate that the ordering SOV[plain] is ungrammatical.

Table 3: No agreement vs. classifier-agreement in Libras

LF	PF candidates	ScoT	CCO	Pred.	Judg.
$\text{S} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; \text{O} \;]$					
	$\text{S} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; \text{O} \;]$	✓	✓	☜	ok
	$\text{S} \; [_{?} \; \text{O} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; t_{\text{O}} \;] \;]$	Not applicable[15]			*
$\text{S} \; [_{\text{ClassOP}} \; \text{O} \; \text{V}_{\text{[hs:\_]}} \; [_{\text{VP}} \; t_{\text{V}} \; t_{\text{O}} \;] \;]$					
	$\text{S} \; [_{\text{ClassOP}} \; t_{\text{O}} \; t_{\text{V}} \; [_{\text{VP}} \; \text{V}_{\text{[hs:\_]}} \; \text{O} \;] \;]$	*	✓	☜	ok
	$\text{S} \; [_{\text{ClassOP}} \; \text{O} \; t_{\text{V}} \; [_{\text{VP}} \; \text{V}_{\text{[hs:\_]}} \; t_{\text{O}} \;] \;]$	✓	*	☜	ok

inside the VP, and the second one spells out the copy of O in Spec,ClassOP. Note that we do not need to consider PF-candidates that spell out the higher copy of V, since there is an inviolable constraint requiring lower V to be spelled out. The SVO-candidate does not fulfill ScoT, but fulfills CCO. The SOV-candidate fulfills ScoT, but does not fulfill CCO. We see the ¾ signature arising from the interaction of two violable constraints.

Table 4 illustrates classifier-agreement in ASL. Here the constraint "Value" comes into play. It differentiates between the two possible PFs of the second LF, allowing only SOV ordering in ASL with classifier-agreeing V.

Table 4: No agreement vs. classifier-agreement in ASL

LF	PF candidates	ScoT	CCO	Value	Pred.	Judg.
$\text{S} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; \text{O} \;]$						
	$\text{S} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; \text{O} \;]$	✓	✓	✓	☜	ok
	$\text{S} \; [_{?} \; \text{O} \; [_{\text{VP}} \; \text{V}_{\text{[plain]}} \; t_{\text{O}} \;] \;]$	Not applicable				*
$\text{S} \; [_{\text{ClassOP}} \; \text{O} \; \text{V}_{\text{[hs:\_]}} \; [_{\text{VP}} \; t_{\text{V}} \; t_{\text{O}} \;] \;]$						
	$\text{S} \; [_{\text{ClassOP}} \; t_{\text{O}} \; t_{\text{V}} \; [_{\text{VP}} \; \text{V}_{\text{[hs:\_]}} \; \text{O} \;] \;]$	*	✓	*		*
	$\text{S} \; [_{\text{ClassOP}} \; \text{O} \; t_{\text{V}} \; [_{\text{VP}} \; \text{V}_{\text{[hs:\_]}} \; t_{\text{O}} \;] \;]$	✓	*	✓	☜	ok

Locus-agreement in both ASL and Libras mirrors Table 3 (because, as argued above, "Value" does not apply to locus-agreement), except that it is less optional for O. I.e., whenever O is associated with a locus and V allows locus-agreement with O, V will agree (Padden 1983/1988; but see the corpus studies by De Beuzeville et al. 2009 for Auslan, Costello 2015 for LSE, and Fenlon et al. 2018 for BSL showing that while locus-agreement on V with O is more frequent than with S, this is by no means obligatory in these three sign languages).

Aspect-marking on V is also not optional, given that it is the only marking of aspectual information in a sentence. V that is marked with durational aspect modifies its movement to contain a circular motion, which corresponds to phonological heaviness (Brentari 1998). Thus, the constraint "Heavy", which was fulfilled for all PF-candidates in Tables 3 and 4, differentiates the PF-candidates in Table 5.

Table 5: Aspect-marking in ASL and Libras

LF	PF candidates	ScoT	CCO	Heavy	Pred.	Judg.
S $[_{\text{AspP}}$ O $\text{V}_{[\text{asp}]}$ $[_{\text{VP}}$ t_{V} t_{O}]]						
	S $[_{\text{AspP}}$ t_{O} t_{V} $[_{\text{VP}}$ $\text{V}_{[\text{asp}]}$ O]]	*	✓	*		*[16]
	S $[_{\text{AspP}}$ O t_{V} $[_{\text{VP}}$ $\text{V}_{[\text{asp}]}$ t_{O}]]	✓	*	✓	☜	ok

3 Problems with previous proposals

It has been proposed that the obligatory word order change from VO to OV when V carries aspect-marking is due to V moving into a right-headed Aspect phrase to collect this extra morphology. Fischer & Janis (1992) suggested such an analysis, although for verb-doubling constructions of the form SV[plain]OV[asp]. This proposal has then been picked up, refined, and applied to object shift constructions by Matsuoka (1997) and Braze (2004). A verb-doubling construction is illustrated in (19).

(19) SALLY TYPE[plain] HER TERM PAPER TYPE[asp]. ✓ASL, ✓Libras
‘Sally typed her term paper for a very long time.’ (from Fischer & Janis 1992)

The idea is that the two verbs, which always share the same root, are two realizations of the same chain. The first verb appears in its base position inside VP. The second verb carries additional marking, thus appears in a position with additional morphology, which is the Asp head, which must be on the right given

[16]Braze (2004) reports that his consultants like the order SV[asp]O and dislike the order SOV[asp]. This may be due to an influence of English on ASL, as Matsuoka (1997) notes, or it could be dialectal variation within ASL, as Braze suspects, or both.

this construction's word order. Matsuoka (1997) proposes the derivation in Figure 2. In a verb-doubling construction, both copies of V are pronounced: the copy inside VP in its plain form, and the copy in Asp with aspect-marking.

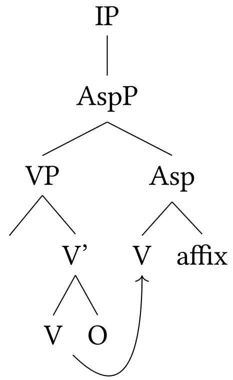


Figure 2: Matsuoka's (1997) analysis of aspect-marked verbs

We reject this analysis on two grounds: one empirical and one theory-internal, which we discuss in turn in Sections 3.1 and 3.2.

3.1 Adverb placement

The empirical problem with the right-headed-Asp analysis is that it cannot capture the following data for adverb placement, while our PF-based account can.

In general, adverbs can appear to the left of V (temporal adverbs before S, as illustrated in (20); adverbs of manner after S, as illustrated in (21)) or to the right of V (in sentence-final position, (22)). We remain agnostic as to whether this is derived via optional left- or right-adjunction of the adverb to TP resp. *v*P, or via extraposition of the adverb.

(20) Temporal adverbs adjoin on the left.

a. **YESTERDAY** MY SISTER SEND[plain] LETTER. ✓Libras, ✓ASL

b. **YESTERDAY** MY SISTER LETTER SEND[asp]. ✓Libras, ✓ASL
both: 'Yesterday my sister sent a/the letter(s).'

(21) Frequency adverbs adjoin on the left.

a. MY SISTER **QUICKLY** SEND[plain] LETTER. ✓Libras

b. MY SISTER **QUICKLY** LETTER SEND[asp]. ✓Libras
both: 'My sister quickly sent a/the letter(s).'

c. MY SISTER **SOMETIMES** LETTER SEND[dir:→1]. ✓ASL
'Sometimes my sister sends me a letter.'

(22) Adverbs adjoin on the right in SVO clauses.
a. MY SISTER SEND[plain] LETTER **YESTERDAY**. ✓Libras, ✓ASL
b. MY SISTER SEND[plain] LETTER **QUICKLY**. ✓Libras
c. MY SISTER LETTER SEND[dir:→1] **SOMETIMES**. ✓ASL

However, in object-shift clauses with aspect-marked V, adverbs must adjoin on the left. They do not have the option of appearing in sentence-final position. This is illustrated in (23).

(23) Adverbs cannot adjoin on the right in SOV[asp] clauses.
a. * MY SISTER LETTER SEND[asp] **YESTERDAY**. *Libras, *ASL
b. * MY SISTER LETTER SEND[asp] **QUICKLY**. *Libras

That the examples in (23) should be ungrammatical is completely unexpected under the theories proposed by Fischer & Janis (1992), Matsuoka (1997), and Braze (2004). Why should movement of V to Asp prohibit an adverb adjoining on the right? In contrast to this, our account captures these data perfectly. Since we postulate a PF-constraint stating that phonologically heavy V should be in sentence-final position, SOV-constructions with V[asp] followed by another element are penalized.[17] Our derivations are illustrated in Tables 6 and 7.

Table 6: Adverb-placement options with plain V

LF	PF candidates	ScoT	CCO	Pred.	Judg.
S [$_{VP}$ V O]	S [Adv [$_{VP}$ V$_{[plain]}$ O	✓	✓	☜	ok
	S [[$_{VP}$ V$_{[plain]}$ O] Adv]	✓	✓	☜	ok
	S [Adv [$_?$ O [$_{VP}$ V$_{[plain]}$	Not applicable			*
	S [[$_?$ O [$_{VP}$ V$_{[plain]}$]] Adv]	Not applicable			*

Our account also correctly predicts that when V is marked with classifier- or locus-agreement, adverb placement is possible on the left as well as on the right. Consider the data in (24–27) and our derivations in Table 8 (given for locus-agreement only; classifier-agreement is completely parallel in Libras, and in ASL the constraint "Value" comes into play additionally).

[17] Elements that are typically in sentence-final position and may appear even after V[asp] include the subject pronoun copy. This is outside the scope of this paper, but it seems to us that copying a subject pronoun into the sentence-final position might be an inviolable constraint, taking precedence over the constraints discussed here.

Table 7: Adverb-placement options with aspect-marked V

LF	PF candidates	ScoT	CCO	Heavy	Pred.	Judg.
S $[_{\text{AspP}}$ O V $[_{\text{VP}}$ t_V t_O]]						
	S [Adv $[_{\text{AspP}}$ t_O t_V $[_{\text{VP}}$ V O]]]	*	✓	*		*
	S [$[_{\text{AspP}}$ t_O t_V $[_{\text{VP}}$ V O]] Adv]	*	✓	*		*
	S [Adv $[_{\text{AspP}}$ O t_V $[_{\text{VP}}$ V t_O]]]	✓	*	✓	☜	ok
	S [$[_{\text{AspP}}$ O t_V $[_{\text{VP}}$ V t_O]] Adv]	✓	*	*		*

(24) Adverb placement with classifier-agreement in Libras

a. IX1 **QUICKLY** DRINK[hs:] WINE.

b. IX1 DRINK[hs:] WINE **QUICKLY**. ✓Libras

c. IX1 **QUICKLY** WINE DRINK[hs:]. ✓Libras

d. IX1 WINE DRINK[hs:] **QUICKLY**. ✓Libras

all: 'I quickly drank wine.'

(25) Adverb placement with classifier-agreement in ASL

a. IX1 **SOMETIMES** DRINK[hs:] WINE. ✓ASL

b. IX1 DRINK[hs:] WINE **SOMETIMES**. ✓ASL

c. IX1 **SOMETIMES** WINE DRINK[hs:]. ✓ASL

d. IX1 WINE DRINK[hs:] **SOMETIMES**. ✓ASL

all: 'I drink wine sometimes.'

(26) Adverb placement with locus-agreement in Libras

a. IX1 **QUICKLY** BUY[loc:*a*] HOUSE[loc:*a*]. ✓Libras

b. IX1 BUY[loc:*a*] HOUSE[loc:*a*] **QUICKLY**. ✓Libras

c. IX1 **QUICKLY** HOUSE[loc:*a*] BUY[loc:*a*]. ✓Libras

d. IX1 HOUSE[loc:*a*] BUY[loc:*a*] **QUICKLY**. ✓Libras

all: 'I quickly bought the house.'

(27) Adverb placement with locus-agreement in ASL

a. IX1 **SOMETIMES** BUY[dir:1→*a*] HOUSE[loc:*a*]. ✓ASL

b. IX1 BUY[dir:1→*a*] HOUSE[loc:*a*] **SOMETIMES**. ✓ASL

c. IX1 **SOMETIMES** HOUSE[loc:*a*] BUY[dir:1→*a*]. ✓ASL

d. IX1 HOUSE[loc:*a*] BUY[dir:1→*a*] **SOMETIMES**. ✓ASL

all: 'I sometimes buy a house.'

Table 8: Adverb-placement options with locus-marked V

LF	PF candidates	ScoT	CCO	Pred.	Judg.
S $[_{AgrOP}$ O V $[_{VP}$ t_V t_O]]					
	S [Adv $[_{AgrOP}$ t_O t_V $[_{VP}$ V O]]]	*	✓	☜	ok
	S [$[_{AgrOP}$ t_O t_V $[_{VP}$ V O]] Adv]	*	✓	☜	ok
	S [Adv $[_{AgrOP}$ O t_V $[_{VP}$ V t_O]]]	✓	*	☜	ok
	S [$[_{AgrOP}$ O t_V $[_{VP}$ V t_O]] Adv]	✓	*	☜	ok

3.2 Mixed headedness

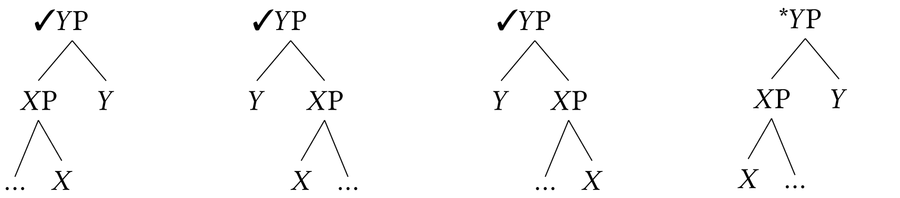
The conceptual problem with the proposal that V moves from a left-headed VP to a right-headed AspP is that it violates the Final-over-Final Constraint (FOFC, pronounced [fofk]; see Biberauer et al. 2014, Sheehan et al. 2017, and much subsequent work). The FOFC is an implicational universal over the headedness of phrases within an extended projection. There are 2 types of extended projections: the verbal one containing V, *v*, Asp, Aux, T, C, etc; and the nominal one containing N, Num, Poss, D, etc. The implicational universal FOFC states informally:

(28) If a phrase in an extended projection is right-headed, all phrases below this phrase in this extended projection are also right-headed. (after Biberauer et al. 2014)

The logical consequence of (28) is (29):

(29) If a phrase in an extended projection is left-headed, all phrases above this phrase in this extended projection are also left-headed.

Thus, if in a language, CP is right-headed, then TP, *v*P, VP, and all other verbal projections below CP are also right-headed (Figure 3a vs. Figure 3d for $Y = \mathrm{C}$). If VP is right-headed, this does not make a statement about the headedness of the next higher verbal projection (Figure 3a vs. Figure 3c for $X = \mathrm{V}$). If VP is left-headed, then *v*P, TP, CP, or any other verbal projection higher than VP cannot be right-headed because this would violate (29) (Figure 3b vs. Figure 3d for $X = \mathrm{V}$). If CP is left-headed, any headedness is possible for the next lower verbal projection (Figure 3b and 3c for $Y = \mathrm{C}$). It is easy to see that the proposal that in ASL, VP is left-headed and AspP is right-headed, is incompatible with the FOFC (Figure 3d for $X = \mathrm{V}$ and $Y = \mathrm{Asp}$).



(a) Final over final (b) Initial over initial (c) Initial over final (d) *Final over initial[18]

Figure 3: Possible and impossible headedness combinations

The FOFC is well-motivated based on a variety of synchronic and diachronic cross-linguistic studies, connected to other linguistic universals, finds support in processing and language acquisition, and fits in well with current assumptions in Minimalism (see arguments provided in Biberauer et al. 2014, Sheehan et al. 2017, and many other works). We believe that an account that is compatible with the FOFC should on conceptual grounds be preferred over an account that violates it.

4 Conclusions

In this paper, we have proposed a novel account for object shift in ASL and Libras. Like accounts of object shift in spoken languages (Holmberg 1986 and many others), and expanding the proposals for ASL & Libras by Müller de Quadros (1999), Müller de Quadros et al. (2004), Müller de Quadros & Lillo-Martin (2010), Gökgöz (2013), we assume that the reversal of V and O happens in the syntax by overt movement of O. We have amended this syntactic proposal by violable constraints at PF, following Bobaljik & Wurmbrand's (2012) framework, which determine the copy of O that will be realized at PF. This captures the object-shift paradigm, whereby object-shift is always triggered by aspect-marking, always triggered by classifier-agreement in ASL, optionally triggered by classifier-agreement in Libras, optionally triggered by locus-agreement in both languages, and unacceptable otherwise. Furthermore, we have shown that our theory makes better predictions than the competing proposal by Fischer & Janis (1992), Matsuoka (1997), Braze (2004), who argue that the reversal of V and O happens by movement of V into a right-headed Aspect phrase. We have shown data from adverb placement that is problematic for their proposal but derived perfectly in our theory; and we have given a theory-internal argument against assuming a right-headed Aspect

[18]The FOFC is unintuitively named, as the configuration Final-over-final in Figure 3a does not stand out in the paradigm. However, the name can be understood as: [$_{\text{Topic}}$ Final] over [$_{\text{Focus}}$ Final] Constraint, saying that if *YP* is head-final, *XP* must be head-final as well.

phrase dominating a left-headed VP – namely that it violates the implicational universal FOFC.

In this way, we have provided additional evidence for the number of verbal projections in ASL and Libras, thereby for the size of the VP-domain, and for the importance of considering PF-constraints in the investigation of syntactic phenomena.

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Chapter 4

Only the tall and the small: Size restrictions on Icelandic possessors

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In this chapter I discuss the DP-internal fronting of possessors in Icelandic. Fronted possessors are of two types: (i) modifier-less definite possessors bearing contrastive focus, and (ii) quantified/indefinite possessors. For the definite possessors, I argue that the same mechanism is underlying their fronting as the one underlying the fronting of the head noun and adjective in definite DPs as well as the formation of the noun. In the absence of modifiers, the heads forming the noun form a complex head directly and, when bearing focus, can value all the relevant features of D, rather than partially doing so, as is the case when the noun and adjective are fronted. I argue that the fronting of quantified/indefinite possessors is an instance of overt quantifier raising and show that this fronting interacts with the availability of covert subextraction of the possessor.

1 Introduction

In Icelandic, the genitive typically occurs postnominally within the DP, (1). Genitives do vary terms in thematic roles. However, in the interest of space, I will focus on possessors in this chapter. When the possessor is definite and bears focus, it is possible for it to occur prenominally, (2).[1] Generally, preposing possessors is easier with pronouns or proper names than it is with common nouns (see, e.g., Magnússon 1984, Sigurðsson 1993, 2006, Thráinsson 2007: 93–94).

[1]The definite article agrees with the noun in case, number and gender. Hence, these categories occur twice. For the sake of space and presentation, I only mark inflection on the noun.

Gísli Rúnar Harðarson. 2023. Only the tall and the small: Size restrictions on Icelandic possessors. In Zheng Shen & Sabine Laszakovits (eds.), *The size of things II: Movement, features, and interpretation*, 67–86. Berlin: Language Science Press. DOI: 10.5281/zenodo.8427869

(1) Thráinsson (2007: 93)

a. bók **stelp-u-nnar**
book girl-GEN-ART
'the girl's book'

b. bók **Ottó-s**
book Ottó-GEN
'Ottó's book'

(2)
a. ? **STELPU-NNAR** bók
girl-GEN-ART book
'the girl's book'

b. **OTTÓ-S** bók
Ottó-GEN book
'Ottó's book'

Additionally, these fronted genitives do not allow modification of any kind, whereas postnominal genitives do (Magnússon 1984, O'Connor et al. 2013).

(3) Magnússon (1984: 101)

a. ? **KENNAR-A-NS** bók
teacher-GEN-ART book
'the teacher's book'

b. bók **kennar-a-ns**
book teacher-GEN-ART
'the teacher's book'

c. * **[LEIÐINLEGA KENNAR-A-NS]** bók
boring teacher-GEN-ART book
Int: 'the boring teacher's book'

d. bók **[leiðinlega kennar-a-ns]**
book boring teacher-GEN-ART
'the boring teacher's book

Hence it would seem that the fronted genitives in Icelandic are exhibiting at the syntactic level an effect reminiscient of branchingness effects in phonology, where the application of certain processes within the DP are sensitive to whether the phrase contains modifiers or not (for an overview, see, e.g., Selkirk 2011, Bonet et al. 2019).

A number of questions regarding the nature of this movement arise: is this movement phrasal or is this some form of head movement? If this movement is phrasal, why is it the case that the fronted possessor cannot contain any modifiers? Also, if it is the case that the fronted genitive is conditioning the null form of the definite article, how can the appropriate structural relationship be established in order for the noun to host D? If, on the other hand, this is a case of head movement, how is it possible to skip intervening heads, specifically the head noun? And furthermore, given the assumed base position of the genitive as a specifier, if this is a case of head movement, why is it possible, given the general difficulty of extracting out of non-complements (see, e.g., Huang 1982)?

To answer these questions, I propose that the movement of the possessor is in fact head movement. I adopt a mechanism proposed in Harðarson (2020), where heads can merge directly if neither of them has formed a phrase. Under this approach, modifier-less definite possessors are heads and phrases simultaneously, and can thus move to a position above the article and host the article, thus conditioning its null form.

This picture of the preposed possessors is not complete, as indefinite or quantified possessors can occur prenominally as well, (4). However, these are subject to different criteria.[2]

(4) [MÍM][3]

a. [heimsk-ra mann-a] ráð
   foolish-GEN men-GEN advice
   'advice of fools'

b. [hver-s mann-s] hús
   each-GEN man-GEN house
   'every person's house'

The main differences between these and the first type of genitives are that indefinite/quantified possessors contain modifiers, do not require contrastive stress, and are obligatorily indefinite.[4]

(5) a. * [heimsku manna-na] ráð
   foolish men-ART advice
   Int: 'advice of the foolish men'

b. * [hver-s manna-nna] hús
   each men-ART houses
   Int: 'each of the men's houses'

As will become clear below, I argue that this difference in behaviour is due to these genitives being subject to different types of movement. Specifically, I argue that the fronting of the indefinite/quantified possessors is an instance of overt quantifier raising within the DP, as evidenced by the availability of different scope readings depending on its position.

In §2, I argue that the branchingness effects are linked to D requiring a host. As discussed in, e.g., Harðarson (2017), other instances of DP-internal fronting coincide with a bound article, and the driving forces behind that fronting can be applied to the fronted definite possessors. In §3, I discuss the distribution of

[2]There is a third class of prenominal genitives, which includes measure genitives, expressive genitives, and certain attributive genitives. Although these do appear prenominally, and they seem to be subject to similar criteria as the quantified/indefinte possessors, they differ from possessors in that their distribution appears to be more in line with adjectives. They often do not appear postnominally, and those that can, typically do not maintain the same semantic relationship with the head noun. For reasons of space, I will set these aside for the purposes of this chapter.

[3]MÍM = Tagged Icelandic Corpus (Helgadóttir et al. 2012)

[4]Although the singular form of the possessor with *hver* with a definite complement is independently ruled out in the singular, the plural form shown in (5b) is possible under a partitive interpretation.

quantified possessors and provide arguments for their fronting being an instance of quantifier raising. In §4, I summarize the chapter and discuss prospects for future research

2 Branchingness effects

Before moving on, some preliminaries on the DP structure are in order. I build on Harðarson (2017) and assume the DP structure argued for there. An abbreviated version of this structure is provided in Figure 1. Under this approach, the head ω marks the top of the traditional NP, encodes reference, and houses numerals and adjectives in its specifier.[5] Heads below ω have been conflated into what is labelled here as N (see Harðarson 2017 for a more intricate structure and the relevant arguments). Possessors are merged in the specifier immediately below ω. Finally, the noun undergoes head movement to ω, and this yields the order shown in (6a–6b). Often in definite DPs, the noun moves onward to D and typically the adjective is fronted as well, yielding a configuration shown in (6c).[6]

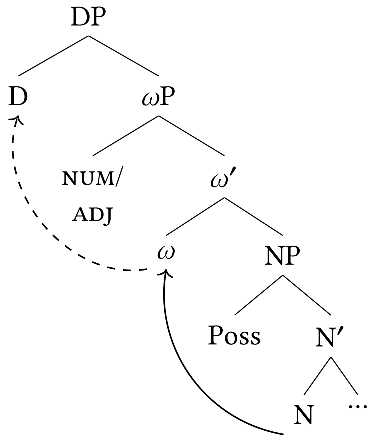

Figure 1: DP structure and relevant head movements in Icelandic

[5]This head corresponds roughly to Faarlund's (2004, 2009) R, and aspects of Julien's (2003, 2005) α and *n*.

[6]See e.g., Magnússon (1984), Sigurðsson (1993, 2006), Pfaff (2015), Ingason (2016), Harðarson (2017) for a more detailed discussion on the structure of the DP and the relevant word order effects regarding adjectives and numerals and interpretative effects. See also Sigurðsson (2006) for a discussion on the proprial article that occurs with postnominal possessors in definite DPs. I also assume multiple specifiers (e.g., Chomsky 1995, Lahne 2009), for both ω and D.

(6) a. tvær stórar bækur Astridar
two large books Astrid.GEN
'two large books of Astrid's'

b. Hinar tvær stóru bækur (hans) Ottós
ART two large books PROP Ottó.GEN
'the two large books of Ottó's'

c. stóru bækur-nar tvær hans Ottós
large books-ART two PROP Ottó.GEN
'Ottó's two large books'

In order to determine the possible mechanism behind the fronting of possessors, we must first establish what is driving movement within the DP. I assume that Merge is a last resort operation, which occurs when the derivation would otherwise crash due to unvalued features (cf. Abels 2003, Bošković 2007, Wurmbrand 2012a,b,c, 2013, 2014c,b, 2017). Hence, the movement of the noun to D and, when applicable, the subsequent movement of the adjective are driven by feature valuation.

Following Harðarson (2017), N to D movement in Icelandic is the result of an unvalued [R] feature on D (Figure 2). During the derivation, this feature must then receive its value from a corresponding valued [R] feature elsewhere within the appropriate domain (e.g., Pesetsky & Torrego 2007). Assuming *Reverse Agree* (Wurmbrand op cit.), the head carrying the valued counterpart of [R] must c-command D. Here, a valued equivalent is carried by ω (Harðarson 2017: 147ff).[7]

Following, e.g., Matushansky (2006) and Harizanov & Gribanova (2019), I assume that head movement in the syntax operates on par with phrasal movement and that complex heads are formed post-syntactically.[8] In syntax, ω hence moves to Spec-DP.[9] From this position, ω c-commands D and values its [R] feature (Figure 3).

A possible explanation for the choice of head movement in this case is that phrasal movement is blocked by *Antilocality* (e.g., Grohmann 2000, Abels 2003).

Post-syntactically, D and ω come to form a complex head through, e.g., M-merger (Marantz 1988, Matushansky 2006), conflation (Harley 2004) or amalgamation (Harizanov & Gribanova 2019). I assume this is triggered by the presence of a feature M present on D (cf. Harley 2004, Harizanov & Gribanova 2019). This results in the pattern shown in (7).

[7]See Harðarson (2017: 147ff) for a discussion on the nature of this feature.

[8]This could also potentially be carried out via traditional head movement (cf. Harðarson 2017).

[9]Note that although I present this operation as movement this is done simply for the sake of presentation. Nothing here hinges on whether this operation is movement, copying or remerger.

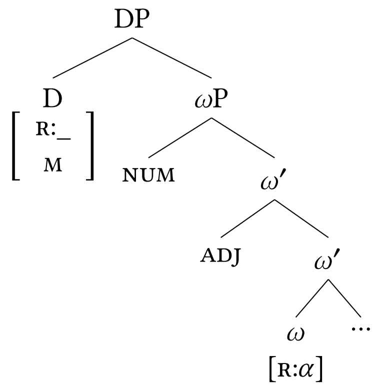

Figure 2: Definite DP prior to head movement

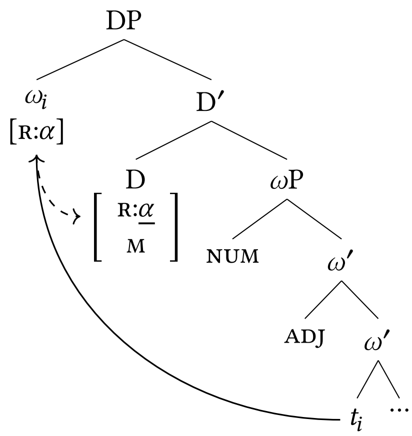

Figure 3: Definite DP after head movement

(7) N - ART > NUM > ADJ
bækur - nar tvær stóru
books - ART two large
'the two large books'

In instances where the adjective also moves to a prearticular position, (6c), Harðarson (2017: 147ff) argues that the adjective is undergoing focus movement, formalized here as D carrying an unvalued [DI(scourse)] feature which is valued by a focus-bearing adjective. In case of fronted possessors, the possessor values both [R] and the [DI] features, (Figure 4). D is then merged into a complex head with the fronted possessor, thus conditioning the null form of the definite D, whose presence is indicated by the weak inflection of the adjectives, see (8).

This approach does capture the fact that fronting these possessors does require contrastive focus and blocks the movement of the noun and adjectives, (8).[10]

(8) a. Astrid-ar (*(h)inar) tvær stóru bækur
Astrid-GEN ART two large. books
'Astrid's two large books'

[10]Under this, Spec-DP of a definite DP would be a criterial position (cf. Rizzi 2006, Bošković 2008, Wurmbrand 2014a, 2015). The unavailability of subextraction of adjectives and genitives would follow, as movement to Spec-DP would freeze them for the purposes of any subsequent criterial movement, such as topicalization, focus movement, or quantifier raising. See §3 for some further evidence for this position.

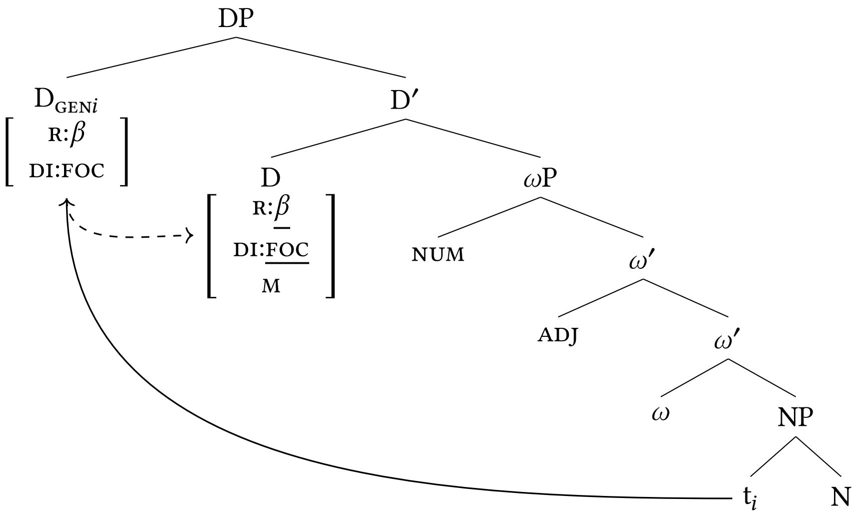

Figure 4: Definite DP with a fronted genitive

b. * Astrid-ar bækur tvær stóru
Astrid-GEN books two large

c. * Astrid-ar stóru bækur tvær
Astrid-GEN large books two

There are two issues, however, that are not adequately addressed in Harðarson (2017): one being the branchingness effects, and the other being the minimality violation in fronting the possessor rather than the noun and adjective.

Turning first to the branchingness effects, there are two main questions: how is it possible perform head movement from a specifier position, and why is it not possible to strand modifiers as in typical cases of head movement?

To address these questions, let us first examine the formation of the noun. The full structure of the Icelandic DP under Harðarson (2017) is shown in Figure 5. As mentioned above, the noun is argued to be formed through the accumulation of the heads up to ω (Figure 5) and in certain definite DPs, including D, which results in the complex head shown in Figure 6.

The configuration shown in Figures 5–6 introduces a redundancy. Under traditional assumptions regarding the formation of complex heads and Merge, the heads necessarily form a phrasal construction prior to the formation of the complex head. In the absence of any DP-internal modifiers, these operations apply vacuously. This redundancy has been used as an argument for *Spanning*, i.e. vocabulary insertion targeting non-terminal nodes (e.g., Svenonius 2016).

However, under *Bare Phrase Structure Grammar* (Chomsky 1995), it is possible to merge two heads and form a complex head directly. This possibility has

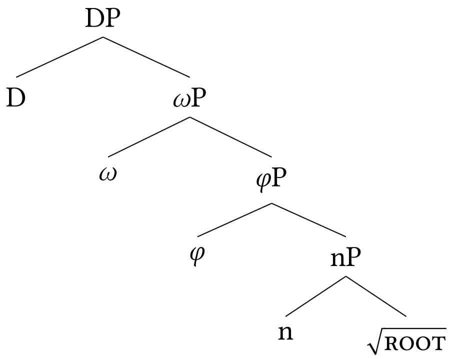

Figure 5: Structure of the DP

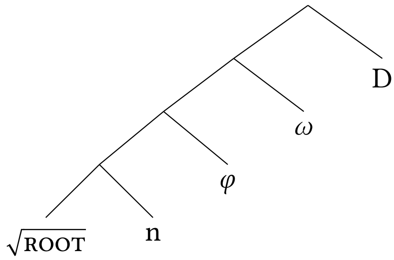

Figure 6: Result of a N-to-D movement

been utilized, e.g., for the formation of compounds (e.g., Josefsson 1997, 1998, Zhang 2007, Siddiqi 2009, Okubo 2013, Harðarson 2018). Harðarson (2020) also makes use of this possibility in addressing patterns in the distribution of Penultimate Vowel Lengthening in Zulu discussed by Cheng and Downing (2007 et seq.). There it is argued that when two unmodified heads are merged, i.e., neither of them has projected to a phrase, with one or both of them carrying an [m] feature, a complex head is formed directly without first forming a phrase. If either of the heads is modified, i.e. has projected to a phrase, the merger will result in a phrasal construction and the formation of the complex head will take place post-syntactically. This is schematized below.[11]

(9) Merger of two unmodified m-marked heads (Harðarson 2020: 468)

$Y_{M} + X_{M} \rightarrow [_{X}\ Y\ X]$

(10) Merger of two m-marked heads with modification (Harðarson 2020: 468)

a. Raising

$Y_{M} + [_{XP}\ X_{M}\ ZP] \rightarrow [_{YP}\ Y_{M}\ [_{XP}\ X_{M}\ ZP]] \rightarrow [_{YP}\ [_{Y}\ Y{+}X]\ [_{XP}\ ZP]]$

b. Lowering

$Y_{M} + [_{XP}\ X_{M}\ ZP] \rightarrow [_{YP}\ Y_{M}\ [_{XP}\ X_{M}\ ZP]] \rightarrow [_{YP}\ [_{XP}\ [_{X}\ Y{+}X]\ ZP]]$

The argument carries over to the Icelandic DP. As discussed above, the heads in the extended nominal projection come to form a complex head. Hence, in the absence of modifiers, the complex head in Figure 6 can be formed directly

[11]Note that both heads are m-marked below in order to abstract away from the directionality of the process. That may not be necessarily.

under (9), without first forming the phrasal configuration in Figure 5. Performing head movement out of the specifier is then no longer an issue. This is not a head movement out of a specifier, but a head movement of an entire specifier. The possessor can then satisfy all the requirements of the matrix D, including serving as its host, and subsequently conditioning the null form of D. This allows us to exclude stranding of modifiers given the difficulty of subextraction from specifiers in general.

A possible way of ruling out phrasal movement of the possessor may lie in an inversion of the last resort condition of movement, i.e., that Merge does not occur if it leads to features not being satified. As mentioned above, the fronted possessor values both the [r] and the [di] features, preventing the movement of both the head noun and the adjectives. Note, however, that although this would mean introducing some form of optimization into the derivation, the optimization in this case is local in that it only evaluates possibilities for the next step in the derivation (cf. Heck & Müller 2007, Lahne 2009). In the case of the modifier-less possessors, they are also able to satisfy D's [m] feature by virtue of being a nominal head c-commanding D. If a phrasal element were to move to this position, it would be able to value both [r] and the [di] features and prevent movement of nouns and adjectives, just as the modifier-less. However it would not provide a suitable host for the matrix D as there is no head c-commanding it, thus not satisfying the [m] feature.

Turning to the minimality effects, one possibility is that Agree prioritizes Single Agree over Multiple Agree, and when an element that can value all of the relevant features is accessible, that element will be targeted over closer elements that only partially satisfy the unvalued features of the head. This would mean that, as the focused unmodified possessors can satisfy all three of the relevant features, it will be given priority over the head noun and the adjective, which only partially satisfy the features of D.

To summarize this section, the branchingness effects that are observed with definite possessors can be accounted for under the proposal in Harðarson (2020): In the absence of any modifiers, a definite DP will form a single head, hence allowing it to value all the features of the matrix D and serve as a host for D. In the presence of modifiers, the possessor forms a phrase, and can still value the relevant features of D, but cannot serve as a host.

3 Quantified possessors

Turning to the quantified possessors, as mentioned above, these differ from the definite possessors in a number of ways: first, they contain modifiers, as discussed above, and thus would be considered phrasal under the approach taken here. Second, their fronting is not limited to occurring within definite DPs, but they can also be fronted within indefinite DPs. Third, the fronted definite possessors carry focus and obligatory contrastive stress, but the quantified possessors do not. And fourth, the position of the possessor relative to other material in the DP has semantic consequences beyond what is observed with the definite possessors.

Just as we saw with the definite possessors, there appear to be two possible positions for quantified possessors within the DP, postnominal and prenominal, (11–12). In addition to that, the position is relevant for the availability of different scope readings.

For the indefinite DPs, when the possessor follows the noun, (11a), the DP is ambiguous with respect to the two possible readings: either there is (i) a particular large bunny that belongs to each of the children (∃ ≫ ∀), or (ii) each child has their respective large bunny (∀ ≫ ∃). When the possessor is fronted, (11b), this ambiguity is lost and the only reading possible is reading (ii).[12] This indicates that from its position in (11b), the possessor c-commands whatever is carrying the existential force of the DP.

(11) a. stór-∅ kanína [hver-s barn-s] ∃ ≫ ∀; ∀ ≫ ∃
large-STR bunny each-GEN child-GEN
'each child's large bunny'

b. [hver-s barn-s] stór-∅ kanína *∃ ≫ ∀; ∀ ≫ ∃
each-GEN child-GEN large-STR bunny

Assuming that the existential force of indefinite DPs is a property of determiners (cf. Chierchia 1992), the available scope indicates that the possessor is situated

[12]Note that it is possible for a quantified possessor to occur between the adjective and noun, (i–ii). This position also freezes the scope possibilities for the QP, as shown.

(i) stór-∅ [hver-s barn-s] kanína ∃ ≫ ∀; *∀ ≫ ∃
large-STR each-GEN child-GEN bunny

(ii) hin stór-a [hver-s barn-s] kanína DET ≫ ∀; *∀ ≫ DET
ART large-WK each-GEN child-GEN bunny

There is, however, reason to believe this may not be a phrasal construction. First there is an absence of a prosodic break between the genitive and the head noun, which occurs with other genitives, and second, the stress pattern is more akin to compound stress, with primary stress on the quantifier and secondary stress on the first syllable of the head noun. Hence it is possible that this may be a case of phrasal compound, which may also explain the semantic effects. If it is a part of a complex head, it cannot move to Spec-DP on its own.

in Spec-DP in (11b). The differences in meaning then result from the possessor taking wide or narrow scope with respect to D.[13] The ambiguity of the DPs in which the possessor remains in situ in turn indicates that this movement also occurs covertly.

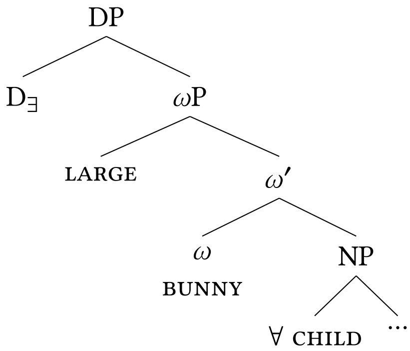

Figure 7: ∃ ≫ ∀; ∀ ≫ ∃

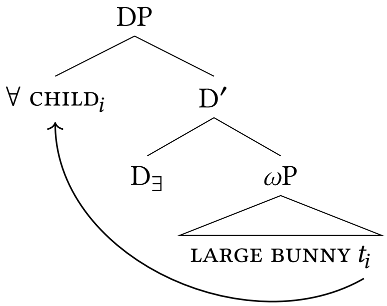

Figure 8: *∃ ≫ ∀; ∀ ≫ ∃

For definite DPs, the same pattern is observed. When the possessor is post-nominal, (12a), the DP is ambiguous: (i) there is a single large bunny that belongs to each child (DET ≫ ∀), or (ii) each child respectively has a single bunny that is large (∀ ≫ DET). If the possessor is fronted, (12b), this ambiguity is lost, and only reading (ii) is available.[14]

(12) a. hin stór-a kanína [hver-s barn-s] — DET ≫ ∀; ∀ ≫ DET
ART large-WK bunny each-GEN child-GEN

b. [hver-s barn-s] stór-a kanína — *DET ≫ ∀; ∀ ≫ DET
each-GEN child-GEN large-WK bunny

Hence, it would appear that the possessor is moving to Spec-DP by way of overt quantifier raising.

Another relevant point of difference between the quantified genitives and other genitives is that they appear to be extractable out of the DP, albeit not overtly. Overt subextraction from DPs is generally limited to argument PPs, (13a) or their complements, (13b). Overt extraction out of definite DPs is generally ruled out, (13c).

[13]Furthermore, in the light of (11) and (12), this indicates that there is in fact a null D in indefinite DPs in Icelandic, contra Harðarson (2017).

[14]Note that although the definite article has a null form in (12b), the DP can be identified as definite by the weak adjective inflection, which occurs within (formally) definite DPs. Precisely what is conditioning the null form, however, is not entirely clear.

(13) (Harðarson 2017: 197)

a. ? [Á hverjum]$_i$ vannstu [sigur t_i]?
on who won.you victory
'Who did you defeat?'

b. Hverjum$_i$ vannstu [sigur [á t_i]]?
who won.you victory on

c. * Hverjum vannstu [sigurinn [á t_i]]?
who won.you victory.ART on

Overt extraction of possessors is not possible in Icelandic, (14). However, the availability of different scope readings indicates that it is possible for covert extraction to take place (Harðarson 2017). This is shown in (15) below where the possessor takes wide scope over the subject (see also Wurmbrand 2008, Bobaljik & Wurmbrand 2012 for a similar effect in German).

(14) (Harðarson 2017: 200)

* Hvers$_i$ horfðir þú á [sigur t_i á Svíum]
who.GEN wathced you on victory on Swedes
Int: 'Whose victory over the Swedes did you watch?'

(15) (Harðarson 2017: 201, ad.)
[Einn stúdent] borðaði [kanínu [hver-s barn-s]]
one student ate bunny each-GEN child-GEN

a. 'A single student ate all the children's bunnies.' $\exists \gg \forall$

b. 'Each child is such that a student ate their bunny.' $\forall \gg \exists$

It is worth noting at this point that under Kayne (1994: 22ff) specifiers are argued to c-command out of their phrases, hence this does beg the question of whether this is really a case of covert extraction of the possessor or if this is rather a matter of covert movement to Spec-DP and subsequent pied piping. We saw in (11a) and (12a) that if scope readings are the result of different c-command relationships, covert movement to Spec-DP does take place. If it were the case that the wide scope of the possessor in (15) is the result of movement to Spec-DP and subsequent pied piping, we would expect all prenominal possessors to be able to license material outside of the DP via c-commanding. Binding facts show that this is not the case, i.e., possessors in Spec-DP do not c-command out of the DP.

Non-quantified possessors, whether pre- or postnominal, do not license a reflexive pronoun, (16). This strongly indicates that a possessor does not c-command out of the DP whether it is overtly or potentially covertly positioned in spec-DP. Note, however, that the DP containing the possessor can serve as an antecedent for the reflexive pronoun. The structure for (16b) is provided in Figure 9, where the TP, vP, and VP layers have been omitted.

(16) a. [Kanína Astridar$_i$]$_j$ leitar að [pabba sínum$_{*i/j}$]
bunny Astrid.GEN seeks at dad self's
'Astrid's bunny is looking for her dad.'

b. [Astridar$_i$ kanína]$_j$ leitar að [pabba sínum$_{*i/j}$]
Astrid.GEN bunny seeks at dad self's

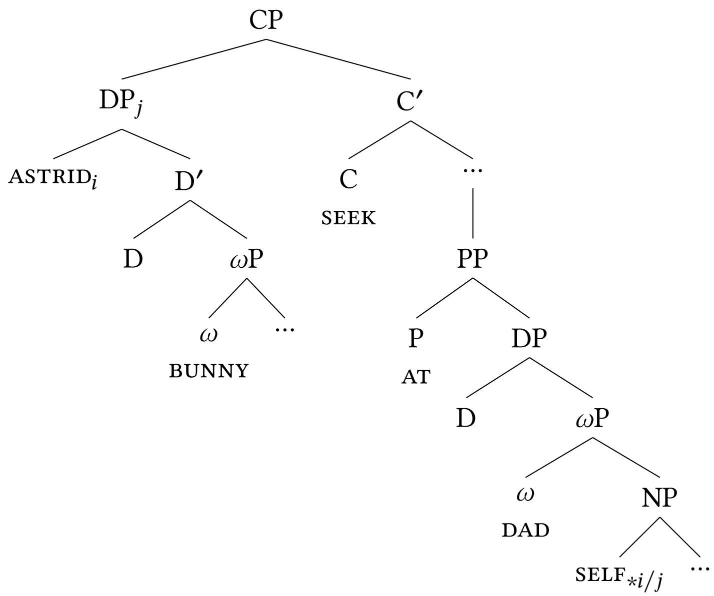

Figure 9: The structure of (16b)

This effect cannot be explained as a matter of domains, i.e., it cannot be the case that the possessor is unable to license the reflexive due to the reflexive being embedded within an inaccessible domain in the structure in Figure 9. If that were the case, we would expect that the DP containing the possessor would also fail to license the reflexive as it is no less distant from the DP containing the possessor in terms of domains. This is not the case and hence this indicates that possessors do not c-command from their position in Spec-DP.

Turning back to the quantified possessors, when they are in a postnominal position they can bind a pronoun and give rise to a bound variable reading. This is shown in (17), where the possessor is able to bind a variable that is overtly c-commanded by its matrix DP. The structure of (17) is given in Figure 10.

(17) [foreldri [hvers barns]$_i$] er með [mynd [af því$_{i/k}$]] uppi í hillu.
parent each.GEN child.GEN is with picture of it up in shelf
'Each child's parent has their picture up on their shelf.' BV

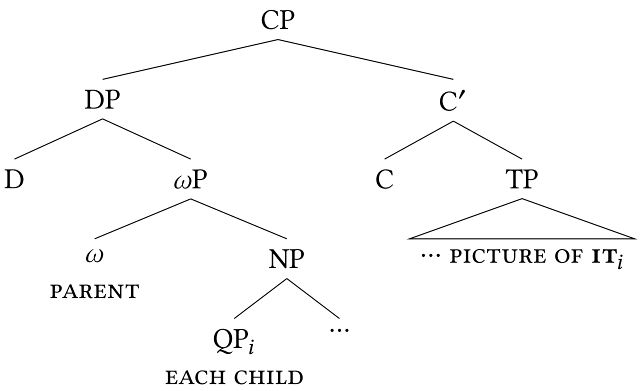

Figure 10: The overt structure of (17)

Assuming that the bound variable reading requires a c-commanding antecedent (Reinhart 1983), the bound variable reading should be impossible under the structure in Figure 10, as possessors do not license reflexives from their position within the DP. Hence the fact that the bound variable reading is possible indicates that the possessor must move out of the DP to a position c-commanding the variable (Figure 11).

However, if the possessor has been fronted, i.e., if it has overtly moved to Spec-DP, the bound variable reading is lost, (18). This indicates that whatever movement that is responsible for the fronting of the possessor also freezes the possessor for the purposes of subsequent movement.[15]

[15]Carminati et al. (2002) provide some experimental evidence that challenges the view that bound variable anaphora require a c-commanding antecedent and propose that bound variable reading in the absence of a c-commanding antecedent is an instance of an anaphoric pronoun with an inferred antecedent. However, this study does not rule out potential covert raising of the quantifier in the context of embedding or coordination, which could establish the c-command relation between the QP and the variable. Furthermore, this would fail to predict the scope differences that are observed between (17) and (18), as there is no clear reason for why an inferred antecedent coreferential with the possessor would be less available when the possessor is prenominal.

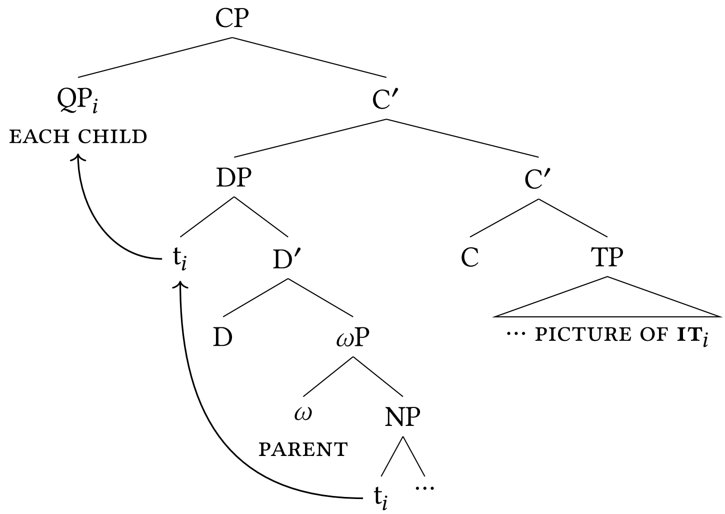

Figure 11: Structure of (17) at LF

(18) [[hvers barns]$_i$ foreldri] er með [mynd [af því$_{*i/k}$]] uppi í hillu.
each.GEN child.GEN parent is with picture of it up in shelf
'Each child's parent has their picture up on their shelf.' *BV

Furthermore, if fronting freezes the possessor for further movement, the expectation is that it should be frozen for quantifier raising as well. This prediction is borne out, as shown in (19).

(19) [Einn stúdent] borðaði [[hvers barns] kanínu].
one student ate each.GEN child.GEN bunny
  a. 'A single student ate all the children's bunnies.' $\exists \gg \forall$
  b. * 'Each child is such that a student ate their bunny.' $*\forall \gg \exists$

This is consistent with the proposal above, that the fronting of the quantified possessor is an instance of DP-internal quantifier raising. As such, once the movement has occurred, the possessor is frozen for the purposes of further quantifier raising, whether overt or covert. When the possessor is overtly in situ, it is free to raise covertly to either Spec-DP, or beyond the DP. This is consistent with the notion of criterial freezing (Rizzi 2006, Wurmbrand 2014a, 2015), i.e., criterial movement, such as quantifier raising, focus movement, a.o., which prevents any subsequent criterial movement.

To summarize this section, the fronting of quantified possessors appears to be a case of overt quantifier raising, where the position of the possessor affects the interpretation of the DP. This analysis is further supported by the fact that quantified possessors can be covertly extracted for interpretative purposes as well, whereas fronting of the possessor prevents subextraction. This is consistent with theories in which movement prevents subsequent movement for the same purposes.

4 Conclusions

Much ground still remains to be covered when it comes to the internal syntax of the Icelandic DP. Staying close to the topic at hand, aspects that remains to be explored are the properties of the non-possessor genitives, their positions within the DP, and their mobility. This includes the midfield genitives, which appear to have a distribution similar to adjectives, and other argument genitives. Unfortunately, due to restrictions on both time and space, these will have to be left for future research.

To summarize the ground covered in this chapter, I have discussed two types of DP-internal possessor fronting. The different criteria for the two types were argued to follow from mechanisms already in place, i.e., feature valuation, word formation, and quantifier raising. The feature valuation approach has been argued for in Harðarson (2017) in order to account for other word order effects within the Icelandic DP. With the amendments proposed here, the fronting of definite possessors can be fully integrated into that analysis and provides an explanation for the size restrictions observed. In the case of the quantified possessors, their fronting appears to be an instance of overt quantifier raising, where the possessor takes scope over the determiner. This was also shown to interact with the availability of covert subextraction of quantified possessors, where if they raise to Spec-DP overtly, they cannot be extracted covertly.

Abbreviations

ART	article	NUM	numeral	STR	strong inflection
ADJ	adjective	PROP	proprial article	WK	weak inflection

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Chapter 5

Heads first: The rest will follow

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The goal of this paper is to find a stable place for head movement within narrow syntax. The first step is to introduce a typology of movement proposed by Travis & Massam (2021) that extends beyond the better known Ā- and A-movement of dependents (limb movement) to include not only movement of elements along the extended projection (spinal movement), but also roll-up movement that violates anti-locality (labelled C-movement). Viewing head movement within this context, a case is made that head movement shares the characteristics of Spinal C-movement, the only distinction being the level of projection that is moved. Candidates are then proposed to fit other cells of the typology – Ā- and A-movement of both limbs and spines – to make a complete, though speculative, picture. As a final step, suggestions are made for rethinking the Extension Condition and E-merge/I-merge in order to create a grammatical system that includes rather than excludes head movement.

> [Head movement] is illegitimate. Head-movement is not formulable in any framework addressing the conditions of genuine explanation.
>
> (Chomsky 2021: 42:19)

1 Introduction

Head movement has had a precarious position in the realm of narrow syntax for a few decades (see, e.g. Chomsky 2001: 37–39) but this was not always the case.[1]

[1]By "precarious" I am not suggesting that head movement does not have its defenders. It does (too many to cite here). But, unlike phrasal movement, it has many detractors (also too many to cite here). As the introductory quotation indicates, Chomsky, in his 2021 WCCFL plenary talk, dismisses head movement as illegitimate, and it is not hard to find a significant number of syntacticians who agree.

Lisa deMena Travis. 2023. Heads first: The rest will follow. In Zheng Shen & Sabine Laszakovits (eds.), *The size of things II: Movement, features, and interpretation*, 87–116. Berlin: Language Science Press. DOI: 10.5281/zenodo.8427871

For example, when Rizzi proposed Relativized Minimality, head movement fit nicely into his typology of movements with respect to the locality of movement.

(1) Relativized Minimality (Rizzi 1990, taken from Rizzi 2001)
   a. … X … Z … Y
   b. Y is in a Minimal Configuration (MC) with X iff there is no Z such that
      i. Z is of the same structural type as X, and
      ii. Z intervenes between X and Y
   c. The typology must involve at least two irreducible distinctions:
      i. between heads and phrases and, in the latter class,
      ii. between positions of arguments (A-positions) and of non-arguments (Ā-positions).

While part of the typology, it was nevertheless clear that head movement had less in common with the two other movement types as it differed in size as seen in (1c). The former, by definition, was movement of an X^0 and the latter was movement of an XP. It was equally clear in Rizzi's characterization, however, that it was part of the same family of movements. In this paper, I argue that the distinction of size continues to matter, but I also argue that this difference in size crucially does not exclude head movement from the narrow syntactic movement family. Basically, I argue that a grammatical system can be created that not only allows for but also explains the diversity that we find in movement.

I propose that, to best understand the status of head movement, other under-represented types of movement also have to be included. These other movements differ from the more familiar XP movements not in the size of what moves but rather in what part of the syntax structure moves and how. Once these more diverse movement types are included, head movement looks less like an outlier. I start by reporting on results outlined in Travis & Massam (2021) (T&M), introducing an Ā and A distinction for XP movement that targets XPs along an extended projection (Spinal Movement), in this case VP. The T&M typology also includes a third type of spinal movement, labelled C-movement, which is more local than A-movement. Once Spinal Movement and C-movement are added to the picture, we will see that head movement actually shares characteristics with XP movement, in particular C-Spinal Movement.[2] Having established the background from T&M, I then speculate on ways in which the emerging movement typology might be expanded to include a variety of types of head movement, just

[2]This connection has already been made by Pearson (2000).

as we find a variety of types of XP movement. Once the typology is extended to include a wider diversity of movements, I suggest a re-envisioned version of the grammatical system itself that naturally legitimizes this range of diversity.

2 Expanding the movement landscape

In Travis & Massam (2021), VP fronting is investigated in an effort to determine the difference between the type of VP movement one finds in more well-studied languages such English and German as opposed to the type of VP movement that has been proposed for Austronesian languages such as Niuean and Malagasy. The study reaches three conclusions. First, VP movement may be expected to have different characteristics from DP movement as it involves movement not of dependents of the lexical head of the clause (i.e. limbs), but rather movement of (extended) projections of this head (i.e. parts of the spine). Second, certain types of VP fronting can be argued to correlate either with Ā movement (English/German VP fronting) or with A movement (Niuean). Third, the properties of VP fronting in Malagasy, which are similar to the roll-up movement, seen for example in Cinque's (2005, 2014) work, point to a third type of VP-fronting. This third type of movement is labelled C-movement for reasons to be outlined in Section 2.2.2.

2.1 Adding Spinal Movement

In investigating VP fronting, it is important to point out that focus has shifted away from DP movement and wh-movement, the more commonly studied movements. These latter movements will be referred to as Limb Movement.[3] The tree in Figure 1 highlights the differences between XP limb constituents (in boxes) and XP spinal constituents (in gray). In this context, VP movement is Spinal Movement.

Note that, without more information on category type (lexical vs. functional), ZP might either be a limb (if Z is the highest member of an extended projection) or part of the spine (if Z is a lower member of an extended projection). T&M look only at predicate fronting as an example of Spinal Movement showing that it can come in (at least) two varieties, one parallel to A-Limb Movement and one parallel Ā-Limb Movement.

[3]This distinction becomes very apparent, for example, in Ott (2010) where Ott argues that a variety of different X(P)s along the V-headed extended projection can be fronted.

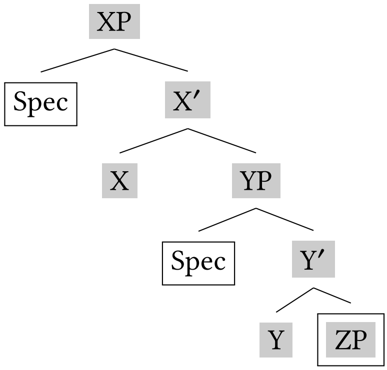

Figure 1: Limb vs. Spine

2.1.1 Ā-Spinal Movement

A case of predicate fronting well-known in the literature is the type of VP-fronting found in English examples such as (2a). Similar examples may be found in other languages such as German (2b) and Javanese (2c).

(2) VP fronting

a. English
... and [$_{\text{CP}}$ [$_{\text{VP}}$ do their homework] [$_{\text{TP}}$ they will _]]

b. German
[$_{\text{CP}}$ [$_{\text{VP}}$ Das Buch gelesen] hat [$_{\text{TP}}$ Peter gestern _]]
the book read has Peter yesterday
'Peter read the book yesterday'

c. Paciran Javanese (Vander Klok 2016: 213)
[$_{\text{CP}}$ [$_{\text{VP}}$ nggotong watu-ne] [$_{\text{TP}}$ cak Kholiq iso _]]
AV.lift rock-DEF Mr. Kholiq CIRC.POS
'Lift the stone, Kholiq can.'

Such fronting fits quite nicely into the description of Ā-movement, as the fronted constituent appears to move to Spec, CP.[4] This is most clearly seen in the German example in (2b), where movement of the VP triggers movement of the auxiliary to second position. Also, like typical Ā-movement, the movement comes with discourse effects.

[4]This is an oversimplification especially since we will eventually shift to a system where movement type is determined not by landing site, but rather by trigger feature, as in van Urk (2015). I am assuming, however, that fronting of the sort seen in (2) is triggered by an Ā-type feature, and such movements typically, though not exclusively, move to a position in the C domain.

2.1.2 A-Spinal Movement

It is more difficult to find a case of A-movement of the predicate, but this is likely to be due to the types of languages that have been most studied. Massam & Smallwood (1997), however, propose that Niuean's predicate initial order is produced by the fronting of the predicate to Spec, TP. Below we first see a sentence with VSO order (3a), suggesting that Niuean's word order is derived by head movement of the verb around the subject. But as argued in Massam (2001b), this order is misleading. If the object is indefinite (a case of Pseudo-Incorporation in Massam's terms), as in (3b), the object is fronted with the verb. The VOS order in (3b) shows that Niuean's word order is, in fact, VP first. This XP movement of the predicate is masked when a definite object has moved out of the predicate and only the remnant of the VP has been fronted as in (3a).[5]

(3) Niuean Pseudo Noun Incorporation (Massam 2001b: 157)

a. [Takafaga t$_k$] tūmau nī e **ia** [e tau ika]$_k$
   hunt aways EMPH ERG he ABS PL fish
   'He is always fishing.' [V t$_k$]$_j$ S O$_k$ t$_j$

b. [Takafaga ika] tūmau nī a **ia**
   hunt fish always EMPH ABS he
   'He is always fishing.' [V O]$_j$ S t$_j$

VP fronting in Niuean is set up in Massam & Smallwood (1997) as EPP driven movement to Spec, TP that correlates with EPP driven DP movement to Spec, TP in a language like English. Further, this movement occurs in discourse neutral sentences, much like DP movement to Spec, TP, making it an obvious candidate for A-spinal movement.

2.2 Adding C-movement

Staying within the Austronesian language family, we can find another language that has been argued to have predicate fronting: Malagasy (see Pearson 1997, 2018, Rackowski 1998, Rackowski & Travis 2000). While one might expect it to be like Niuean, it is different in important ways. This difference leads to the proposal of a third type of movement, adding to the A vs. Ā typology. In this section I review the arguments from T&M for C-movement and briefly summarize the feature-based typology that was used in that paper to describe the three types of movement.

[5] More accurately, these are referential objects, but here I am abstracting away from such details. See Massam (2020) for more information.

2.2.1 Very local VP movement

To see the difference between Niuean predicate fronting and Malagasy predicate fronting, we look at what happens with definite object shift. Pearson (2000) discusses object shift in the context of distinguishing between two types of VO languages – DIRECT (e.g. English, Icelandic) and INVERSE (e.g. Malagasy, Zapotec). The former group creates the verb first order through head movement, while the latter group fronts the V through roll-up VP movement. To take just one point of comparison, in direct languages (those that have head movement within the VP shell structure) definite object shift is to the left. This is familiar in the literature with examples from Icelandic as shown below, where *greinina* 'the article' appears to the right of negation and the quantifier in (4a), and to the left in (4b).

(4) Icelandic (Holmberg 1986: 166)

a. Hvers vegna lasu stúdentarnir ekki allir **greinina**
   why read the.students not all the.article
   'Why didn't all the students read the article?'[6]

b. Hvers vegna lasu stúdentarnir **greinina** ekki allir

Malagasy, an inverse language, where the V-initial VP is created through successive roll-up movement of the VP, has definite object shift to the right. We examine the relevant data below. We see first in (5a) that the object appears adjacent to the verb. In this position it may appear with or without a determiner. In (5b), where an adverb intervenes between the object and the verb, the determiner is required. Descriptively, it looks like only definite objects may move rightward over the adverb (whereas in Icelandic a definite object may move leftward).

(5) Malagasy (Inverse) rightward object shift

a. Nijinja *(ny) vary* **haingana** ny mpamboly
   PST-AT.cut (DET) rice quickly DET farmer
   'The farmer harvested (the) rice quickly.'

b. Nijinja **haingana** *(*ny*) *vary* ny mpamboly
   PST-AT.cut quickly DET rice DET farmer
   'The farmer harvested *(the) rice quickly.'

c. $[[\text{ V } \mathrm{t}_k\ ]_j$ **Adv** $\underline{\underline{\mathrm{O}}}_k\ \mathrm{t}_j\ ]_m$ S t_m

[6] A translation is not given in the original article. This translation is taken from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.491.8626&rep=rep1&type=pdf.

Pearson's explanation for why movement of the definite object appears to be rightward has to do with the roll-up movement that defines inverse languages.[7] Pearson proposes, as we have seen for Niuean, that the definite object moves leftward, and then the remnant VP, now containing only the V, moves to the left of the object (and the adverb). While similar, predicate fronting in Malagasy is not identical to predicate fronting in Niuean – it is more local. Rather than moving to a position in front of the subject, leaving the object to remain to the right of the subject as in Niuean, the moving predicate in Malagasy has a landing site between the position of the moved object and the subject. Subsequent movement, then, displaces both the verb and the definite object to the left of the subject, creating a VOS order with definite objects (see 5b) rather than the VSO order that we have seen in the case of Niuean (see 3a). The distinction then is between the movement of the Niuean predicate over both the moved object and the subject, and the more local iterative movement of the Malagasy predicate. This distinction is shown in the two tree structures in Figure 2.

In T&M this distinction, as well as the extreme locality of roll-up movement in Malagasy, are taken to indicate that there is a third type of movement to add to A- and Ā-movement, labelled C-movement (for reasons that will become apparent in the next section). This movement has two distinguishing characteristics – it is more local than both A and Ā-movement, and it is roll-up, meaning that the moved element gains more material with each iteration of movement. This is clear in the Malagasy tree in Figure 2, where VP moves into Spec, XP and then it is XP (not VP) that is targeted for the next movement. In the next section, a feature-based account of movement locality is outlined and used to account for the three types of Spinal Movement we have just seen.[8]

2.2.2 Feature-based locality

It is possible to make sense of these three types of movement, even predicting the existence (and characteristics) of C-movement, by adopting a feature-based account of movement such as the one outlined in van Urk (2015). This feature-based system crucially divides A- and Ā-movement not by their landing position (which in the past was the standard assumption, resulting in the usage of the A vs. Ā labels), but rather by the probing feature. Such a system captures three ways in which Ā- and A-movement are distinguished. While Ā-movement can

[7]Pearson situates his analysis within the assumptions of the Linear Correspondence Axiom of Kayne (1994), but the Malagasy object shift data would require a solution for any system that restricts movement to the left, such as Abels & Neeleman (2012).

[8]There is, in fact, roll-up movement in Niuean, but lower in the predicate. See Massam (2010, 2020), and Travis & Massam (2021) for details.

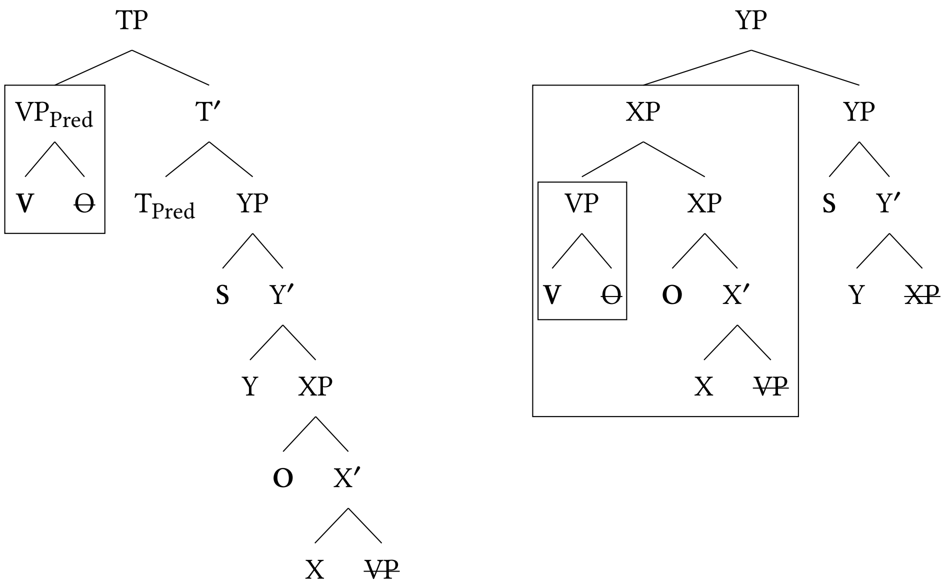

Figure 2: Niuean vs. Malagasy VP fronting. Labels of X(P) and Y(P) are used to abstract away from details that are not necessary to make the point needed here.

target a variety of elements, (traditional) A-movement targets only DPs. While Ā-movement can skip potential Ā-movement targets, A-movement can only target the closest DP. Finally, constructions with Ā-movement have specific discourse consequences and do not generally occur in discourse neutral contexts. A-movement, however, is part of the basic grammatical system with no discourse effects.[9]

The characteristics that distinguish A-movement from Ā-movement are captured in the following manner. For A-movement, the observation is that the locality, category sensitivity, and obligatory nature of A-movement are explained by the fact that T will always have the relevant feature (obligatory), that the relevant feature is D (category sensitive), and that this feature is inherent to every DP (local). In the structure below, we see the probing D feature in T and the goal D feature in every DP. The probe, then, will always target the closest DP, and this DP will always be an intervener for any less local DP.[10]

[9]This sort of description may be too simplistic (for example, there may be Ā- and A- scrambling), but, for the purposes of introducing the system, I present the most canonical uses of these two movements.

[10]It may be the case that sub-features of the DP must also be available for probing in order

(6) A-movement (obligatory and local) – inherent feature
[$_{\text{[D]}}$ They] [$_{\text{T:}\boxed{\text{D}}}$ will] [$_{\text{[D]}}$ ~~they~~] put [$_{\text{[D]}}$ it] on [$_{\text{[D]}}$ the table].

Ā movement is distinguished by the optional nature of the probing feature. It is optional in the probe and it is optional in all of the possible goals. As the feature isn't restricted to any one category, it is not category sensitive. In the example below, both DPs and PPs can be targeted. In a case where the furthest possible target has the feature, none of the intervening possible targets will intervene since none of these will host the relevant feature. This results in Ā movement appearing to be less local.

(7) Ā-movement (optional and less local) – optional (movable) feature
[$_{\text{[wh]}}$ What] [$_{\text{C:}\boxed{\text{wh}}}$ will] [they] put [it] [on [$_{\text{[wh]}}$ ~~what~~]]?

2.2.3 Non-cyclicity in C-movement

This feature-based system is not only simple and intuitive, it nicely accommodates the newly proposed C-movement. T&M argue that a feature system that targets the common categorial feature of an extended projection (hence the name C-movement) will result in the right properties for the type of predicate fronting found in languages like Malagasy. To do this, the extended projection structure of Grimshaw (2000) is assumed. In this system, all heads share a categorial feature, here [verbal]. The heads differ in an F feature, which indicates the position of a head along a functional hierarchy. In a structure such as that represented in Figure 3 below, the relevant categorial feature that is probed for C-movement would be the [verbal] feature that all heads share.

The proposal is that C-movement is triggered by an obligatory probing C-feature. This set-up will have two effects. First, the movement will be very local, as every projection on the spine will inherently have the relevant feature. Second, the movement will be roll-up movement. Since XPs are being targeted in this movement[11] and every maximal projection will have this feature, when movement to a Spec position takes place, this moved constituent will never be the closest target, as the projection which dominates the Spec will also have that

to explain why some local DPs are overlooked (e.g. dative DPs in German, Susi Wurmbrand, p.c.). There are also Austronesian constructions where it appears that there is A-movement of a non-local DP. See, for example, the discussion of Acehnese Object Voice constructions in Legate (2014: Chapter 3) for details and a possible account. Another solution is to say that these constructions are not created by movement (see e.g. Travis 2006a).

[11]The distinction between XP and X movement will become important below.

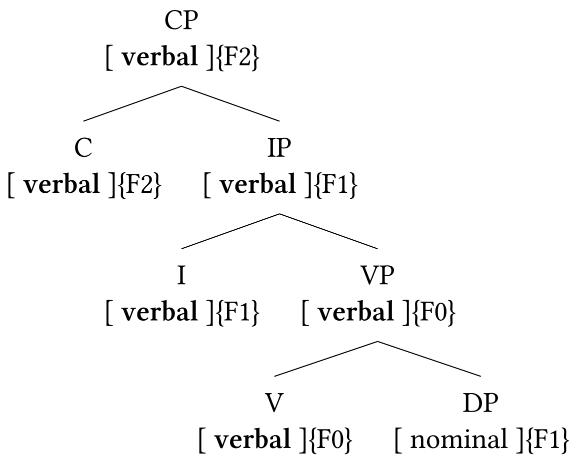

Figure 3: Extended projection from Grimshaw (2000: 118)

feature.[12] We can see how this works in Figure 4. In the first step, a *v* (probe) in X targets a V (goal) in YP, triggering movement to Spec, XP. In the next movement a *v* (probe) in W targets a V (goal) in XP, triggering movement to Spec, WP. Crucially, YP in Spec, XP isn't the goal because XP itself acts as a closer goal. C-movement is, then, very local (in fact violating anti-locality for principled reasons[13]) and it is roll-up (again for principled reasons).

2.3 Interim summary

Above I have summed up the main findings from T&M, and in Table 1 I outline the VP fronting typology that has been proposed.

We have two types of VP fronting (Spinal Movement) that match the better-known Ā and A-movement of limb XPs. Since C movement only becomes apparent when one looks specifically at movement of spinal XPs, it is understandable why it is a latecomer to the XP movement typology. Given that, by definition, C-movement probes for a spinal feature, it will only target projections of the spine.

[12] An anonymous reviewer points out that Rackowski & Richards (2005) treat Spec, XP and XP itself as being equidistant w.r.t. a c-commanding goal. While this requires more research, my impression is that their need to specify this relation arises from issues internal to their account.

[13] An anonymous reviewer notes that anti-locality is also derived from principles. I suggest that this points to another case where the current system of principles needs to be open to re-examination in order to accommodate a larger set of languages and the syntactic mechanisms that they use.

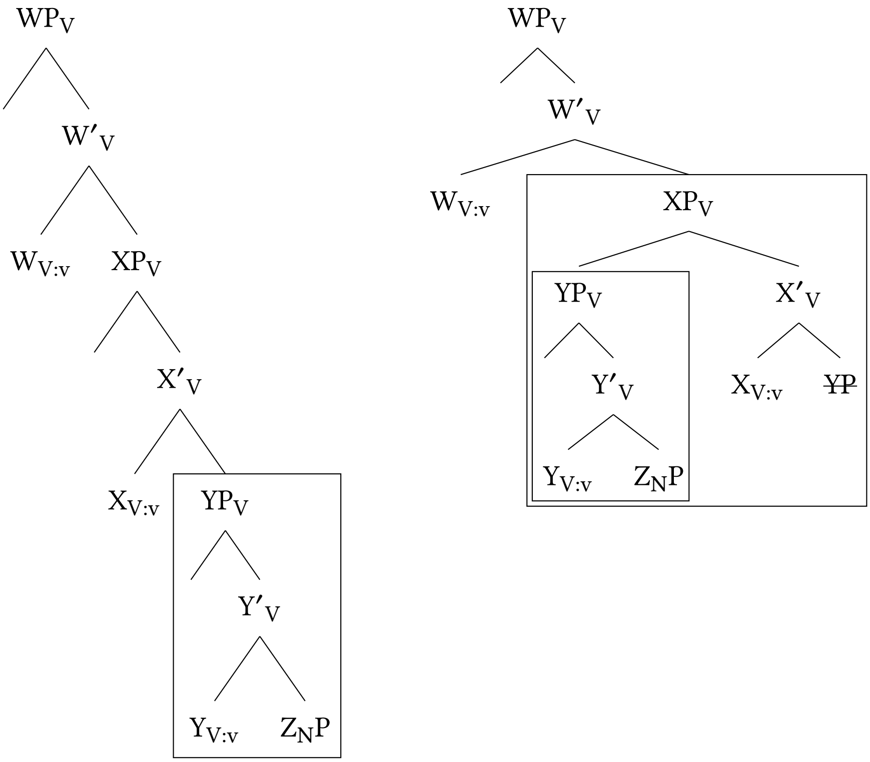

Figure 4: C-Spinal Movement (a.k.a. roll-up movement)

Table 1: XP movement (adapted from Travis & Massam (2021))

	XP	
	LIMB	SPINE
Ā	WH-, Focus	VP fronting (English)
A	Derived Subject	VP fronting (Niuean)
C	***	VP fronting (Malagasy)

This explains the unfilled cell of C-movement of a limb.[14] Further, C-movement will always target the closest projection of the spine, accounting for its extreme locality and the roll-up nature of the movement. The operation does not move material from one Spec position to another one. Rather, the projection above the landing site of one movement becomes the target of the next movement because the dominating projection is the closest XP goal with the relevant feature.[15] The fact that C-movement is hyper-local and non-cyclic (roll-up) is crucial in facilitating the full member status of head movement in the movement typology as described above.

3 The repatriation of head movement

Two questions come to mind concerning the status of head movement in narrow syntax – (i) why did head movement become the black sheep of the family, and (ii) how was the awkwardness of this situation dealt with?[16] In response to the first question, it is clear that the more different that head movement looks, the more precarious its position. Head movement (i) does not affect meaning (or rarely does – see Lechner (2006), Roberts (2010: Ch. 1)) for evidence to the contrary), (ii) does not move cyclically (in that it does not excorporate – though see Roberts (2010) for a different view on excorporation), (iii) is not anti-local in the sense of Grohmann (2003), and (iv) does not obey the Extension Condition. Chomsky (2015: 12) writes "head raising is a unique operation, with special properties".

Given all of these, at best, differences, and, at worse, violations, what is to be done? One possibility is to say that head movement is, in fact, XP (remnant) movement (e.g. Koopman & Szabolcsi 2000). Another possibility is to make head movement behave as much like XP movement as possible (i.e., not violate the Extension Condition) even though the fit remains uncomfortable (e.g. Matushansky 2006). The problem with some such solutions is that questions relating to the apparent lack of semantic effects or the hyper-locality may still remain. A more drastic possibility is to say that it is not, in fact, a syntactic movement at all (see Chomsky (2001) or Harley (2004) for different versions of this). A very different

[14]The link between C-movement and spinal movement becomes less obvious when the Spec contains projections of the same categorial type, for example the DP possessor in Spec, DP. This issue requires a longer discussion.

[15]The absence of movement of the fronted VP out of a Spec position is discussed in more detail in Travis & Massam (2021) with respect to the observation that predicate fronting in Niuean does not undergo Spec, TP to Spec, TP (subject to subject) raising.

[16]Roberts (2010) nicely lays out the issues. See also Dékány (2018) for a clear overview of the status of head movement

tack to take, however, is to examine the system itself. It is this path I explore in this paper. I argue that a grammatical system has been created which, by its very principles, excludes head movement. The reason for this situation is that the system was created to account for the set of movement rules that are most prevalent in the languages most studied, that is, phrasal cyclic movement of dependents of the syntactic structure. My claim is that if a system had been created to account for a wider diversity of movements, including not only XP and X^0 movement, but also dependent (limb) and extended projection (spinal) movement, the status of head movement would not have been treated with such suspicion.

I start by re-examining the apparent exceptional nature of head movement with the aim of showing that the observed differences are derivable by the inherent nature of canonical head movement.[17] It is, after all, movement of a head and not an XP, and of a spinal element, not a limb. The point that I will make is that a typology that naturally includes Spinal Movement and C-movement will also include head movement. As mentioned earlier, XP C-movement has distinguishing properties that follow from the feature being targeted. It is extremely local and it is roll-up. These are also two salient properties of head-movement.[18]

Dékány (2018), in her overview paper on head-movement, lists three constraints on head movement. First, she mentions the roll-up characteristic of head movement as being a constraint against excorporation, meaning that it is not cyclic (the same element cannot undergo further movement). Second, she mentions the hyper-locality of head movement (the Head Movement Constraint). Third she points to the fact that head movement is clause-bound, i.e. does not occur beyond the border of an extended projection. All of these traits follow naturally from the T&M feature-driven C-movement. Roll-up and hyper-locality follow in a movement driven by the shared features of an extended projection. Movement across an extended projection falls out in the same way. C-movement must be triggered by a head that shares the same extended projection feature as its complement.[19] Given this, head movement of the sort seen in, for example, verb raising in Italian, appears to be C-movement, differing from VP roll-up movement in Malagasy only in the level of projection moved, i.e. a head rather than a phrase. Proceeding along these lines and following T&M, I extend the typological table to include head movement as shown below.

[17] At this point I am concentrating on garden variety head movement such as V-to-T-to-C. Later in the discussion I return to less canonical cases.

[18] Pearson (2000) also makes the connection between Malagasy roll-up movement and head movement.

[19] This raises the question of where incorporation in the sense of Baker (1988) fits in the typology. This is being left for future work.

Table 2: Movement typology with XP and X^0

	XP		X^0	
	Limb	Spine	Limb	Spine
Ā	wh-, Focus	VP fronting (English)		
A	Derived Subject	VP fronting (Niuean)		
C	***	VP fronting (Malagasy)		V-movement

The grey cells are those movements most commonly presented in any discussion of, say, English syntax, i.e. Ā (wh-)movement, A (NP-)movement, and head (V-)movement. Viewing just these cells, one could easily come to the conclusion, as has been done, that XP movement must be Limb Movement that is anti-local, while head movement must be Spinal Movement that is hyper-local. Given this family picture in which head movement looks nothing like either of its siblings, it is not surprising that some suspicion should arise. However, once Spinal Movement, and in particular C-Spinal Movement, becomes part of the group, head movement now has a sibling with shared traits.

With this in mind, I continue to examine the typology and in particular the empty cells of Table (2), as one naturally wonders why certain movement types are missing. Below I only suggest directions that might be taken in searching for likely candidates, looking first at Spinal Head Movement and then at Limb Head Movement. Before proposing possible candidates, I want to make two points. The first point is that, as with XP movement, we might expect not to find C-movement of a head from the limb, given that C-movement is triggered by the probe and the goal having a shared extended projection feature. The second is that the head movements we are looking for (Ā- and A-movement of limb and spine) will violate the Head Movement Constraint, given that we do not expect Ā and A movement to have the hyper-locality property of C-movement.[20]

4 Spinal Head Movement

In this section, I suggest that predicate clefting might be an example of Ā-Spinal Head Movement, and that Slavic Long Head Movement (LHM) might be a case

[20] Many of the conclusions I come to in this section are preceded by similar conclusions reached in Roberts (2010). One the main differences here is the addition of spinal C-movement to the movement typology.

of A-Spinal Head Movement. I acknowledge that both of these proposals require a more in-depth study and that at this point I am just holding them up as possibilities.[21]

4.1 Ā-Spinal Head Movement

Koopman (1984) argued that (i) predicate clefting of the sort seen in the Vata data in (8) is an example of Ā verb movement, and (ii) short V-movement as seen in the Vata data in (9) is an example of A verb movement.

(8) **lī** [$_{TP}$ Ȯ dā sȧká **lī**]
eat s/he PERF.AUX rice eat
'S/he has **eaten** rice.' Vata: adapted from Koopman (1984: 38)

(9) a. [$_{TP}$ á lā sȧká **lī**]
we PERF.AUX rice eat
'We have eaten rice'

b. [$_{TP}$ á **lì**$_k$ sȧká t$_k$]
we ate rice
'We ate rice' Vata: adapted from Koopman (1984: 42)

I borrow from Koopman the claim that V movement in the predicate cleft construction is, in fact, a case of Ā head movement of the verb. I will assume, however, that movement of the V into T as in (9) is a case of C-movement as it appears to be similar to the type of head movement of the verb we find in languages such as English, German, and Italian.

The process of predicate clefting has many of the earmarks of Ā-movement. The trigger is high in the extended projection of the clause, it has the discourse effect of focusing the verb, and the movement is relatively long-distant. When compared to its close sibling of Ā VP movement, it is quite similar in that it moves to the left of the subject, suggesting that it moves to a position within the CP domain.[22]

[21] Both of these movements are discussed in Roberts (2010) (along with long head movement of Breton), which he also categorized as Ā-movement and A-movement, respectively. While movement in Breton is, according to Roberts, to C, he nevertheless categorizes it as A-movement. In his system as well as the one being outlined here, the type of movement is determined by features not by landing site.

[22] While I bring up landing site as possible support for the determination of the movement type, it is neither a necessary nor sufficient condition in the determination of movement type. It is the clustering of properties that is important.

Many questions can be raised pertaining to predicate clefting that I leave unanswered here. On such question is whether predicate clefting is, in fact, movement (see Cable 2004), and, if it is movement, whether it moves a head and not an XP. One reason to believe that the fronted element is an XP is that in Yiddish predicate clefts, the clefted material is arguably in a Specifier position, which triggers V2 effects. In (10) below, the verb *essen* in sentence initial position triggers movement of the auxiliary *hot* to second position.[23]

(10) Essen hot Max gegessen a fish
to.eat has Max eaten a fish
'As for eating, Max has eaten a fish.' Yiddish (Cable 2004: 2)

Further, some predicate clefts may move both more than just the V (see e.g. Vicente (2009)). And finally there is the question of why predicate clefts require pronunciation at the tail of the chain (see e.g. Trinh 2009). Ideally, a case can be made for some instance of predicate clefting where (i) only a head may move and (ii) it is clear that movement is to a head position within the C domain. Whether such a case can be found remains to be seen.

4.2 A-Spinal Head Movement

Turning now to A-Spinal Head Movement, it could be that some cases of Long Head Movement (LHM) in Slavic, where a non-finite verb appears to move over auxiliaries, might be good candidates.[24] In order to have the expected properties for A-movement, we would want the movement to not interact with discourse issues such as focus or question formation, and we might expect the probe for the movement to be in the inflectional domain. In Rivero (1994), there appear to be two types of LHM. The Romanian example shown in (11) below is not the best candidate for A-movement, as the LHM brings with it a new discourse function, either exclamatory or interrogative.

(11) a. L-ar **bate** Dumnezeu.
him-would-3s punish God
'God would punish him.'

[23] Ideally a case can made for some instance of predicate clefting where (i) only a head may move and (ii) it is clear that movement is to a head position.

[24] LHM is much more complicated than will be presented here. See Harizanov & Gribanova (2019), Lema & Rivero (1989), Rivero (1991, 1994), Roberts (2010) for more details.

b. **Bate**-l-ar Dumnezeu.
punish-him-would-3s God
'God would punish him!' Romanian: Rivero (1994: 86)

In other cases, however, certain contexts force the use of LHM without triggering discourse effects. In the Present Perfect in Bulgarian, the main verb must precede the Auxiliary.[25]

(12) a. **Pročel** sŭm knigata.
read I-have book-the
'I have read the book.'
b. * Sŭm **pročel** knigata. Bulgarian: Rivero (1994: 89)

As with the proposal that predicate cleft constructions exemplify Ā-Spinal Movement, the proposal that Slavic long head movement, at least in certain cases, exemplifies A-Spinal Movement is still speculative. Many questions still have to be addressed. For example, it is curious that this movement only occurs when the subject is either missing or post-verbal (see Rivero (1994: 322) and fn 1).[26] It is tempting to say that A-movement of the verb satisfies the same EPP feature that subject movement satisfies, accounting for why the subject no longer raises to Spec, TP. This follows in the spirit of the proposal in Massam (2001a) that Niuean VP fronting, which is A-Spinal Movement of an XP, satisfies the EPP feature in Niuean. More work, however, is required to do a complete study on this phenomenon and determine its appropriateness for A-spinal movement.

5 Limb Head Movement

While most cases of traditional head movement involve moving heads along the extended projection (Spinal Movement), there are cases in the literature of proposed head movement from limbs. Here I suggest that argument cliticization may be an instance of A-Spinal Head Movement. Some have proposed that clitization of the Romance type is head movement (e.g. Roberts (2010) and Preminger (2019)). I, however, will look at a phenomenon in Malagasy where cliticization more closely resembles the type of A-movement of DPs that we are familiar with.

[25] Rivero (1994) also gives an example with the Past Perfect where the Aux-V order is also possible.

[26] King (1996) offers an alternative analysis for some cases of LHM that needs to be looked into. She argues that at least certain cases of LHM are not movement at all but rather encliticization of the auxiliaries onto the verb.

Lastly, stretching a bit, I suggest that the type of WH-feature movement proposed in Cheng (2000) and Donati (2006) or the question particle movement of Hagstrom (2000) could be seen as Ā-Spinal Head Movement.

5.1 A-Limb Head Movement

Before beginning the search for examples that will represent A-Limb Movement of a head, we need to outline what properties we are looking for, and for this we turn to the sort of DP movement that is familiar to us, i.e. DP raising to Spec, TP.[27] As discussed in section (2.2.2), DP movement does not trigger discourse effects, and it attracts the closest DP. As tempting as it is to subsume Romance cliticization into this category of movement, given that, unlike DP raising to Spec, TP, multiple DPs may cliticize, I take a different direction. Instead I turn to a process that occurs in some Austronesian languages, wherein the highest non-subject argument in the clause arguably moves. I illustrate this with data from two languages, Indonesian and Malagasy.

Indonesian has two different means to promote an object to the subject position – the passive (13b) and Object Voice (OV: (13c)).[28]

(13) Indonesian: Active/Passive/Object Voice[29]

a. Ali/saya/kamu meN-baca buku itu
   Ali/1SG/2SG ACT-read book DET
   'I/you read the book.' — Active

b. Buku itu di-baca oleh Ali/saya/kamu
   book DET PASS-read by Ali/1SG/2SG
   'The book is read by me/you (Ali).' — Passive

c. Buku itu Ali/saya/kamu baca
   book DET Ali/1SG/2SG read
   'I/you (Ali) read the book.' — Object Voice

[27] See Baker & Hale (1990) for arguments for a similar movement analysis for Breton.

[28] For more details, see Chung's paper on the two passives of Indonesian (Chung 1976). I have given an active translation for the OV constructions to distinguish OV from the passive, but I underline the grammatical subject in the translation. See Chung (1976) for arguments that the sentence initial DP is the subject in the OV construction in Indonesian, and Legate (2014) for similar arguments for the subject of OV in Achenese.

[29] These examples are taken from Guilfoyle et al. (1992). Their consultants allowed proper names in this position, while this was not allowed by Chung's Indonesian consultants. These examples have been checked for Indonesian with Jozina Vander Klok, who points out that proper names are allowed if they have 1st or 2nd person referents.

d. * Buku itu lelaki itu baca
   book DET man DET read
   'The man read the book.'

It is the OV sentence in (13c) that is relevant for our purposes, and in particular, the placement of the Agent in the pre-verbal position. There is speaker variation with regard to what forms can appear in this position, but there is at least one variety that allows all pronouns (see Chung 1976: 60–61, taken from Macdonald & Dardjowidjojo 1967: 235). Crucially, it is not possible to front a whole DP, as shown in (13d).[30]

Guilfoyle et al. (1992) account for this position of the Agent through D-movement from the Agent DP in Spec, VP (which would update to Spec,*v*P) to T as shown in an updated tree in Figure 5.[31]

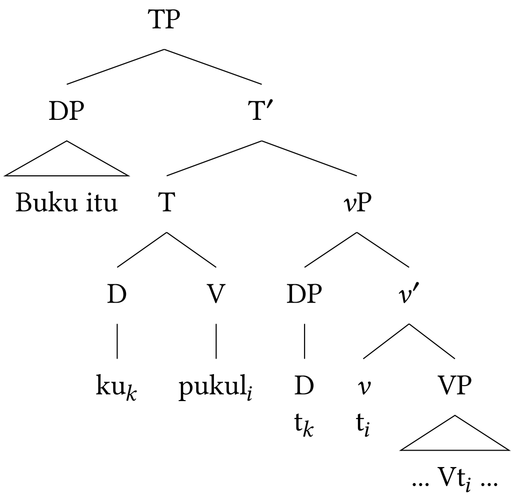

Figure 5: D-movement from Guilfoyle et al. (1992)

This movement, then, has the properties of what we expect to find in Ā-Limb Head Movement – it is obligatory (has no discourse effects) and it targets the closest DP.

[30]When the Agent is a full DP, only the passive construction can be used to place the Theme in the subject position.

[31]Other updating is needed but this would require a much longer discussion. Clearly there is a subject DP in Spec, TP raising the question of how this DP comes to appear in this position. Further, auxiliary type heads appear between the subject and the moved D, so it must be that D moves to a head lower than T. Also note that the framework of Bare Phrase Structure is not being assumed.

Malagasy has a similar process, labeled N-bonding by Keenan (2000). Malagasy is a VOS language with a complex voice system (often referred to as the Philippine-type voice system). Changes in the verb form indicate the semantic role of the sentence-final subject.[32] One of these forms is similar to the Object Voice construction in Indonesian (often labeled Theme Topic in the syntactic literature on Malagasy). We see below what could be called the Active or the Agent Voice, where there is no N-bonding, followed by three cases of N-bonding: one with a pronoun, one with a proper name, and one with a common noun.[33]

(14) N-bonding in Malagasy

a. *Mamaky* ny boky *aho*.
PRES.AV.read DET book 1SG
'I read the book.' *m-an-vaky*

b. *Vaki**ko*** ny boky.
PRES.OV.read-1SG DET book
'I read the book.' *vaki-na + ko*

c. *Vakin-**dRasoa*** ny boky.
'PRES.OV.read-Rasoa DET book
'Rasoa reads the book.' *vaki-na + Rasoa*

d. *Vakin'**ny*** vehivavy ny boky.
PRES.OV.read'DET woman DET book
'The woman reads the book.' *vaki-na + ny*

In all three cases of N-bonding, an element has undergone some morphological merger with the verb. It has been argued that this merger is similar to the D^0 movement posited for Indonesian above (e.g. Travis 2006b).[34] In more recent work, Paul & Travis (2019) have provided an argument for D-movement using the Augmented Pronoun Construction (APC), as in *we women*. The Malagasy APC differs from the English APC in that it can be used for all pronominal forms, while in English it only appears with 1st and 2nd person plural pronouns: *we women*, *you women*, **I woman*, **you woman*, **she woman*, **they women*. The Malagasy

[32] There are debates about whether the sentence final DP is a subject or a topic, but I follow the more traditional literature and adopt the label of subject.

[33] Orthographic conventions of Malagasy are used here where an apostrophe appears between the verbal form and a determiner, a hyphen between the verbal form and a proper name, and word final *i* is written as *y*. See Ting (2023) for a syntactic and phonological account of N-bonding.

[34] The assumption is that whether head movement results in prefixation or suffixation is determined by morpho-phonology and not syntax.

APC also provides insight into the N-bonded pronoun of the type we have seen in (14b). In (15) the 'bonded' pronoun that we have seen in (14b) must be doubled if it is followed by a nominal complement.

(15) Vaki*ko* *(*izaho*) ankizy ny boky.
PRES.OV.read-1SG 1SG.NOM child DET book
'I child read the book.' Malagasy APC

Paul & Travis claim that the lower copy of the movement must be pronounced under certain circumstances, but what is important here is to demonstrate that the D^0 in (14b) has undergone movement and not simply morphological merger under adjacency.[35]

Again, this candidate for A-Limb Head Movement requires more support before being confirmed. As with the predicate cleft construction, it is important to determine the relevant circumstances for copy pronounciation since this is not what we find in the closely related DP movement.

5.2 Ā-Limb Head Movement

In order to find a possible candidate for Ā-Spinal Head Movement, we want to first find a process which interacts with the discourse, which displaces something small enough to be considered a head, and which can be assumed to move to a position within the C domain. One candidate for this position already exists in the literature in slightly different forms. Cheng (2000) argues that some cases of WH-movement are, in fact, feature movement. Hagstrom (2000, 2004) argues that there is particle movement in WH-constructions in Japanese, and Donati (2006) argues for head movement of a quantifier in English free relatives and in comparatives.

Below I give an example from Cheng (2000) showing a case of partial WH-movement in German.

(16) a. [**Mit wem**] glaubt Hans [$_{CP}$ **daß** [$_{IP}$ Jakob jetzt **t**$_i$ spricht]]
with whom thinks Hans that Jakob now talks
'With whom does Hans think that Jakob is now talking?'

b. **Was**$_i$ glaubt Hans [$_{CP}$ [**mit wem**]$_i$ [$_{IP}$ Jakob jetzt **t**$_i$ spricht]]
WH thinks Hans with whom Jakob now talks
'With whom does Hans think that Jakob is now talking?'

[35] See Levin (2015) for an adjacency account of N-bonding.

Cheng proposes that while there is full movement of the WH-XP in (16a) to the matrix Spec, CP, in (16b) there is only partial movement to the embedded Spec, CP followed by feature movement to the scopal position in the matrix clause as realized by *was*. "I propose that partial WH-movement involves overt movement of part of the WH-word (hence partial), namely, the WH-feature of the WH-word." (Cheng 2000: 77).

For a similar type of analysis, Hagstrom (2000) investigates WH-constructions in Japanese, coming to the conclusion that these constructions are formed through movement of the *ka* particle: 'a question particle *ka* undergoes syntactic movement from a clause internal position (by the *wh*-word) to the clause periphery (i.e. into the complementizer position).' A relevant example from Japanese is given below.

(17) Japanese: Hagstrom 2000: ex. 1
dare-ga t_i hon-o kaimasita ka_i
who-NOM book-ACC bought.POLITE Q
'Who bought the book?'

Hagstrom argues that by positing *ka* movement, we can account for the intervention effects of other uses of *ka*, as shown with a disjunctive *ka* in (18) and an indefinite *ka* in (19).

(18) Disjunctive **ka** (Japanese: Hagstrom 2000: ex. 2)
a. ?* [John-**ka** Bill]-ga *nani-o* **t**$_i$ nomimasita **ka**?
John-or Bill- NOM what-ACC drank Q?
b. *nani-o* **t**$_i$ [John-**ka** Bill]-ga nomimasita **ka**?
what-ACC John-or Bill- NOM drank Q?
'What did John or Bill drink?'

(19) Indefinite **ka** (Japanese: Hagstrom 2000: ex. 3)
a. ?? dare**ka**-ga *nani-o* **t**$_i$ nomimasita **ka**?
someone what-ACC drank Q?
b. *nani-o* **t**$_i$ dare**ka**-ga nomimasita **ka**?
what-ACC someone drank Q?
'What did someone drink?'

Only when the WH-XP has scrambled out of the c-command domain of the competing *ka* form, as in (18b) and (19b), is the construction completely grammatical.

A third candidate for Ā-head movement from a limb is found in Donati (2006). She argues that certain wh-constructions in English and Italian, such as free relatives, are created through head movement of a wh-head, as illustrated below. What distinguishes these constructions from regular wh-constructions is that they have what she labels an "anti-pied piping restriction". In the (a) examples, a full DP has moved in a free relative, which accounts for the ungrammaticality. The (b) examples show that embedded wh-questions have no such restriction. The (c) examples show that the string is grammatical when, in her terms, just a head moves to create the free radical

(20) a. * Mangerò [quanto pane] vorrai [t]
I-will-eat how-much bread you-will-want

b. Mi chiedo [quanto pane] vorrai [t]
I wonder how-much bread you-will-want

c. Mangerò [quanto] vorrai [t]
I-will-eat what you-will-want

(21) a. * I shall visit [what town] you will visit [t]

b. I wonder [what town] you will visit [t]

c. I shall visit [what] you will visit [t]

Again, while I have outlined three possible candidates for Ā-Limb Head Movement, more work needs to be done to vet these more thoroughly. For example, the following questions arise: why, in German partial movement, is the wh-XP not able to remain in situ but must move to a Spec, CP, unlike in Japanese and English/Italian free relatives? What features make it possible for disjunct *ka* and indefinite *ka* to interfere with Q-*ka* movement without making them targets themselves? In the case of Donati's proposal, it is crucial that movement of the wh head lands in a D and not a C, suggesting that the constructions she investigates differ from those found in Cheng's and Hagstrom's work.

6 Going head first

My aim has been to argue for a more inclusive movement typology – one in which head-movement is an equal member. In doing so, a related goal is to add to the possible properties that movement can express and to have these properties follow from the features that trigger movement. If done right, those properties of head movement that made it look different from its better known siblings are now part of the set of possible properties and are shared by at least some other family members. If these proposals in the end turn out to be on the right track, we might have solved some of the problems arising from the distinct nature of head-movement. But we are still left with the problem of the Extension Condition, given below.[36]

(22) Extension Condition (Chomsky 1995)
Merge should be effected at the root.

Since head movement clearly violates this condition, we can see that the system needs not just expansion, but some fundamental rethinking.

One option to make sense of the Extension Condition is to start with E-merge, which consists of merging α and β and creating γ. Any additional element added to this figure will have to be merged to the root γ, resulting in the Extension Condition. Looking now at I-merge and XP movement, we see that movement can be accounted for in a similar fashion by requiring that the moved element undergo I-merge in a manner similar to E-merge, whereby the moved element must merge with the root node. There are many things that fall out nicely by making I-merge parallel to E-merge (generation and transformation are reduced to one process, the c-command requirement on movement does not need to be stipulated). However, the drawback is that head movement is now put in an uncomfortable position due to the fact that a moved head does not merge with the root node (pace Matushansky 2006).

However, if we give our story a different beginning, we arrive at a different endpoint. Since features have become the driving force of syntax, it seems reasonable to begin our story with features and what they do. And since features have received the most attention in the domain of movement, it also seems reasonable to start with I-merge. A simple view of movement is that a (probe) feature in a head interacts with a (goal) feature within its domain, and that this interaction will trigger movement. Since movement is triggered, it must be that there is a requirement that the probe feature and the goal feature be in a local configuration – one more local than the non-movement configuration, hence the need for movement. Now we ask two questions: what moves and where does it move to? As pointed out by others (e.g. both Cheng 2000 and Donati 2006), the most economical element to move would be the goal feature itself, or perhaps the head that is the minimal syntactic realization of that feature. Starting at this end of the story, head movement becomes the default.

[36]Note that Feature Cyclicity, leading to tucking in, as laid out in Richards (1997), already includes some of the points I make in the discussion to come. One important point made in that paper (Richards 1997: 57) is that cyclicity can be derived by having features satisfied when they enter the derivation, without any recourse to the Extension Condition. I thank an anonymous reviewer for leading me back to this.

Continuing with head movement for the moment, we look at the question of where this head moves to. It seems that one could say that it must be as local as possible to the probing feature and that this can be achieved by adjunction to the head that contains the probe. Now adjunction to the head becomes the default.

It is at this point that we turn to XP movement. We know that there has to be some mechanism that determines whether X or XP movement is triggered, but for the time being I assume that it is (unsatisfyingly) some diacritic. So now we imagine that we have the same probe-goal relationship, but instead of moving a head, it is the XP that dominates the feature that will move, due to the diacritic. This XP too will want to adjoin to the head, but if there is a restriction on adjunction relationships, perhaps the LCA of Kayne (1994), such that XPs can only adjoin to XPs, then the moved element will attach to the root of the structure. In this story, extension is not only not required, but is not even the default process. Extension occurs when the default of adjoining to the head hosting the probe feature is ruled out. In sum, head movement is the default, but in some cases it must be the XP (controlled by a diacritic). Secondly, adjunction to the head is the default, but when ruled out by the LCA, it must be adjunction to the root node.

Obviously this scenario needs to be worked out, and the details relating to E-merge have not been addressed, in particular issues of complementation and adjunction. The point, however, is to begin to imagine a scenario where the full diversity of movements are taken into account as the defining characteristics of syntactic movement are being determined.

7 Conclusion and next steps

The purpose of this paper was to examine why head movement has become marginalized and to re-evaluate its position in the typology of syntactic movement once a wider range of movements is added to the theoretical landscape. I have argued that creating a view of grammar that only takes into account XP Limb Movement marginalizes head movement for the wrong reasons. In the end, I hope to have shown that head movement is not principally excluded from the narrow syntax. Once the properties of Spinal Movement and C-movement are added to the range of possibilities, head movement has a clear position in the system. Further, it is predicted that there will be cases of head movement that violate the Head Movement Constraint, but they themselves should show particular characteristics that fit with either their A- or Ā-status. While this work is still preliminary and cuts through many other phenomena such as predicate clefting, cliticization, and wh-movement, I argue that it is worthwhile to at least try to create a grammatical system that includes the complete range of movement types from square one.

Abbreviations

3s	3rd person singular	EMPH	emphatic
AV	Actor Voice	OV	Object Voice
CIR.POS	circumstantial possibility (modal)	PERF	perfect
		PRES	present

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Chapter 6

What moves where? A typological-syntactic approach to multiple *wh*-questions

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This paper presents a new syntactic analysis for multiple *wh*-constructions. Adopting Richards (1997), I assume that there are two types of languages concerning *wh*-movement: such which A-move their *wh*-words (A-languages) and such which A'-move them (A'-languages). I expand this account by assuming that in both types, *wh*-movement targets the CP. This is done via A'-movement, as well as via A-movement. Building on recent work on cross-clausal A-dependencies (CCA; mainly Wurmbrand 2018), I adopt the idea of [A]-features inside CP. Based on Rizzi (1997), I propose a split CP domain whose different parts (ForceP, FocusP, TopicP) can either have A'- or A-quality. *Wh*-movement targets ForceP and FocusP, CCA-elements move to TopicP. The CP heads are ordered in an implicational hierarchical way, and their feature make-up entails the properties of the embedded and higher-ordered heads. Within this ordering, there is a threshold where A'-qualities shift to A-qualities. I assume that certain CP-heads are able to contain A-properties and by that, the CP domain contains A'- as well as A-properties. The option of having A-quality is restricted by embedding options: An A-CP-part cannot embed an A'-CP-part within the same domain (CP). I claim that languages pattern into three types, depending how high in the CP the A'/A-shift is located. This assumption predicts that there is a correlation between A-*wh*-movement and CCA-phenomena. This is indeed the case and will be summarised as a novel typological generalisation: "Whenever a language A-moves its *wh*-words, it allows CCA (but not the other way around)." This generalisation reflects that A-*wh*-movement entails CCA, as expected by my analysis of the CP domain. My account ties together CCA-phenomena and A-*wh*-movement in a syntactically novel way and might shed new light on the universal composition of the CP-domain.

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1 *Wh*-movement as A-movement

When it comes to multiple *wh*-questions, languages show three different kinds of behaviour. First, there are languages which raise one *wh*-word to sentence-initial position and leave all others in-situ (e.g. English, German, Greek, Brazilian Portuguese). I will call them "single-raising."

(1) English (Bošković 2002: 351)
What did John give to whom?

Then, there are "multiple-fronting" languages like Bulgarian, Polish, Romanian, Hungarian, Bosnian, Croatian and Serbian, which move several *wh*-words to sentence-initial position.

(2) Bulgarian (Bošković 2002: 351)

Na kogo	kakvo	dade	Ivan?
to whom	what	give.3SG	Ivan

'What did Ivan give to whom?'

Finally, there are languages which leave all of their *wh*-words in their base-generated position (such as Japanese, Chinese, Korean or Turkish), called "*wh*-in-situ languages".

(3) Japanese (Richards 1997: 31)

John-ga	nani-o	naze	katta	no?
John.NOM	what.ACC	why	bought	Q

'What did John buy why?'

Throughout linguistic history, there have been several syntactic explanations for each of the three. One of those accounts stands out because of its unconventionality: the ideas proposed in Richards (1997). He suggests that languages do not divide into three classes depending on what is moved on the surface, but only into two classes. Based on Huang (1982), he assumes that in all languages, all *wh*-words move to sentence-initial position at LF due to interpretability.[1] What happens on the surface is determined by other factors. Supposing

[1] This statement is probably not universally applicable. Another wide-spread analysis for wh-in situ constructions is quantificational inverse linking (see for example May 1978, Larson 1985, May & Keyser 1985, Chang 1997, Pollard & Yoo 1998, Cooper 2013, May & Bale 2017). Furthermore, it is more difficult to test the A'/A-movement distinction in wh-in-situ languages. Since the length of this paper is restricted and for the sake of the argument, I adopt the claim in Huang (1982) that *wh*-words move on LF, and the argument in Richards (1997) regarding

that all *wh*-words move, Richards (1997) claims that there are only two types of languages: IP-absorption languages and CP-absorption languages. The difference between them is not the PF-quantity of moved *wh*-words but rather the LF-quality of their movement. According to him, languages can either A'-move their *wh*-words (CP-absorption languages; from here on A'-languages) or A-move them (IP-absorption languages, from here on A-languages). This sheds a completely new light onto the discussion of multiple *wh*-questions. So far, *wh*-movement has always been assumed to be pure A'-movement. However, Richards (1997) lists some criteria which show that the quality of *wh*-movement does not seem to be uniform within syntax. It appears that whether *wh*-movement has A- or A'-qualities is more important than how many *wh*-words move on the surface. The difference between A'-*wh*-movement and A-movement is bound to distinctive behaviour in the following aspects: A-languages do not obey Superiority between the *wh*-words, they usually allow A-scrambling of items other than *wh*-words and do not show WCO-effects in local *wh*-questions. A'-languages behave inversely to that; they do obey Superiority between their *wh*-words, do not allow A-scrambling in general and do show WCO-effects in local *wh*-questions. These observations are true for languages of all three surface classes. This means that each surface language type (multiple fronting, single fronting or in-situ) contains languages which A-move their *wh*-words as well as such which A'-move them. To put it differently: whether a language A- or A'-moves its *wh*-words is independent of how many *wh*-words are raised on the surface. The exact typology can be seen in Table 1 (adapted from Richards 1997). Each language type splits into two classes. Multiple-fronting languages for example divide into Bulgarian-like languages and Bo-, Cr-, and Se-like languages.[2] Bulgarian-like languages obey Superiority (4), show WCO-effects (5) and do not allow A-Scrambling and therefore A'-move their *wh*-words.

(4) Superiority in Bulgarian (Richards 1997: 30)
   a. Koj kogo vižda?
      who whom sees
      'Who sees whom?'
   b. * Kogo koj vižda?
      whom who sees

why and how in-situ languages part into A'- and A-languages and refer to his dissertation for a more detailed description of the supporting data. I am aware that *wh*-in-situ languages posit an important question for further research.

[2]For reasons of simplicity, I cannot present all the supporting data for all languages here. It can be found in great detail in Richards (1997).

Table 1: A- versus A'-movement of *wh*-words

		Superiority	WCO	A-SCR
Multiple fronting	Bulgarian-like	✓	✓	✗
Wh-in-situ	Chinese-like	✓	✓	✗
Single fronting	English-like	✓	✓	✗
Multiple fronting	Bo, Cr, Se[a]-like	✗	✗	✓
Wh-in-situ	Korean-like	✗	✗	✓
Single fronting	German-like	✗	✗	✓

[a] In the literature, Bosnian, Croatian and Serbian are summarized as "Serbocroatian" or "B/C/S". The three languages are similar but not the same and therefore, I refer to them as "Bo, Cr, Se". Since they do not seem to behave crucially different to each other concerning *wh*-movement (they all A-move their *wh*-words and are multiple fronting), I group them together in this paper.

(5) WCO in Bulgarian (Richards 1997: 32)
* Kogo$_i$ običa majka si$_i$?
who$_i$ loves mother his$_i$
'Whom$_i$ does his$_i$ mother love?'

Opposed to that, Bo,Cr,Se-like languages do not show Superiority effects (6), omit WCO effects (7) and have local A-scrambling. Therefore, they A-move their *wh*-words.[3]

(6) Superiority in Bo, Cr, Se (Richards 1997: 30)
a. Ko je koga vidjeo?
who AUX whom seen
'Who saw whom?'
b. Koga je ko vidjeo?
whom AUX who seen

(7) WCO in Bo, Cr, Se (Richards 1997: 33)
Koga$_i$ voli njegova$_i$ majka?
who$_i$ loves his$_i$-NOM mother-NOM
'Whom$_i$ does his$_i$ mother love?'

[3] A reviewer noted that a crucial property of A-movement is that it is restricted to nominals. This predicts that properties like Superiority and WCO might arise in A-movement languages when a non-nominal is moved. This is a very interesting clue and is in need of proper examination. I have no answer to this question yet since providing a well-founded one includes fieldwork in different languages and a lot more literature research. Hence, I leave this question open to further investigation.

In the following pages, I will propose a new account for A-*wh*-movement by linking *wh*-movement to the concept of an A-position inside CP. The ingredients for my analysis have their origin in different, so far unrelated grammatical phenomena and their corresponding theories: First, Richards's (1997) proposal that in some languages, *wh*-movement has A-quality. Then, cross-clausal A-phenomena (as discussed, among many others, in Wurmbrand 2018), i.e. the ability of certain languages to allow A-relations into embedded CP domains or A-movement out of them. And finally, an extended CP domain, consisting of multiple CP-parts (as proposed in Rizzi 1997). By combining these three, I will present a novel analysis of the CP domain, rendering new derivational positions for *wh*-movement. I will substantiate my claim with typological observations and a universal generalisation.

2 An A-position inside CP

In the recent literature, the claim for an A-position inside CP (Tanaka 2002, Şener 2008, Takeuchi 2010, Alboiu & Hill 2011, Bondarenko 2017, Zyman 2017, Zyman 2018, Wurmbrand 2018, Fong 2019), respectively the dissolving of strictly separated A- and A'-positions (Obata & Epstein 2011, van Urk 2015) grew stronger. This idea is mainly used to explain cross-clausal A-dependencies (CCA) like Hyperraising, Hyper-ECM or Hyperagreement. CCA include A-dependencies (Case Assignment, Raising or Agreement) operating across a CP-boundary. Take Hyper-ECM as an example: It behaves like regular Exceptional Case-Marking (ECM), the only difference being that the embedded clause (containing the targeted DP) is a full CP. Mongolian, for example, shows this phenomenon: the embedded subject *Dulmaa* receives accusative case from the matrix verb *say*. The embedded clause, however, is a full CP and thus case assignment crosses a clause boundary.

(8) Mongolian (Fong 2019: 2)
Bat [margaash Dulmaa-g nom unsh-n gej] khel-sen.
Bat [tomorrow Dulmaa.ACC book read.N.PST COMP] say.PST
'Bat said that Dulmaa will read a book tomorrow.'

Hyper-ECM appears in several non-related languages, such as in Korean (Yoon 2007), Japanese (Horn 2008), Turkish (Şener & Şener 2011) or Uyghur (Shklovsky & Sudo 2014). Wurmbrand (2018) and others deny that Hyper-ECM is an instance of Object Raising, Binding, Prolepsis or deficient CPs and argues that the embedded clause is a fully functional CP, that the accusative case comes from the matrix clause and targets the embedded subject and that the targeted DP remains within the embedded CP. Wurmbrand (2018) brings forward several arguments for this claim (such as idiomatic reading, impossibility of embedded overt pronominal subjects, embedded negation, matrix predicate scope, clefts, Proper Binding Condition violations, island sensitivity or shifted indexicals).[4] I adopt her analysis of CCA and apply it to *wh*-constructions: she claims that languages allowing CCA contain an A-position inside CP which can be targeted by A-relations from the matrix and embedded clause. This A-position is made possible by an [A]-feature on C. Based on a composite probe approach by van Urk (2015), stating that C-heads may have mixed [A] and [A']-features, Wurmbrand (2018) proposes that in CCA-cases, C-heads can have [A]-features additionally to their [A']-features. If a C-head has [A]-features, a DP agreeing with it inherits these [A]-features. Then, A-movement from a mixed A/A'-position is possible as well as an A-relation targeting it. Languages differ in whether they have [A]-features on their C-head or not. Languages allowing CCA do have [A]-features on C, languages disallowing CCA do not. Figure 1 shows the general idea (adapted from Wurmbrand 2018: 15).

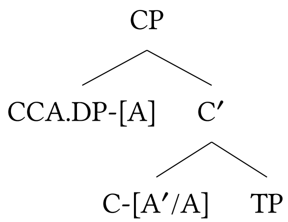

Figure 1: Embedded CP in CCA configurations

I will adapt the idea of a potential A-position in CP in order to derive a new account for multiple *wh*-questions typologically. This means that I will use the approach that CP is not a pure A'-domain and extend it to another phenomenon of grammar, namely *wh*-movement. *Wh*-movement has been the stereotypical instance of A'-movement for a long time. Assuming that this grammatical transformation might be A-movement (based on Richards 1997) sheds new light onto a very old discussion. What is new about my proposal is the idea that *wh*-movement has A-quality but still targets the CP-domain. In the following section, I combine and extend the accounts on CCA and multiple *wh*-questions.

[4]For detailed typological data and similar approaches see Bondarenko (2017), Bruening (2001), Deal (2017), Halpert (2015), Halpert & Zeller (2015), Podobryaev (2014), Polinsky & Potsdam (2001), Shklovsky & Sudo (2014), Şener & Şener (2011), Zyman (2017). While I cannot present the full analysis of CCA in these works due to the limited extent of this paper, I only use languages from works on CCA which clearly show that the A-dependencies are made possible via an A-position in CP and not other mechanisms such as prolepsis, etc.

3 *Wh*-movement as A-movement to CP

A-languages (like Bo, Cr, Se) remain a mystery for most accounts on multiple *wh*-constructions. In A-languages, *wh*-movement resembles A-movement in that it shows neither WCO-effects nor Superiority. However, so far, the usual landing site for *wh*-words has been the CP-domain, a pure A'-domain. Thus, all *wh*-movement targeting it has to be A'-movement. A-languages constitute a problem for this assumption: their *wh*-words do move but their movement does not have A'-quality. The question arises: if CP is an A'-domain, where do the *wh*-words move to? Several authors tried to find a position high enough to be close to CP and interpretable but simultaneously low enough as not to actually enter CP. Citko (1998) for example proposes an additional functional phrase between CP and TP, Bošković (2002) claims that *wh*-movement in A-languages is Focus-movement to a very high TP-position and Rudin (1988) and Richards (1997) use TP-adjunction as a target position for *wh*-movement in A-languages. This means they all face the same problem: there are apparently two kinds of languages: A'-languages (Bulgarian, Chinese, English…) in which all *wh*-words A'-move to CP, and A-languages in which only one or no *wh*-word A'-moves to CP. All others A-move to some very high functional position below CP but above TP. For the latter class, it seems to be difficult to find a proper landing-site and proper motivation to move at all. My idea is built on this struggle to find a destination for A-moved *wh*-words. I do not assume that these *wh*-words remain in TP or some inbetween functional projection between CP and TP. I claim that they target CP. This proposition is based on the ideas and data in Wurmbrand (2018) and related literature on CCA (Tanaka 2002, Şener 2008, Takeuchi 2010, Alboiu & Hill 2011, Obata & Epstein 2011, van Urk 2015, Bondarenko 2017, Zyman 2017, Zyman 2018, Wurmbrand 2018, Fong 2019). I adopt their claim that CP is not a pure A'-domain but may involve [A]-features and thus A-positions and apply it to *wh*-movement. This assumption has one advantage over several others proposed earlier: A-languages and A'-languages do not differ any longer by the domains they move to but only by the quality of movement. This means that all *wh*-movement targets CP where it can be interpreted. The only difference is the feature make-up of the CP-part to whose specifier a *wh*-phrase moves: if it has A-features, the movement is A-movement, if not, it is A'-movement. The following explains the theoretical part of the analysis in detail. Section 4 then presents an empirical cross-linguistic correlation between CCA and A-*wh*-movement, supporting my claims.

I adopt Richards's (1997) analysis that there are two types of languages: those which move all of their *wh*-words via A'-movement and those which move their *wh*-words by A-movement. I also adopt the idea that all *wh*-words are moved at LF, independently from what is moved or not on the surface (Huang 1982). However, contrary to Richards (1997) (and Bošković 2002, Citko 1998, or Rudin 1988), I claim that all of these movement-operations target the CP-domain instead of only adjoining to TP. In order to do so, I assume a split CP domain, as proposed in Rizzi (1997). Note that this proposal is still in a developmental stage and some parts of the analysis might not yet be fully fledged out. I aim to present a sketch that captures the typological correlation between CCA and multiple wh configurations but am aware that there is still space for theoretical improvement.

3.1 A'-languages

My analysis for A'-languages (Bulgarian-like, Chinese-like, English-like), is based on assumptions in Richards (1997) and Rudin (1988); I claim that all *wh*-words A'-move to CP. Whether this movement targets separate A'-SpecCPs or whether the *wh*-words form a cluster is irrelevant for the moment. What is important is that the part of CP responsible for *wh*-movement has pure A'-quality in these cases. Assuming an extended left periphery, respectively a split CP (based on Rizzi 1997), this A'-movement presumably targets the highest part of CP, ForceP. A'-*wh*-movement is triggered by a [wh] feature on C and all *wh*-words. [Wh] is an A'-feature.

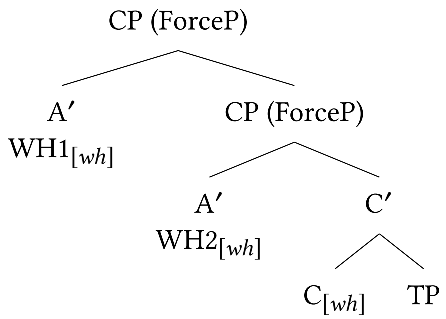

Figure 2: The left periphery in A'-languages

All *wh*-words are attracted by the same C-head via Multiple Agreement (see Hiraiwa 2001). This means that the *wh*-probe on C does not stop probing after it found a goal but continues to search. It finds the highest *wh*-word first and raises it to SpecCP (*Attract Closest*). Then, it finds the next *wh*-word and tucks it in below the first SpecCP (*Shortest Move*), see Figure 2. By that, Superiority arises: The *wh*-word from the highest base-generated position becomes the highest in the movement-structure. Since all *wh*-words undergo A'-movement, the moved *wh*-words leave their binding domain and WCO-effects arise.

3.2 A-languages

The more interesting phenomenon are A-languages (Bo, Cr, Se-like, Japanese-like and German-like). Richards (1997) and Bošković (2002) propose that all *wh*-words first adjoin to TP via Focus-movement and then one of them A'-moves up to CP to satisfy the [wh]-feature on C. The other *wh*-words remain adjoined to TP. Contrary to that, I sketch an analysis where no *wh*-word remains in TP. I propose that in A-languages, all *wh*-words A-move to a Focus-phrase (FocusP) within the CP domain. The idea that *wh*-movement in A-languages has focus qualities comes from Bošković (1997a,b, 2002). The FocusP (FocP) constitutes a part of the split CP domain and is located below ForceP but above TopicP. I claim that its head Foc has [focus] features and that in A-languages all *wh*-words have [focus] features as well. By that, they are attracted by Foc and moved to its specifiers. I assume that [focus] features have A-quality and that in A-languages movement to FocP is A-movement. One *wh*-word has a [wh] feature additionally to its [focus] feature and in a further step is probed by Force and A'-moved to ForceP, see Figure 3.

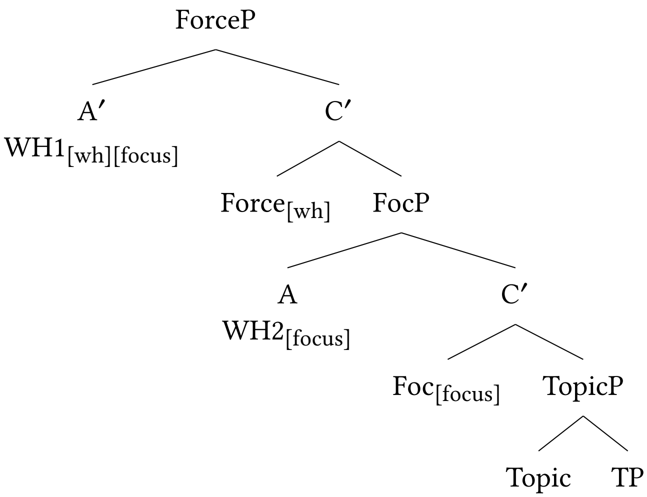

Figure 3: The left periphery in A-languages

The exact derivation looks like this: all *wh*-words bear a [focus] feature and one of them has an additonal [wh] as well. This is the main difference to A'-languages where all *wh*-words carry a [wh]-feature and none of them has a [focus]-feature. Foc is a multiply agreeing [focus] probe and attracts all *wh*-words. Recall that [focus] is an A-feature. Attracted by [focus] on Foc, all *wh*-words A-move and attach to specifiers of FocP.[5] Then, the one of them carrying a [wh] feature is attracted by the A'-probe [wh] on the higher-up Force and A'-moves to the ForceP specifier. Thereby only one *wh*-word A'-moves in A-languages whereas in A'-languages, all *wh*-words carry a [wh] and by that have to undergo A'-movement. A-languages lack Superiority due to the fact that only one *wh*-word bears an additional [wh]-feature whereas all others only have [focus] features.

The lack of WCO-effects in A-languages results from the intial Focus-movement of *wh*-words. In A-languages, all *wh*-words have a [focus] feature. Even in a non-multiple *wh*-construction, i.e. a construction with only one *wh*-word, this *wh*-word bears both [wh] and [focus]. Thus, it first A-moves to FocP (triggered by [focus]) and then A'-moves to ForceP (triggered by [wh]). (I assume that ForceP always has to be filled in order to derive interrogative semantics.) The moved *wh*-word leaves a trace in FocP which is able to bind an anaphor and WCO-effects are omitted. Figure 4 provides an example for an external argument bearing [wh]. The underlined features are the satisfied ones whereas the blank ones are those which still need to be valued.

In this framework, A-languages differ from A'-languages in the following way: in A'-languages, all *wh*-words carry an A'-[wh] feature. They are all attracted by an A'-head in CP (here Force) and A'-move directly to the the highest part of CP. The [wh]-attracting head probes multiply for [wh]. In A-languages, on the other hand, all *wh*-words carry a [focus]-feature and only one of them has an additional [wh]-feature. They are all attracted by a Focus-head in CP and A-move to FocP. Then, one of them, namely the one carrying the [wh]-feature, is attracted by [wh] on Force and A'-moves up to ForceP, the higher part of CP. This shows that CP has a higher-layered A'-part and a lower A-part. Important for my analysis is that both of them are constituent parts of the CP domain and that there are projections of CP below them too, enabling other processes such as CCA. I will come back to this assumption in §4. But first, there is one observation left that needs to be included into the framework: long-distance questions.

[5]Rizzi (1997) claims that FocP cannot be multiply filled. However, his claim is based on Italian focalized elements. As a matter of fact, Italian does not allow multiple *wh*-questions at all. Hence, the restriction on multiple focalized elements probably is language-specific.

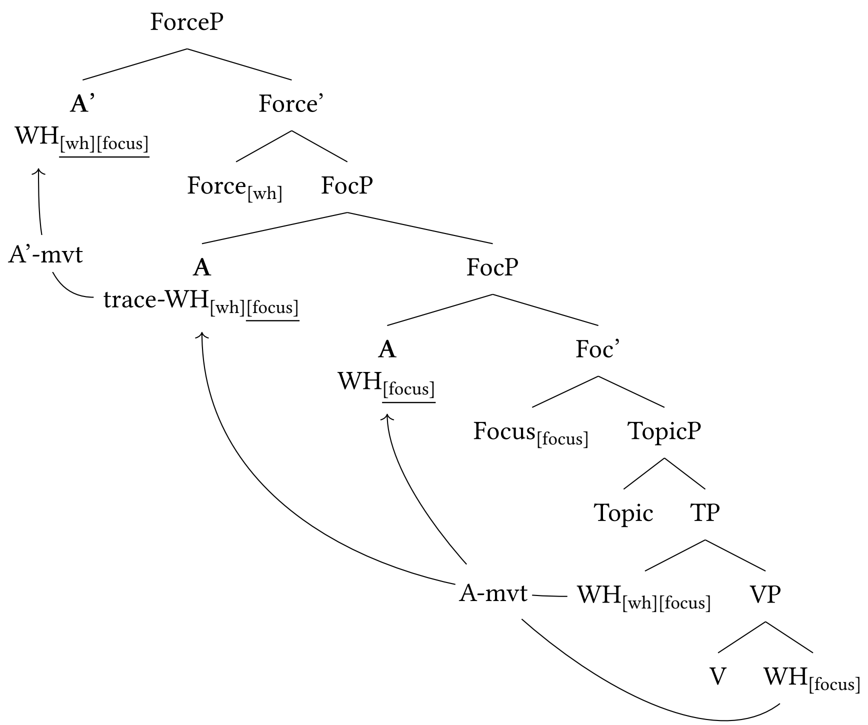

Figure 4: *Wh*-movement of an external argument through FocP

3.3 Long-distance questions

Long-distance questions show very peculiar behaviour in A-languages. As soon as *wh*-words are moved over a CP-border into another clause, A-languages adopt the qualities of A’-languages: Superiority between the *wh*-words arises (9a) and WCO-effects occur (9b).

(9) a. Superiority in Bo, Cr, Se (Richards 1997: 51)
* Koga si ko tvrdio da je istukao?
whom AUX who claimed that AUX beaten
‘Who did you claim beat whom?’

b. WCO in Bo, Cr, Se (Richards 1997: 33)
* Koga$_i$ njegova$_i$ majka misli da Marija voli?
who$_i$ his$_i$-NOM mother-NOM thinks that Maria loves
‘Who$_i$ does his$_i$ mother think that Mary loves?’

All *wh*-movement seems to be A’-movement as soon as it crosses a clause boundary. In my framework, these facts can be accounted for the following way: In

A-languages, all *wh*-words first focus-move since they have focus-qualities (A-qualities). I claim that focus-movement is clause-bound and that the FocusP does not represent a phase-edge. This means an embedded interrogative CP cannot be truncated to FocusP but needs a ForceP (probably due to semantic/selectional reasons, see Section 4.4.3 for an exact elaboration). Thus, whatever element wants to move out of an embedded interrogative clause has to move through ForceP. Since ForceP is always an A' domain (and that is a stipulation one has to make), long-distance movement has to be A'-movement. For A-languages, this means that they have to shift and act like A'-languages if their CP is embedded and they want to move *wh*-words out of this embedded clause.

4 Typological predictions

So far, I brought forward the idea that *wh*-movement has A-qualities and targets CP at the same time. This is a unification of two accounts. One the one hand, I agree with Richards (1997) and Bošković (2002) that wh-movement is A- and/or focus movement. On the other hand, I agree with Wurmbrand (2018) and other accounts on CCA that CP can host A-positions or [A]-features. I will now go a step further: if we assume that the possibility of allowing an A-position inside CP is a language-specific parametric option, then there should be two kinds of languages: such that allow A-moved elements within CP and thereby CCA and A-*wh*-movement and such which do not. This prediction is borne out: there seems to be a (unidirectional) typological correlation between the allowance of CCA and A-properties of *wh*-movement, stated in (10).

(10) Whenever a language A-moves its *wh*-words, it allows CCA (but not the other way around).[6]

For the examined languages, I tested whether they allow some instance of CCA (based on the criteria brought forward in the literature on CCA) and if their *wh*-words move via A-movement or A'-movement (based on Superiority and WCO-effects). There are four possible combinations resulting from this: languages allowing both CCA and A-*wh*-movement, languages allowing neither, languages allowing only CCA and languages allowing only A-*wh*-movement. Crucially,

[6]This generalisation is based upon a small set of languages and I do not claim its universal applicability. I looked at 10 languages from 6 different language families altogether. However, within those, the proposed generalisation appears to be plausible. Most of the languages are taken from current works on CCA.

there do not seem to be any languages in my sample allowing A-*wh*-movement but not CCA. The results I received are presented in Table 2.[7]

Table 2: Correlation between CCA and A-*wh*-movement

✓ A-*wh*-mvt ✓ CCA	✓ A-*wh*-mvt ✗ CCA	✗ A-*wh*-mvt ✓ CCA	✗ A-*wh*-mvt ✗ CCA
Turkish		Korean	English
Japanese		Brazilian Portuguese	Bulgarian
Greek		Romanian	
Hungarian		Mandarin Chinese	

One class is not attested, namely A-*wh*-movement without the possibility of CCA is not attested. This renders the unidirectional implication plausible between CCA and A-*wh*-movement in (10). I will shortly exemplify each attested class and then give a formal explanation for the correlation.

4.1 A-*wh*-movement and CCA

The expected outcome of combining A-*wh*-movement with allowance of CCA is a class of languages exhibiting both of these phenomena. Those are languages like Turkish, Japanese, Greek or Hungarian. Take Turkish as an example. It behaves like an A-language concerning *wh*-movement in that it does not show Superiority between the *wh*-words:

(11) a. Kim Kim-e ne-yi sat-miş?
who who.DAT what.ACC sell.REP
'Who has sold what to whom?'

b. Kim-e kim ne-yi sat-miş?

c. Ne-yi kim kim-e sat-miş?
(Özsoy 1996: 4)

[7]Language data taken from: Turkish: Özsoy (1996), Şener & Şener (2011); Japanese: Richards (1997), Hiraiwa (2001), Watanabe (1992); Greek: P.c. Christos Christopoulos, Sinopoulou (2008), Joseph (1976), Alexiadou & Anagnostopoulou (1999); Hungarian: Brody (1995), Richards (1997), Horvath (1998), Den Dikken (2017); Korean: Jeong (2003), Kim & Goodall (2016), Yoon (2007); Braz. Portuguese: P.c. Ingrid Cisneiro Facchim, Nunes (2009); Romanian: Rudin (1988), Rivero (1991); Mandarin Chinese: Cheng (1997), Richards (1997); English: P.c. Sean Anstiss, Richards (1997), Ross (1967); Bulgarian: P.c. Marchela Oleinikova, Aline Panajotov, Rudin (1986, 1988), Richards (1997).

Additionally, Turkish allows Hyper-ECM, an instance of CCA:

(12) (Şener & Şener 2011: 5)
Pelin [dün Mert-i sinav-a gir-di diye] bil-iyor.
Pelin.NOM [yesterday Mert.ACC exam.DAT enter.PAST C] know.PRES
'Pelin thinks that yesterday, Mert took an exam.'

4.2 No A-*wh*-movement, no CCA

Languages allowing neither A-*wh*-movement nor CCA are equally present. English and Bulgarian behave like that. Bulgarian shows Superiority between its *wh*-words as well as WCO-effects (see (4) and (5) from above). Therefore, its *wh*-movement has A'-quality. In addition to that, there are no CCA phenomena in Bulgarian. ECM is not possible, either into non-finite clauses (introduced by the particle *da*) or into finite clauses. Neither are there instances of Hyperraising.

(13) (Rudin 1986: 192)
Njama koj / *kogo da otide.
isn't who.NOM / *whom.ACC to go
'There isn't anyone to go.'

Bulgarian thus neither has A-*wh*-movement nor does it allow CCA. In conclusion its CP-domain is a pure A'-domain.

4.3 No A-*wh*-movement but CCA

Finally and most interestingly, there are several languages which do not A-move their *wh*-words but do exhibit CCA phenomena. This means that CCA cannot be directly dependent on A-*wh*-movement. Amongst these languages are Korean, Brazilian Portuguese, Romanian and Mandarin Chinese. I take a closer look at Korean here. It behaves like an A'-language when it comes to *wh*-movement. It does, for example, show Superiority effects:

(14) (Jeong 2003: 131)
a. Mwues-ul wae ne-nun sa-ess-ni?
what.ACC why you.TOP buy.PAST.Q
'Why did you buy what?'
b. * Wae mwues-ul ne-nun sa-ess-ni?
why what.ACC you.TOP buy.PAST.Q

Korean does also allow CCA, namely Hyper-ECM.

(15) (Yoon 2007: 630)
Cheli-nun wonswungi-ka banana-lul cal meknunta-ko sayngkakhanta.
Cheli.TOP monkey.ACC banana.ACC well eat.COMP think.3.SG
'Cheli thinks monkeys love to eat banana.'

This means that its ability for CCA is not dependent on the quality of its *wh*-movement. However, the absence of the inverse configuration, a language allowing A-*wh*-movement but not CCA, indicates that the character of *wh*-movement determines CCA but not the other way around.

4.4 Generalisation

As has been shown in section 4 so far, there are some languages allowing both A-*wh*-movement and CCA, and others allowing neither. Additionally, there are languages which allow CCA but not A-*wh*-movement but no languages that allow A-*wh*-movement but not CCA. This renders the unidirectional generalisation given in (10), repeated below.

(16) Whenever a language A-moves its *wh*-words, it allows CCA (but not the other way around).

In this last subsection, I will give a syntactic analysis on how the correlation between A-*wh*-movement and CCA could be explained. As noted above, both of them involve an A-position inside CP and thus derive from the same grammatical source: allowance of [A]-features inside the CP-domain.

4.4.1 A split hierarchical CP domain

I assume that within a single CP-domain, A'-positions and A-positions are allowed. However, they stand in a hierarchical relation to each other: A'-projections can embed A-projections but not the other way around. My analysis is built upon a split CP domain, adopting Rizzi (1997). I assume the following structure for CP:[8]

(17) [ForceP [FocusP [TopicP]]]

[8] Rizzi (1997) claims that there are at least an additonal FinP and another FocusP below TopicP. These projections are irrelevant for me at the moment, hence I do not include them in my schematic structures.

I assume that ForceP always has A'-qualities, sustaining the traditional assumption of CP having A'-quality. It hosts one (or more) A'-specifiers which can be targeted by A'-*wh*-movement and serve as a left-edge to escape an embedded interrogative clause. Embedded in ForceP is FocusP, which can have A-properties. In A-languages, A-*wh*-movement targets ForceP and A-moves its *wh*-words to that phrase. (Presumably, FocusP can have A'-qualities instead of A-qualities in other languages.) Embedded into ocusP is TopicP. I claim that elements participating in CCA relations (like the accusative DP in Hyper-ECM or the embedded element in Long-Distance Agreement) move to TopicP which, in languages allowing CCA, has A-properties. This assumption is based on Şener (2008) and comes from the fact that very often, CCA is restricted to topicalized elements (as it is the case in Tsez and Turkish). Tsez Long-Distance Agreement (LDA) becomes obligatory when the embedded element ('bread' in (18)) is topic-marked (particle *-(go)n*).

(18) Tsez (Polinsky & Potsdam 2001: 610)

a. Eni-r [užā magalu-**(go)n** b-āc'ru-łi]
mother-DAT [boy-ERG bread.**III**.ABS-**TOP** **III**-eat-PST.PRT.NMLZ]
b-iy-xo.
III-know-PRES
('The mother knows the boy ate the bread.')
'The mother knows that the bread, the boy ate.'

b. * Eni-r [užā magalu-**(go)n** b-āc'ru-łi]
mother-DAT [boy-ERG bread.**III**.ABS-**TOP** **III**-eat-PST.PRT.NMLZ]
r-iy-xo.
IV-know-PRES
'The mother knows the boy ate the bread.'

Turkish Hyper-ECM is restricted to topicalized elements. Assuming that the object NPI *anybody* cannot be topicalized predicts that it is excluded from undergoing Hyper-ECM. This prediction is borne out:

(19) Turkish (Şener 2008: 14)
* [Kimse-**yi** gel-di] san-ma-dı-m.
pro [anybody-**ACC** come-PAST] believe-NEG-PAST-1SG
'I didn't think anybody came late.'

Taking these facts into consideration and based on the analysis in Şener (2008), I claim that the element undergoing CCA moves to or is located in TopicP. This yields the structure in Figure 5 for the CP-domain.

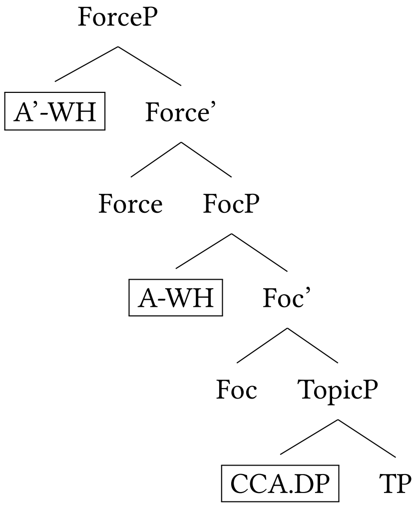

Figure 5: A'/A threshold between ForceP and FocusP

Table 3: A'/A threshold options

[ForceP	[FocusP	[TopicP]]]
A'	A'	A'
A'	A'	A
A'	A	A

4.4.2 The A'/A shift

This leads to a genereal conclusion about the CP-domain: I assume that all parts of CP lower than ForceP (i.e. FocusP and TopicP) can either have A'- or A-quality. Let us assume that within one domain (and I claim that CP still forms a single domain, consisting of multiple phrases), an A'-position can embed an A-position but not the other way around. This means that an A'-ForceP can embed an A-FocusP but an A-FocusP cannot embed an A'-TopicP, only an A-TopicP. At some point, there is an A'/A-threshold within CP. All projections above this threshold have A'-quality, all projections underneath it have A-quality.[9] In Table 3 the relevant CP-projections with their embedding options are presented.

Languages part into different groups regarding this threshold. There are languages where the shift from A' to A lies between ForceP and FocusP, there are languages where it lies between FocusP and TopicP and then there are languages where it lies even lower, below TopicP.[10] As explained above, I assume that A-*wh*-movement requires a FocusP with A-qualities and CCA requires a TopicP

[9]A reviewer noted that a similar assumption could be modeled in the framework by Williams (2002) and subsequent works like Keine & Poole (2018).

[10]David Pesetsky, p.c., pointed out to me that this threshold could be even lower, somewhere inside TP. This could explain "regular" ECM-phenomena, such as English ECM and I leave the idea open for further research.

with A-qualities. I assume that there is a language-specific shifting threshold. Depending on the language type, the locus of the A'/A-shift varies. This assumption provides an explanation for the A-*wh*-movement + CCA combinations presented in Table 2. Take for example the group of languages allowing both A-*wh*-movement and CCA as shown in (20): the A'/A-shift lies between ForceP and FocusP, as in Figure 5. This results in an A-FocusP (enabling A-*wh*-movement) and an A-TopicP (enabling CCA). The exact shifting location for each (im)possible language type is given below (the shift is indicated as "→").

(20) a. ✓A-*wh*-mvt, ✓CCA languages shift between ForceP and FocusP

b. $[_{\boxed{\text{A'}}}$ ForceP $\rightarrow[_{\boxed{\text{A}}}$ FocusP $[_{\boxed{\text{A}}}$ TopicP]]]

(21) a. ✗A-*wh*-mvt, ✓CCA languages shift between FocusP and TopicP

b. $[_{\boxed{\text{A'}}}$ ForceP $[_{\boxed{\text{A'}}}$ FocusP $\rightarrow[_{\boxed{\text{A}}}$ TopicP]]]

(22) a. ✗A-*wh*-mvt, ✗CCA languages shift below TopicP

b. $[_{\boxed{\text{A'}}}$ ForceP $[_{\boxed{\text{A'}}}$ FocusP $[_{\boxed{\text{A'}}}$ TopicP $\rightarrow[_{\boxed{\text{A}}}$]]]]

(23) a. ✓A-*wh*-mvt, ✗CCA languages are excludeed because they would require two shifts: One from A' to A between ForceP and FocusP and (a syntactically excluded) one from A to A' between FocusP and TopicP.

b. * $[_{\boxed{\text{A'}}}$ ForceP $\rightarrow[_{\boxed{\text{A}}}$ FocusP $\rightarrow[_{\boxed{\text{A'}}}$ TopicP]]]

4.4.3 Embedded clauses

It lies in the nature of CCA that they involve embedded clauses. I noted above that interrogative embedded clauses necessarily have to project a ForceP in order to explain the A'-behaviour of long-distance *wh*-movement in A-languages. This probably is the case due to selectional requirements: the embedded clause has to be typed as interrogative, which can only be done in ForceP. I claim that no such restriction is posited onto embedded CCA clauses. They are truncated down to TopicP, or only project a TopicP. This is based on the assumption that functional heads only project when there is a reason to do so (Bošković 1997b). The embedded CP in a CCA construction does neither have a ForceP nor a FocusP. By that, the specifier of TopicP becomes the left-edge of the embedded clause (see Şener 2008 for a similar claim). TopicP has A-qualities in CCA-languages and therefore, the left-edge position is an A-position. This enables A-relations into the embedded clause and A-movement out of it to a higher clause. It also predicts that if both *wh*-movement and CCA occur together, *wh*-movement should block CCA. This should be the case since *wh*-movement requires an (A'-)ForceP and CCA requires the absence of a ForceP. The prediction is illustrated in Zyman (2018) for Janitzio P'urhepecha.

(24) Janitzio P'urhepecha (Zyman 2018: 114)
 * ¿Ambe=ri ueka-sïn-∅-gi Alicia-ni eska kusta-a-∅-ka?
 what=2sS want-HAB-PRS-INT Alice-ACC that play-FUT-PRS-SJV
 Int.: 'What do you want Alice to play?'

5 Summary

I examined a typological correlation between *wh*-constructions exhibiting A-quality and CCA-phenomena. A new syntactic analysis for multiple *wh*-questions is presented which makes the right predictions about A-*wh*-questions and CCA-dependencies. I adopt the account in Richards (1997) who divides languages into two classes regarding their LF: those which A-move their *wh*-words and those which A'-move them. I extend Richards' claim in that I propose that all *wh*-movement targets the CP domain. Assuming a split CP-domain (Rizzi 1997), I propose an analysis in which A'-*wh*-movement, A-*wh*-movement as well as CCA-elements target different CP-projections. A'-*wh*-movement uses ForceP as a landing site, A-*wh*-movement FocusP and CCA TopicP. Given the hierarchical embedding structure of CP-projections such as ForceP, FocusP and TopicP, an implicational relation between A'-*wh*-mvt, A-*wh*-mvt and CCA arises. I bring forward an A'/A-shifting threshold inside CP which varies in height, depending on the language type. This means that the CP-domain has an A'-part and an A-part. At which exact point A'-positions end and A-positions begin is defined by a shifting threshold. This threshold varies language-specifically and can either be located between ForceP and FocusP, between FocusP and TopicP or below TopicP. Languages can be divided into classes depending on the location of their A'/A-shift. This assumption renders the right predictions concerning the observed typological generalisation "whenever a language A-moves its *wh*-words, it allows CCA (but not the other way around)". Additionally, I propose that embedded *wh*-constructions require an (A'-)ForceP, assigning all long-distance *wh*-movement A'-quality. CCA-constructions, on the other hand, have a truncated embedded CP, consisting solely of an (A-)TopicP, rendering their left-edge CP position an A-position.

There are still several open issues remaining. Above all, a more detailed derivation of the CP-domain. Furthermore, in order to deploy a valid typological generalisation, a larger set of languages has to be examined. *Wh*-in-situ languages should be investigated more carefully since, for the moment, I simply adopt Richards's (1997) and Huang's (1982) claims about their LF. Then, there are several languages posing fundamental problems like German which is hard to categorise into an A'- or A-language at all (see Wiltschko 1997 for an exact analysis). A closer look will have to be taken on D-linked *wh*-words, since they behave very different from regular *wh*-words (see for example Pesetsky 1987, Krapova 1999). Finally, there might be a possbile correlation with the ICH proposed in Wurmbrand & Lohninger (2019), regarding the type of matrix predicate and the behaviour of long-distance *wh*-questions.

Abbreviations

ACC	Accusative Case	NOM	Nominative Case
CCA	Cross-clausal A-dependencies	WCO	Weak Cross-over
ECM	Exceptional Case Marking		

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Chapter 7

How strict should Cartography be? A view from Slavic

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This article addresses one of the core questions in syntactic theory – the architecture of the (universal) tree. The question is crucial when we consider the recent rise of strict syntactic Cartography (Rizzi 1997, Cinque 1999, Cinque & Rizzi 2010), a research program that seeks to map syntactic structure in as highly an atomized and universal a fashion as possible. In this article, I present two different arguments from Slavic syntax that the strictest current hypothesis about syntactic Cartography is insufficiently flexible to account for the various phenomena under consideration. In particular, I look at multiple WH-movement in Slavic, and the representation of Topic/Focus through word order and prosody. Both areas pose significant problems for strict Cartography. These case studies should be taken seriously as important empirical tests for a theory that posits a fixed universal and extensive set of syntactic primitives with the additional restrictions imposed by considerations of anti-symmetry, such as single specifier positions and no free process of adjunction. In conclusion I discuss the appropriate place for Cartography in syntax, and its connection to syntactic features.

1 Introduction

Syntactic Cartography "is a research topic asking the question: what are the right structural maps for natural language syntax?" (Cinque & Rizzi 2010: 51). The answer given by Cinque, Rizzi and others (especially in Cinque 1999, Cinque & Rizzi 2010, Rizzi & Cinque 2016), is what I refer to as "Strict Cartography", and is comprised of five basic tenets, given directly below (the order of presentation is for expository purposes only). The primarily focus of this article is on the third,

John Frederick Bailyn. 2023. How strict should Cartography be? A view from Slavic. In Zheng Shen & Sabine Laszakovits (eds.), *The size of things II: Movement, features, and interpretation*, 141–158. Berlin: Language Science Press. DOI: 10.5281/zenodo.8427875

fourth and fifth of these, though the first two are also important and issues they raise have been discussed elsewhere in the literature (see the articles in van van Craenenbroeck 2009).

First, Strict Cartography proposes that every piece of morphology has unique syntactic status, and corresponds to a single category head in syntactic structure, typically with unique interpretation. This is referred to as the *One Feature One Head* principle:

(1) One feature one head (OFOH, Cinque & Rizzi 2010: 52)
Each morphosyntactic feature corresponds to an independent syntactic head with a specific slot in its functional hierarchy.

Second, the base order of the syntactic categories is universal. The evidence in favor of universal fixed order takes the form of transitivity arguments: If A > B and B > C, then A > C (as argued to hold for adverbs in a range of languages in Cinque 1999 for the TP-internal adverbial domain). For arguments that call into question the universality of a single underlying order, see Bobaljik (1999) and Nilsen (2003) among others.

Third, multiple specifier positions associated with a single syntactic head are disallowed. Fourth, there is no adjunction. Combined with the unavailability of multiple specifiers, this entails that every left edge position is associated with a unique functional head in the functional hierarchy.

Fifth, surface word order patterns that do not reflect the universal hierarchy are derivable by a limited set of derivational options – (i) head movement and (ii) phrasal movement into specifier positions (including remnant movement of phrases with sub-extraction "gaps" and "roll-up" movements). Movements into such positions are typically motivated by feature requirements of the relevant heads, though it is possible to accommodate non feature-driven movements.[1] Cartographic and non-cartographic approaches to the (traditional) CP domain are shown in Figures 1–2.

[1] A reviewer points out that nothing about the postulation of an extensive set of "cartographic" heads entails a ban on multiple specifiers or adjunction; rather, these restrictions follow from a strong anti-symmetric version of cartography (following Kayne 1994). However, Cinque & Rizzi (2010) explicitly motivate the minimalist and anti-symmetric nature of the cartographic program, and these extensions have become integral to Strict Cartography. Naturally, any theory involving functional heads is in some sense a cartographic mapping of syntactic structure; what distinguishes Strict Cartography are the universality of the posited syntactic heads, and the limitation of phrasal positions to being complements or unique specifiers of each head. This version of Cartography, without multiple specifiers or adjuncts, is what I am concerned with in this article.

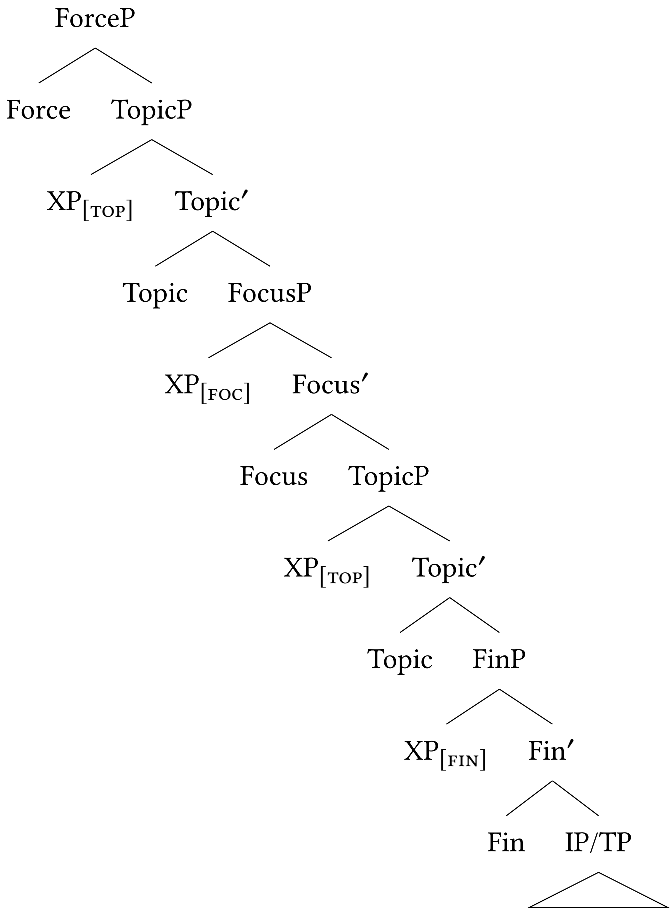


Figure 1: Cartographic approach (Rizzi 1997)

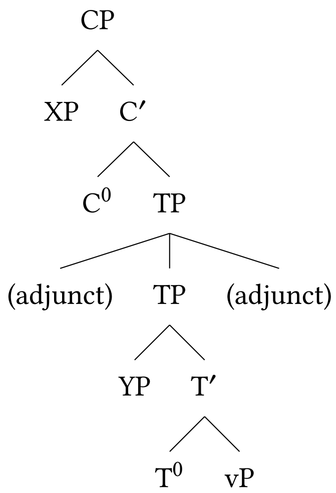


Figure 2: Non-cartographic approach (Rizzi 1997)

2 Multiple wh-movement

Many Slavic languages show multiple wh-fronting (MWF, Rudin 1988). As was observed by Rudin and discussed in much subsequent work (esp. Richards 1997, Bošković 1997b, 2002, a.o.), Slavic and other MWF languages seem to pattern into two kinds – those such as Bulgarian, in which the wh elements appear in fixed order, obey superiority, and act as an uninterrupted cluster, and those such as Serbo-Croatian or Russian, in which the order appears free, but the first wh element stands apart, with clitics, parentheticals and other elements able to follow it, preceding the subsequent wh elements. We will take Bulgarian to represent the former type, and Serbo-Croatian, the latter type. (2a–2b) show the basic properties of Bulgarian and Serbo-Croatian possibilities respectively:

(2) Multiple overt wh-movement

a. Bulgarian

i. Koj koga vižda?
who$_{\text{NOM}}$ whom$_{\text{ACC}}$ sees
'Who sees who?'

ii. * Koga koj vižda?
whom$_{\text{ACC}}$ who$_{\text{NOM}}$ sees

b. Serbo-Croatian

i. Ko koga vidi?
who$_{NOM}$ whom$_{ACC}$ sees

ii. Koga ko vidi?
whom$_{ACC}$ who$_{NOM}$ sees

In (2a-i–ii) we see that the Bulgarian type obeys superiority among its fronted wh elements, whereby fronted wh subjects must precede fronted wh objects, something the acceptability of both orders in (2b) shows is not the case in Serbo-Croatian. The two language types also differ in terms of the cluster-like behavior of the fronted wh elements in the Bulgarian type, but not the Serbo-Croatian type, as shown in (3–4):

(3) Bulgarian

a. Koj koga e vidjal?
who$_{NOM}$ whom$_{ACC}$ aux seen
'Who saw whom?'

b. * Koj *e* koga vidjal?
who$_{NOM}$ AUX whom$_{ACC}$ seen

(4) Serbo-Croatian

a. Ko *je* koga vidio?
who$_{NOM}$ AUX whom$_{ACC}$ seen

b. * Ko koga *je* vidio?
who$_{NOM}$ whom$_{ACC}$ AUX seen

In (3a) we see that Bulgarian auxiliary clitics (or any other material, including pronominal clitics) must follow all wh-phrases, and cannot intervene among them as in (3b). The opposite holds in Serbo-Croatian where such elements follow the first wh element (4a) and cannot follow all of them (4b). Examples with 3 elements are given in (5).

(5) a. Ko šta gdje kupuje?
who$_{NOM}$ what$_{ACC}$ where buys

b. * Ko-Nom kupuje šta-ACC gdje

c. * Ko-Nom šta-ACC kupuje gdje

d. * Ko-Nom gdje kupuje šta-ACC

Both properties (superiority and clustering) have been attributed in the Bulgarian case to the ability (indeed the necessity) to have either a multiply filled SpecCP position (Rudin 1988, Grewendorf 2001, Bailyn 2018) or multiple specifiers of a single C^0 head (Rudin 1988, Bošković 1997a, 2002).

Rudin's initial proposal for the various kinds of wh-fronting languages, including English, is shown in Figure 3, where wh elements are represented by "K".

The Bulgarian type, labeled by Rudin as [+Multiply Filled Spec] or [+MFS], is shown on the left, with a multiply-filled Comp position (the equivalent of SpecCP). Lack of intervening clitics and other cluster-like behavior derives from the [+MFS] property. In the Serbo-Croatian type, conversely, the first wh-phrase fills SpecCP, as it does in English, while all of the other wh's obligatorily cluster on the left edge of S (IP/TP), as shown above. This accounts for the position of clitics after the first wh-phrase (presumably being located in the C^0 position, not shown in Rudin's original pre-X'-theory tree, while parentheticals also intervene, being on the far left edge of IP. The distinction between the two kinds of multiple wh-movement languages was later recast by Richards (1997, 2001) and much subsequent work as the difference between a set of multiple Spec positions on the CP edge, for Bulgarian, and on the IP edge, for Serbo-Croatian, as shown in Figure 4.

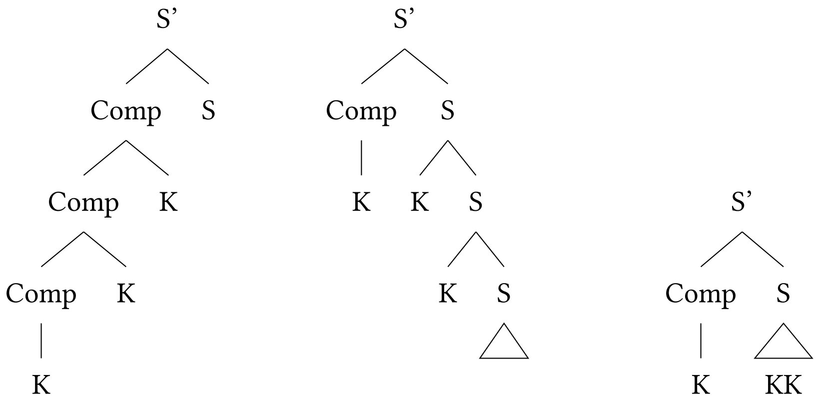
Thus Rudin's initial intuition of CP-level and IP-level left attachment is maintained prominently by Richards (1997), who labels the types "CP-absorption" and "IP-absorption". Crucially, both language-types involve multiple specifiers.[2]

Besides cluster interruption, the Serbo-Croatian/Russian kind has another well-known property, namely, lack of superiority among all the wh-elements. Thus, in Russian, as we have already seen for Serbo-Croatian, any order of the multiple wh elements is essentially equally acceptable, here seen with 3 elements:

(6) a. Kto kogo komu predstavil? (Rus)
who$_{\text{NOM}}$ whom$_{\text{ACC}}$ whom$_{\text{DAT}}$ introduced
'Who introduced who to whom?'

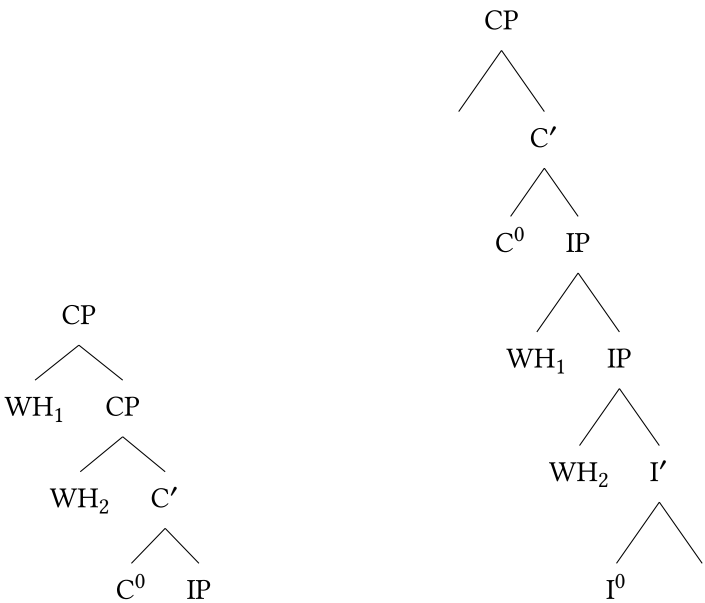
b. Kto komu kogo predstavil?
who$_{\text{NOM}}$ whom$_{\text{DAT}}$ whom$_{\text{ACC}}$ introduced

[2] Various complex analyses have been developed in the syntactic literature to account for the properties of the two kinds of Multiple wh movement languages. The accounts vary and have varying advantages, but all share the conclusion that we cannot analyze the surface position of the Bulgarian wh-elements as being specifiers of distinct heads, as would be required by Strict Cartography. The head-like nature of auxiliary and pronominal clitics, on a strict cartographic approach, indicates that the elements to the left must be located in multiple specifiers of a single head.



Bulgarian type Serbo-Croatian type English type

Figure 3: Rudin (1988)’s structure for multiple WH (here “K”) languages



(a) “CP-absorption” (Bulgarian, Chinese) (b) “IP-absorption” (Serbo-Croatian, Japanese)

Figure 4: Richards’s (1997) structures of two kinds of Multiple WH languages

c. Kogo kto komu predstavil?
   whom_{ACC} who_{NOM} whom_{DAT} introduced

d. Kogo komu kto predstavil?
   whom_{ACC} whom_{DAT} who_{NOM} introduced

e. Komu kto kogo predstavil?
   whom_{DAT} who_{NOM} whom_{ACC} introduced

f. Komu kogo kto predstavil?
   whom_{DAT} whom_{ACC} who_{NOM} introduced

Lack of superiority is accounted for, typically, by the equidistant property of multiple specifier positions. All wh elements cluster on the left edge of IP, as multiple adjuncts or specifiers, and are thus all equidistant from the true wh position, SpecCP, to which any one of them can raise. Were each wh-phrase to occupy a distinct Specifier of a distinct head, we would not expect equidistance to apply, and would therefore expect ordering asymmetries that we do no find. In Bulgarian, on the other hand, where there is a strong requirement that subjects (canonical agents) precede all other wh-phrases, the structural superiority of the subject is maintained derivationally, either as an order-preservation effect (Bailyn 2018), or through the device of Tucking-in (Richards 1997). In either account multiple specifiers are needed to account for the strict clustering properties. Thus, all analyses that cover the wide range of facts involved in these two kinds of languages rely on multiple specifiers or multiple adjunction as a crucial component of the analysis (Rudin 1988, Richards 1997, Bošković 1997a, 2002). For strict cartographic approaches, these constructions appear to cause intractable problems. Naturally, they would allow for multiple landing sites for these elements. Thus, on such an approach, we might expect something like Figure 5.

Any such analysis would face strong empirical hurdles. (The following difficulties do not constitute definitive evidence against such an approach, however they do shift the burden of proof to the cartographic analyses, to both descriptively handle the situation and motivate the derivational steps required to make it work.) First, such an approach would predict specific interpretations to be associated with the various fronted wh elements. The literature does not report any such effects, other than the general tendency for d-linked wh-phrases to precede non d-linked ones, discussed below. However, that is a binary division, and yet multiple wh-fronting of more than two elements is common, and there is no evidence of any consistent semantic distinction among them. Second, the cartographic approach would not predict any clustering effects (contrary to fact).

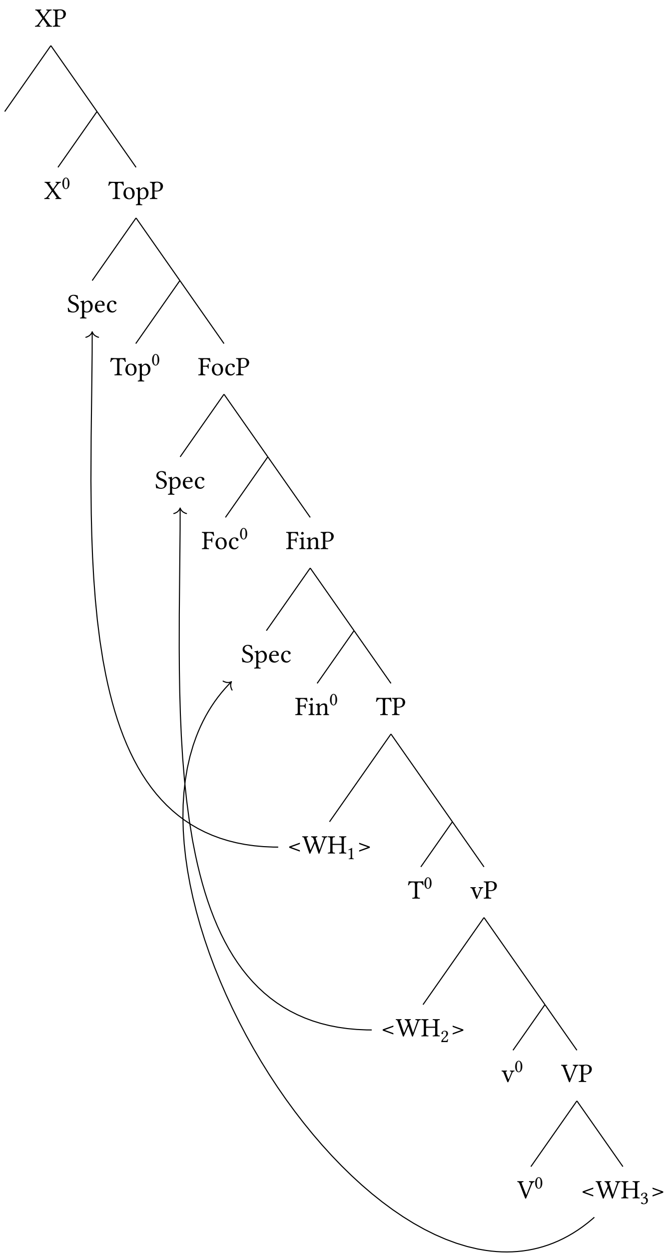


Figure 5: Possible cartographic distribution of landing sites for 3 fronted WH phrases.

Third, it would have no obvious explanation for the lack of superiority generally found in the Russian/Serbo-Croatian type.[3]

One attempt to apply a cartographic approach to the multiple wh situation in Slavic is found in Krapova & Cinque (2008), who seek distinctions among fronted wh-phrases that might be clues to their positioning. Their results clearly show that D-linked and non D-linked elements are often uniquely ordered with respect to each other, resulting in the tendencies listed in Table 1.

Table 1: Krapova & Cinque (2008: 189) summary of Bulgarian WH orders.

D-linked wh-	Non-D-linked wh-phrases						
koj/koja/koe/koi(N) (kogo) (na kogo) (marked) kakvo$_{subj/obj}$ (marked) kâde/koga	kogo	na kogo	koga	kâde	kakvo$_{Subj}$ kolko$_{Subj}$ N	kakvo$_{Obj}$ (na)kolko$_{Obj}$ N	kak

Krapova and Cinque (2008) do not provide any individual derivations, but for a case of two wh-phrases, one of which is D-linked and the other not, it is clear they assume distinct functional category specifier positions as landing sites, consistent with discourse roles of certain phrases in the left-periphery. They demonstrate clearly that there are discourse preferences associated with the orders found, in line with general information structure principle of given > new, to be discussed in Section 3 below. However, it is not possible to determine if Krapova and Cinque are committed to a fully cartographic analysis in which the various wh elements land within each general zone (D-linked; non-D-linked), that is, whether each lands in a distinct specifier position, or if they assume multiple specifiers. In either case, the analysis would still have to account for the freedom of ordering among non-initial WH elements, and the inability for the entire WH-cluster to be broken up (something usually attributed to sharing of a single specifier position).

Furthermore, some sort of Superiority seems to be at play among non-D-linked wh elements – a structure-preserving effect. Once D-linking is controlled for, Krapova & Cinque conclude that “various clues seem to suggest that [surface wh] ordering reflects the order of wh-phrases prior to wh-movement” (p. 189). They analyze such structure preservation as resulting from a chain-sensitive form of

[3]That approach would also have difficulty with the well-known wh-island-voiding behavior seen in some dialects of Bulgarian (Rudin 1988, Richards 1997).

Relativized Minimality, but do not address the issue of the landing site of non D-linked wh elements. Clearly, for surface positions to line up with base-positions, the lower left periphery would have to replicate the argument domain (a highly unlikely state of affairs, and one that is inconsistent with cartographic views of the left-periphery since Rizzi 1997). Rather, it is generally assumed (Richards 1997 and much subsequent work) that there exist multiply filled or multiple specifiers, which are equidistant, allowing apparent lack of superiority effects. Even if Bulgarian shows a higher rigid left wh order, either multiple specifiers would have to be allowed, or a highly flexible set of functional categories would have to exist, both contradicting basic tenets of Strict Cartography.

Finally, Krapova & Cinque (2008) also do not address how the wh elements form a syntactic cluster, which is well-known (Grewendorf 2001, Bailyn 2018). If, to account for cluster-like behavior, such an account would posit multiple specifiers of a single head, then even this partly cartographic approach would be forced to abandon the strong cartographic requirement of one head – one specifier to accommodate multiple occurrences in varying order, within each larger set. If not, clustering appears to remain a mystery within Strict Cartography.

Either way, a fully cartographic account of the landing sites of multiple wh movement structures without recourse to adjuncts or multiple specifiers has yet to be provided. Note that this is for the one Slavic language that shows some degree of rigidity in the wh left periphery. For those with none, such as Serbo-Croatian/Russian, a cartographic approach remains feasible, but would require extensive manipulation of the functional hierarchy, since each attested order, with identical semantics (other than scope), would have to be derived through a highly intricate set of (unmotivated) remnant movements. The burden of proof thus remains with the strict cartographic approaches to provide an analysis that maintains the tenets of Strict Cartography discussed above, while at the same time accounting for the clustering and superiority properties of these well-known multiple-wh language types.

3 Topic/Focus structure

As is well-known, Slavic free word order sentences often follow traditional “Theme-Rheme” structure, now sometimes equated with Topic>Focus structure. Traditional analyses go back to the Prague School of the early 20th century under the notion of Functional Sentence Perspective (FSP).

(7) a. Functional Sentence Perspective (FSP) (Mathesius 1939, Adamec 1966) = the essentially bipartite division of every sentence into *Theme* before *Rheme*

b. *Theme*: (or *Topic* or *Departure Point*): "what is known in the given situation ... and from which the speaker departs"

c. *Rheme*: (or *Focus* or *Comment* or *Core*): "what the speaker expresses about the departure point or with attention to it"

Syntacticization of Theme-Rheme structure within generative grammar found new support within Rizzi's (1997) left-periphery, whereby TopP and FocP projections are part of the CP-level functional hierarchy. Given that thematic/topical/ given information indeed precedes rhematic/focal/new information, a cartographic account of such basic discourse divisions would look something like Figure 6.

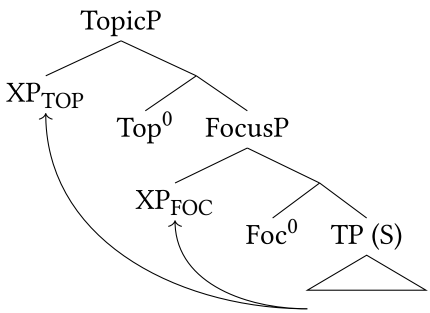


Figure 6: Cartographic approach to Topic > Focus order.

There are various problems with Figure 6 as a derivational approach to surface word order in such languages. First, it is often the case that non-Topic non-Focus material comes between Topic and Focus, and that Focus often appears at the right edge (especially with neutral intonation patterns), as in the (b) answer to the (a) question in (8):

(8) a. Russian(SVO)
Kto čitaet gazetu?
Who reads newspaper
'Who reads newspaper?'

b. Russian (OVS)
[Gazetu] [X] čitaet [X] Ivan.
[newspaper]$_{\text{TOP}}$ reads [Ivan]$_{\text{FOC}}$
'IVAN is reading the paper.'

The simple OVS answer in (8b) is generally judged to allow neutral material, the verb itself as well as other elements, parentheticals included, between the topic *gazetu* and the focal answer *Ivan*:

(9) Discourse division of (8b): Topic > X (neutral) > Focus

Non-cartographic approaches to the OVS derivation that recognize the discourse structure in (9) have utilized right adjunction, Extraposition, and even right-Specifiers (see Bailyn 2012 for an overview). All such mechanisms are explicitly unavailable within strict cartographic approaches.

There are two possible derivations of the OVS order in (8b) under Strict Cartography, each of them requiring positing an otherwise unattested functional category in addition to TopP and FocP.

In the first type of derivation, the elements Object > V > Subject are all independent constituents, as in the derivation outlined here:

(10) Strict cartographic derivation of O_{TOP}-V-S_{FOC} order: (1st attempt)
Step 1: The (focal) subject raises to SpecFoc.
Step 2: the remnant vP containing the verb and its Object (in that order) undergoes remnant movement to an XP between FocP and TopP.
Step 3: The topical Object sub-extracts from the raised vP into SpecTopP.

The derivation in (10) involves several problematic steps. First, Step 2 involves both an unmotivated functional category and an unmotivated movement step. Second, Step 3 involves sub-extraction from an already A'-moved element, which violates Rizzi's (2004) Criterial Freezing, and is generally not thought to be possible for already moved elements (Stepanov 2007). Furthermore, at no point in the derivation does the topical Object move through a high A-position, despite significant evidence of its A-properties (Bailyn 2004, Antonyuk 2021, Pereltsvaig 2021).

The second type of derivation first derives an [Obj > V] extended constituent, via fronting into a low TopicP within TP, out of which the subject moves to SpecFoc before remnant movement into SpecTop. This is sketched in (11):

(11) Strict cartographic derivation of O_{TOP}-V-S_{FOC} order: (2nd attempt)
Step 1: The (topical) object raises to SpecXP, X being perhaps a low Topic phrase just outside vP.
Step 2: The (focal) subject raises to SpecFoc.
Step 3: the remnant vP containing the Object and the verb (in that order) undergoes remnant movement to SpecTopP

This version does not require subextraction, and thus avoids one major issue with (10). Furthermore, the XP proposed is in a plausible position for a low TopicP (somewhere between TP and vP). However, in this case again, the Object does not pass through a high A-position. And as before, the required remnant movement is under-motivated.

The next major problem with attempts to derive Slavic discourse-oriented surface word order under Strict Cartography involves the fact that intonationally marked Focus can in fact be anywhere (Bailyn 2012):

(12) Russian (Context: What did Jacob bring?)
POSYLKU Jakov (POSYLKU) prines (POSYLKU)
Parcel Jacob bought
'Jacob bought a PARCEL.'

This is obviously problematic for cartographic approaches (see also Wagner 2009 for other arguments from Information structure against Cartography). Now, it is possible that Theme-Rheme partitioning occurs at a post-syntactic level of representation, as proposed in Bailyn (2012), in the spirit of Zubizarreta (1998), and some sort of sentence partitioning occurs in the syntax, in the spirit of Diesing (1992), rather than (only) the utilization of universal categories in a fixed functional hierarchy. This would require intonational cues to be relevant to the proper alignment of the two main parts of the structure before some sort of discourse-based partitioning at a distinct level of representation, a possibility not countenanced within Strict Cartography. Without that, the functional hierarchy alone is simply too rigid to handle discourse-oriented word order patterns.

4 Conclusion

Any theory that posits even a TP and a CP is already "cartographic". Some sort of functional hierarchy, however minimal, is assumed in most modern syntactic theories. Distinct schools of thought have developed around varying ideas of how much functional structure there is, how rigid it is, and the extent to which it is universal. It is also well-known that there are extensive word ordering preferences, asymmetries, and regularities, among similar elements, such as attributive adjectives that must show the underlying orderings they do for a reason. And while it is possible the "big tree" functional hierarchy assumed by strict versions of Cartography are descriptively accurate, and have helped with analyses of various word order phenomena, we have seen just in this short excursus into some basic tendencies in Slavic syntax that the "big tree" hypothesis, especially given its "strict" ban on adjunction and on multiple specifiers, does not allow us to succinctly analyze the phenomena. And to the extent that functional hierarchies do emerge, we still do not have a deep explanation – their nature, universality and in particular the order in which they appear, are still very much in question.

There are viable, empirically sound alternatives to Strict Cartography. Indeed, several current lines of research are specifically focused on questions deeper than those that Strict Cartography can ask, attempting to derive whatever functional hierarchies are observed from extra-linguistic considerations. In one prominent approach, Ramchand & Svenonius (2014) provide plausible semantic and real-world justification for the major domains of functional space (CP > TP > VP) and propose approaches to deriving the rest of the needed hierarchies from extra-linguistic factors. Somewhat similarly, and certainly compatibly, Larson (2021) proposes an account of fixed and less-fixed adjective order through the interaction with the syntax of a scale of subjectivity of the adjectives in question. The observed rigidity of adjective order results from their distinct location on a relative scale of subjectivity, mediated by features on the head being modified.

Such systems imagine a flexible functional hierarchy, projected from the heads of a small set of core functional elements (D, C, T, etc), with intricate feature bundles whose requirements determine the categories projected above them. This allows us to imagine a theory in which appearance of moved elements at the edges of domains would result from the usual feature-driven Agree relations; their order at times determined by ordering within the relevant feature-bundling, but not pre-determined by functional templates. The syntactic devices available would include adjunction, mediated by featural and scopal consideration as envisioned by Ernst (2007), as well as multiple specifiers (a pure side-effect, expected within Bare Phase Structure, of complex heads and their features) exactly as envisioned by Chomsky (2001) for the *v*P edge domain. Insofar as constructions show apparent asymmetries of functional hierarchy, the system would derive those, and future research, then, should focus on the nature of the feature bundling and how the projection system serves the needs of the core functional heads, deriving, rather than assuming, those aspects of Strict Cartography that are empirically motivated. The kinds of problems we have encountered here would be remedied through the availability of multiple specifiers, adjunction and perhaps a discourse-oriented level of representation for Information Structual considerations.

Multiple wh movement would remain driven by the movement requirements of the elements themselves, and multiple specifiers account for the lack of superiority and clustering effects. For Topic Focus structures, a late level of Information Structure would organize sentences into their basic discourse-related structure, an effect that may or may not turn out to be part of the core syntax of the sentence, but would be represented not through the mediation of fixed categories within an extensive tree, but at a distinct level of organization. This is the direction future research into Slavic word order phenomena should take.

Abbreviations

A-position	Argument position	FSP	Functional Sentence Perspective
ACC	Accusative	IP	Inflection phrase
AUX	Auxiliary	K	Question phrase in Slavic
C	Complementizer	+MFS	+ Multiply-filled specifier
Comp	Complementizer	NOM	Nominative
D-linked	Discourse-linked	Rus	Russian
FIN	Finite(ness)	WH	Question phrase
FOC	Focus		
FocP	Focus phrase		

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Part II

Size and features

Chapter 8

On the size of same subject complements in two Panoan languages

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Constituents with same subject marking in the Panoan languages Yawanawa and Shipibo normally function as adjunct CPs. In this work, we consider the fact that they can also be used as complements of a restricted class of verbs including 'begin' and 'know'. In this use, they can only be "reduced" clauses, which are less than full CPs. We explain this restriction using the idea that same subject markers need to enter into Agree with the matrix subject. When they occur in complements, this Agree relation is threatened by the matrix v being an intervening phase head. However, Agree can still go through if and only if no C is present as a second phase head. This analysis helps to explain the typological fact that same subject marking is more common in adjunct clauses and auxiliary constructions than in standard (full CP) clausal complementation.

1 Introduction: A gap in the range of Panoan complementation structures

A seminal insight of Susi Wurmbrand's rich research program investigating clausal complementation and the so-called restructuring phenomenon is that complements can come in a variety of different "sizes" (Wurmbrand 2001, etc.). These range from fully articulated CPs down to bare VPs, with several intermediate sizes in between. Of special importance is whether the complement contains one or more phase heads: full CPs do (C and v/Voice) and bare VPs do not. However, one cannot always tell how big a complement is simply by inspecting its

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superficial morphology. For example, infinitives with no overt subject in Spanish come in at least two sizes: a big kind with a phase head that blocks locality-sensitive processes like object clitic climbing, and a small kind without a phase head that allows clitics to climb into the matrix clause. This classic "restructuring" alternation is seen in (1) (see also Rizzi 1982, Burzio 1986, etc.). According to Wurmbrand's very influential account, the complement XP in (1a) is (something like) a CP, whereas in (1b) it is (approximately) a VP.

(1) Spanish (personal knowledge)

a. Quiero [$_{\text{XP}}$ comer-la].
want-1.SG eat.INF-it.F.SG
'I want to eat it.'

b. La quiero [$_{\text{XP}}$ comer].
it.F.SG want-1.SG eat.INF
'I want to eat it.'

This approach has been very fruitful within a wide range of languages. In this chapter, we apply it to a particular issue in two Panoan languages: Yawanawa (YW) spoken in the Brazilian state of Acre, and Shipibo-Konibo (SK), spoken in the Peruvian Amazon. (Our explicit examples are taken mostly from Yawanawa, for uniformity.)

Some aspects of applying the Wurmbrandian approach to these languages are quite straightforward. For example, the desiderative morpheme *kas* 'want' in SK takes a complement headed by a morphologically bare verb stem, not marked with any tense-like affix or switch-reference (SR) marking. Like Spanish infinitives, these can be "big" (phasal) or "small" (nonphasal), as shown by whether or not the object of the complement of 'want' triggers ergative case on the subject of 'want' (Baker 2014: 371–376). Similarly, many verbs take nominal/infinitival complements in which the embedded verb bears the affix -*ti* in SK. With a verb like 'know', the nonfinite complement is big, but with the verb *atipanti* 'be able to' the complement is small by the same criterion (Baker & Souza 2020: 17, henceforth B&CS).

The specific issue we consider here is the status of verbal projections bearing the so-called imperfective same-subject (SS) markers -*i*/-*kin* in YW and SK. These forms are most commonly and canonically used in adjunct clauses, as in (2). When the matrix subject is ergative, the form -*kin* is used; when it is nominative, -*i* is used.

(2) Yawanawa (fieldwork)

a. [(pro) mãnĩa tsisna-*i*], Shaya pake-a.
(she) banana carry-SS.NOM Shaya.NOM fall-PFV
'While she$_i$ was carrying bananas, Shaya$_i$ fell.'

b. [Shaya-N pitxã-pai-*ki-N*], (pro) mai keti hi-a.
Shaya-ERG cook-DES-SS-ERG (she) clay pot get-PFV
'Because Shaya$_i$ was wanting to cook, she$_i$ got a clay pot.'

These adjunct clauses are clearly "big" by the relevant metrics. For example, they can contain an overt subject with ergative case, as in (2b), and DPs inside the adjunct clause do not trigger ergative case on the subject of the matrix clause, as in (2a). There is, however, another use of SS-marked constituents in these languages: they can also be used as complements of a restricted class of verbs. Both SK and YW allow SS-marked constituents as the complement of an aspectual verb like 'begin', 'stop', and 'finish' (Valenzuela 2003: 319). These have the character of raising constructions, in that the matrix verb does not assign a thematic role to the subject of the embedded verb (see Camargo Souza 2020 (CS) for discussion).

(3) Yawanawa (fieldwork)

a. Shukuvena-N [wixi ane-ki-N] tae-wa.[1]
Shukuvena-ERG book read-SS-ERG begin-CAUS.PFV
'Shukuvena began reading a book.'

b. Shukuvena [raya-i] tae-a.
Shukuvena.NOM work-SS.NOM begin-PFV
'Shukuvena began working.'

In addition, CS points out that YW also allows SS complements with certain attitude verbs like 'know', 'dream', 'think', 'hope', and 'forget'. These have the character of control constructions, where the matrix verb does assign a thematic role to the subject in addition to the thematic role that the lower verb assigns to its understood subject.[2]

[1] Aspectual verbs like 'begin' in Panoan languages undergo morphological changes to agree in transitivity with the embedded predicate (Valenzuela 2003). This is why the verb 'begin' bears the causative suffix *wa* in (3a) but not (3b). This phenomenon parallels the voice matching studied by Wurmbrand & Shimamura (2017). See CS for an account of this factor.

[2] These languages also use SS marking in purer auxiliary constructions. For example, 'go' plus a verb marked with SS forms a periphrastic future construction in SK (Valenzuela 2003, Zariquiey Biondi 2011: 306). We think that our analysis of the 'begin' construction can serve as a first-pass analysis of these constructions as well, but there are some morphological differences to consider in a full treatment.

(4) Yawanawa (fieldwork)

a. Shaya-N [yuma pitxaN-ki-N] tapiN-a.
Shaya-ERG fish cook-SS-ERG know-PFV
'Shaya knows how to cook fish.'

b. Shaya [saik-i] tapiN-a.
Shaya.NOM sing-SS.NOM know-PFV
'Shaya knows how to sing.'

At one level, it is not to surprising that SS morphology is used in these environments, since both subject-to-subject raising constructions and subject control constructions have the property that the subject of the embedded constituent is referentially dependent on the subject of the matrix clause. But what we find striking is that the SS-marked projections serving as complements always test out as being "small", never "big". Thus, in both (3) and (4) the subject of the matrix clause bears ergative case if and only if the embedded verb has a direct object. This suggests that there is no phase head associated with the embedded constituent. But why should this be? SS-marked constituents do behave like full phasal CPs when they serve as adjuncts. Other morphological verb forms can vacillate between big and small status. Why then should verbs in the SS form require a small construction when and only when they appear in complement position? This is the puzzle that we consider here.

Our proposal is as follows. What is special about SS clauses in Panoan according to B&CS is that the functional heads associated with the embedded clause enter into two relationships of Agree: one with the subject of the embedded clause, and one with the subject of the matrix clause. These instances of Agree create pointers from the functional heads to the two subjects, which LF then interprets as some type of referential dependency. Now when this kind of phrase appears in complement position, it is separated from the matrix subject by an additional phase boundary: the one induced by the v of the matrix clause. This phase boundary threatens to block the upward Agree relation with the matrix subject, which is an essential ingredient of SS constructions. Therefore SS-marked complements are required to be small, without an additional C-type phase head of their own. The sentence as a whole then counts as a single locality domain. A theoretical consequence of this is that it steers us toward Chomsky's (2001) conception of the phase, in which dependencies can cross one phase boundary but not two. We claim that this analysis gives a partial explanation of the typological fact that switch reference marking is more common across languages in adjunct clauses than in complement clauses, and when it is possible in complement clauses it is often limited to auxiliary-like constructions.

We develop our analysis as follows: §2 establishes the basic structural properties of the two SS complement constructions. §3 shows that they both count as a single locality domain by two tests: ergative case assignment and object=subject switch-reference. §4 reviews B&CS's idea that SS involves Agree relations, and then sketches the outline of our analysis in these terms. §5 refines the analysis in certain ways, arguing that the "small" SS complements are in fact FinP projections, not ForcePs (Rizzi 1997). §6 puts our results in a broader typological context and concludes.

2 The structure of SS complements

In this section, we argue briefly for three points that support our basic claims about SS complements. We show that they are complements, not adjuncts. We show that the overt subject is in the matrix clause, not the embedded clause. And we show that with 'know'-class verbs the subject gets a thematic role from the matrix verb. If all this is true, then YW and SK have the sort of structure that could have been a full-CP control complement, instead of or alongside the reduced structure that they actually do have. The fact that they do not have this familiar and theoretically innocuous structure with SS-marked verbs then becomes interesting and worth trying to explain.

Both 'begin' and 'know' can occur with arguments other than an SS-marked constituent. 'Begin' can take an event-denoting DP complement, as in (5a). It cannot, however, take any verb-headed complement other than SS-complements. Like 'begin', 'know' can take a DP direct object, but it can also take a nominalized clause as internal argument along with a sentient DP as its subject as in (5b).[3]

(5) Yawanawa (fieldwork)

a. Vari tae-a.
summer begin-PFV
'Summer began.'

b. [Shukuvena-N yuma itxapa atxi-ai-tuN] Shaya-N tapiN-a.
Shukuvena-ERG fish many catch-IPFV-NMLZ Shaya-ERG know-PFV
'Shaya knows that Shukuvena is catching many fish.'

(5b) is a typical example of YW and SK's only other form of clausal complementation, in which the embedded verb is marked with a nominalizing suffix:

[3] *TapiN* is naturally glossed as 'know how' in (3) but as 'know that' in (5b). We assume it is essentially the same lexical item in both cases, as in English.

-tuN (YW), *-ti* (SK), *-a* (perfective "participle", both), or *-ai* (imperfective, SK); see also (11), (14a) and (17). The internal syntax of these nominalized clauses is like root clauses, with ergative and absolutive arguments, but their external syntax is that of DPs: they appear in DP positions and trigger ergative on the subject.[4]

Comparison with (5a) suggests that the SS-constituent in (3) is the internal argument of 'begin', parallel to 'summer', and that 'begin' has no other argument – like canonical raising verbs. Similarly, the SS-constituent in (4) is plausibly the internal argument of 'know', parallel to the nominalized clause in (5b). In addition, 'know' does take a distinct external argument, like canonical subject control verbs. These differing thematic properties are confirmed by (6), where the 'begin' construction is compatible with a verb that does not have a thematic subject, whereas the 'know'-type construction is not.

(6) Yawanawa (fieldwork)

a. [Uik-i] ene-a.
rain-SS.NOM stop-PFV
'It stopped raining.'

b. # [Uik-i] tapiN-a.
rain-SS.NOM know-PFV
('It knows how to rain.')

Evidence that the SS-constituents in these constructions are complements of the matrix verb comes from wh-movement. (7c) shows that it is not possible to extract a question word from an SS-marked adjunct clause, due to the adjunct island condition. However, CS shows that it is possible to extract a question word from the SS-constituent in the 'begin' and 'know' constructions (7a, 7b). The contrast shows that these constituents are complements, not adjuncts.

(7) Yawanawa (fieldwork)

a. Awea=meN Shukuvena-N [-- wa-ki-N] tapiN-a?
what=INT Shukuvena-ERG make-SS-ERG know-PFV
'What does Shukuvena know how to make?'

[4] A reviewer asks why 'begin' class verbs select only SS-complements, whereas 'know' class verbs allow nominalized complements as well as SS-complements. Our tentative answer is that this is because (as in English) aspectual verbs combine semantically with event-denoting expressions, whereas cognitive verbs can combine with fact- and proposition-denoting expressions. Nominalized clauses presumably denote facts or propositions, rather than events.

b. Awea=meN Shukuvena-N [-- ane-ki-N] tae-wa?
what=INT Shukuvena-ERG read-SS-ERG begin-CAUS.PFV
'What did Shukuvena begin to read?'

c. * Awea=meN [-- pitxaN-pai-ki-N] Shaya-N mai keti hi-a?
what=INT cook-DES-SS-ERG Shaya-ERG clay pot buy-PFV
('What did Shaya buy a clay pot wanting to cook (it)?')

The last basic property of the SS-complement constructions to affirm is that the overt subject is really a constituent of the matrix clause on the surface, not part of the SS-marked constituent. This is especially an issue for the 'begin' construction, which we claim to be an instance of subject-to-subject raising, since one could imagine that the thematic subject of the lower verb remains in the lower clause. But this turns out to be impossible. Word order evidence for this is in (8). (8a) is the neutral order. (8b) shows that a constituent consisting of the SS-marked verb and its object can be extraposed to the right. However, (8c) shows that it is impossible for the subject to be included in this rightward-moved constituent; rather it is part of the matrix clause.

(8) Yawanawa (fieldwork)

a. Shukuvena-N wixi ane-ki-N tae-wa.
Shukuvena-ERG book read-SS-ERG begin-CAUS.PFV
'Shukuvena began to read the book.'

b. Shukuvena-N tae-wa, [wixi ane-ki-N].
Shukuvena-ERG begin-CAUS.PFV book read-SS-ERG
'Shukuvena began to read the book.'

c. * Tae-wa, [Shukuvena-N wixi ane-ki-N].
begin-CAUS.PFV Shukuvena-ERG book read-SS-ERG
('Shukuvena began to read the book.')

This word order restriction applies to examples with 'know' as well. Converging evidence comes from second position clitics in YW and SK. These can appear immediately after the subject in an example like (8a), but they cannot appear between 'read' and 'begin'. This also shows that the subject-object-verb+SS sequence is not a single constituent in this construction (this order is fine with SS adjuncts).

Putting this all together, we have evidence that (9) is a possible syntactic structure in YW and SK.

(9) [$_{TP}$ Shukuvena.ERG [$_{VP}$ [$_{XP}$ PRO/t fish cook-SS] know/begin]]

The next question, then, is what is XP: a big (phasal) constituent like CP, or a small (nonphasal) constituent? In the next section we argue that XP can only be small in this construction.

3 The size of SS complements

We have two sources of evidence that the SS-complements in Panoan are small, the sentence as a whole counting as a single locality domain. Our fancier evidence comes from these languages' unusual object=subject (O=S) switch-reference construction, analyzed in detail in B&CS. The basic description of this construction is that the verb in an adjunct clause bears the suffix -*a* when it has an object that is coreferential with the subject of the main clause. Normally this is only possible if the DP equated with the matrix subject is the verb's very own object. However, the SS-complement constructions are systematic exceptions to this generalization: they allow -*a* to appear on the 'know'-class verb (here 'forget') or the 'begin'-class verb when the object of the complement of 'forget' or 'begin' is coreferential with the matrix subject. This is seen in (10a, 10b). In contrast, this is not possible when a verb like 'think' takes an infinitival complement rather than an SS-marked complement, as shown in (11) from SK. (YW does not have exactly this sort of complement.)

(10) Yawanawa (fieldwork)

a. [E-N [*kaNmaN* nesha-ki-N] xinavenu-*a*] (pro) itxu-a.
   I-ERG dog tie-SS-ERG forget-OS (it) run-PFV
   'Because I forgot to tie up the dog$_i$, it$_i$ ran away.'

b. [Shukuvena-N [*wixi* ane-ki-N] tae-wa-hi-*a* *aweN wixi* venu-a.
   Shukuvena-ERG book read-SS-ERG begin-CAUS-CONC-OS his book disappear-PFV
   'Although Shukuvena started reading the book$_i$, it$_i$ got lost.'

(11) Shipibo (Baker and Camargo Souza 2020)
   ?? [Jose-kan [(pro) oin-ti] shinan-a]=ra, Rosa-n e-a kena-ke.
   José-ERG *(her)* see-INF think-OS=EV *Rosa-ERG* me-ACC call-PFV
   ('When José thought to see her$_i$, Rosa$_i$ called me.')

There is a similarity here with the clitic climbing seen in Spanish in (1b): in both cases what is thematically the object of another verb behaves like it is the object of the restructuring verb for syntactic purposes. B&CS's official analysis is in terms of Agree: a v node associated with ‘begin’/‘forget’ is able to probe downward into its complement to find the object inside that complement as its goal. This is possible because the complement is nonphasal, so the Agree relation does not violate the Phase Impenetrability Condition (PIC).

Converging evidence that the SS complement is small comes from the assignment of ergative case. Both YW and SK have morphological ergative case (underlyingly *-n*, with allomorphs) on the subjects of transitive verbs. Baker (2014, 2015) analyzes this as a dependent case in the tradition of Marantz (1991); it is assigned by the rule in (12).

(12) Assign ergative to DP1 at the spell out of the complement of a C head if DP1 c-commands another DP in the same domain.

For example, a verb that takes both an external argument and an internal argument has ergative case on the external argument, whereas a verb with only one argument has nominative case on that argument.

(13) Yawanawa (fieldwork)

a. Shaya saik-i.
   Shaya sing-IPFV
   ‘Shaya is singing.’

b. Shaya-N nami pitxã-i.
   Shaya-ERG meat cook-IPFV
   ‘Shaya is cooking meat.’

The relevance of the domain restriction in (12) is seen in examples with embedded full CP clauses like (14). Here whether the matrix subject is ergative or not does not depend on whether the lower verb has an object, but only on the categorical features of the embedded clause as a whole. If the embedded clause is nominal, the matrix subject is uniformly ergative, even if there is no embedded object, as in (14a) from SK. If the embedded clause is not nominal, the matrix subject is not ergative, even when there is an embedded object, as in (14b).

(14) Shipibo and Yawanawa (fieldwork)

a. Maria-nin=ra [bewa-ti] shinan-ke. (SK)
   Maria-ERG=EV sing-INF think-PFV
   ‘Maria thought to sing.’

b. [(pro) Shaya kena-pai-i], Shukuvena ka-i. (YW)
   [(he) Shaya call-DES-SS.NOM] Shukuvena.NOM go-IPFV
   ‘Wanting to call Shaya, Shukuvena is leaving.’

The 'begin' and 'know' constructions are markedly different in this respect. For them, the case marking of the matrix subject does depend on whether the verb in the SS complement takes an object: if it does, the matrix subject is ergative; if it does not, the matrix subject is not ergative. This was seen in (3) and (4); the latter is repeated here.

(15) Yawanawa (fieldwork)

a. Shaya-N [yuma pitxaN-ki-N] tapiN-a.
   Shaya-ERG fish cook-SS-ERG know-PFV
   'Shaya knows how to cook fish.'

b. Shaya [saik-i] tapiN-a.
   Shaya.NOM sing-SS.NOM know-PFV
   'Shaya knows how to sing.'

The lack of ergative case on the subject in (15b) shows that the SS complement as a whole is not nominal, the way *-ti* complements are. The presence of ergative on the subject in (15a) shows that the SS complement is small/nonphasal, so that 'Shaya' and 'fish' are in the same domain at the point of spelling out the complement of the matrix C. Indeed, ergative case is obligatory on the matrix subject here. Therefore, the SS complement *must* be small, and cannot be big.

And that is something worth trying to explain. It is not that Panoan syntax is adverse to optional restructuring across the board. Baker (2014: 371–376) shows that restructuring is optional in a 'want' construction in SK, using the same two tests discussed in this section. In that construction, the matrix subject is optionally ergative when the embedded verb has an object. But this familiar sort of optionality, seen also in (1), is not seen with SS complements in SK or YW. The theoretical question that arises, then, is why not? We turn to this next.

4 The leading idea for an analysis

What is special syntactically about SS constituents, which might cause them to have a different range of possibilities than bare verbs and infinitival verbs? Recall that the core use of SS-marked verbs in Panoan languages is in adjunct clauses, as in (2). B&CS argue that the key to this construction is that a functional head at the periphery of the CP adjunct (a fusion of T and C) undergoes Agree twice: once with the closest DP searching downward, i.e. the subject of the embedded clause, and once with the closest DP searching upward, i.e. the subject of the matrix clause (see also Arregi & Hanink (2022) for essentially the same idea).

The result of these two Agree processes is pointers from the functional head(s) to the two subjects (cf. Arregi & Nevins 2012). LF then interprets these pointers as coconstrual holding between the two subject positions (see CS for discussion). So the structure of a typical SS adjunct like (16a) is (16b). (The adjunct clause then usually extraposes to the sentence's right or left edge.)

(16) Yawanawa (fieldwork)

a. Shaya-N [(pro) mixki-ki-N] ixixiwã atxi-a.
Shaya-ERG (she) fish-SS-ERG catfish catch-PFV
'Shaya, while fishing, caught a catfish.'

b. [$_{TP}$ Shaya$_i$ [$_{CP}$ [$_{TP}$ pro$_i$ [$_{vP}$ t fish v]- T] C] [$_{vP}$ t fish catch v] T]

B&CS present more detailed evidence for the downward Agree relationship than for the upward one. But there is adequate evidence that upward Agree holds too. For example, DP-movement to Spec TP in the matrix clause crucially feeds SS marking, showing that the tracked DP in the matrix clause must c-command the SS morpheme in the adjunct clause. Even more to the point, an SS constituent adjoined to one particular clause – to the complement of 'see' in (17), for instance – can only track the subject of that very clause, namely *Meni*, not the subject of a still higher clause, in this case *eN*, the subject of 'see'. This shows that the SS heads cannot enter into a relationship with a DP that is too far away, with distance measured in terms of clauses, which correspond to phase boundaries within our framework.

(17) Yawanawa (fieldwork)
[[Meni-N Shukuvena vetxi-*ashe*] *(pro)* inĩmai-tu] e-N
Meni-ERG Shukuvena find-SS.PFV.NOM be.happy-NMLZ I-ERG
ũi-a.
see-PFV
'I saw that she$_i$ was happy when Meni$_i$ found Shukuvena.'

This last point can provide an entry into understanding the puzzle that is before us now. What is special about SS-marked constituents as opposed to others is that they enter into upward Agree with a DP, the matrix subject. Given this, what could be the difference between SS-marked adjuncts (which are freely available) and SS marked complements (which are quite restricted, both in Panoan languages and crosslinguistically)? An answer is that adjuncts are closer to the subject than complements are. In particular, adjuncts can be adjoined to vP (or higher), so that they are outside the spell out domain of the phase head v.[5] In contrast, complements are by definition the sisters of the V head, so they are inside the complement of v and they are necessarily spelled out on the v-phase cycle. In other words, there is a phase boundary associated with v that intervenes between heads inside the SS-complement and the matrix subject but not between the SS adjunct and the matrix subject. This phase boundary could prevent the SS heads from entering into the necessary Agree relationship with the matrix subject. This is sketched in (18).

(18) Leading idea: (phrases in { } are spell out domains)

a. [Subj [H clause] [$_{vP}$ v {*V*....}]] — Adjunct clause

Agree possible

b. [Subj v {V [H clause]} — Argument clause

Agree blocked

This is a start, but we need another layer of the analysis to explain why "small", restructuring-type SS-complements are possible in Panoan, whereas "large" SS-complements are not. At this point, it evidently matters whether the SS-complement counts as a full CP, with its own phase head, or not. When the SS-complement is a full CP, Agree fails, whereas when it is less than a full CP, Agree can succeed – even though the v-phase boundary is there. We find our way through to a full analysis if we adopt a view in which two phase boundaries block upward Agree but one phase boundary does not. This amounts to adopting Chomsky's (2001: 13–14) view of the PIC, as stated in (19), rather than his (2000) version.

(19) Elements in the complement of a phase head H are accessible to the computation until the introduction of the next phase head Z.

The other key assumption we make concerns the finer structure of the CP in YW and SK. B&CS assume that T probes downward to find the embedded subject, and C probes upward to find the matrix subject, T then fusing with C to form a single head, as in (16). Following CS, we revise this by distinguishing Force from Fin (Rizzi 1997). The higher head Force is the phase head, whereas the lower head Fin is the upward probe and the head that fuses with T. These assumptions allow us to derive the three-way contrast at hand, where SS is possible in ForceP adjuncts and FinP complements, but not in ForceP complements, as outlined in (20). This is the core of our analysis.

[5] In this work, we follow B&CS in not making a distinction between v and Voice, for simplicity. See CS for a refinement that does distinguish v from Voice.

(20) Leading idea expanded: ({ } = complement of phase head)

a. [Subj [$_{\text{ForceP}}$ Force { Fin TP}] [$_{\text{v}}$ {$_{\text{VP}}$ V....}]] ForceP adjunct

Agree OK by (19)

b. [Subj v {$_{\text{VP}}$ know/begin [$_{\text{ForceP}}$ Force { Fin TP}]}] ForceP

Agree * by (19)

c. [Subj v {$_{\text{VP}}$ know/begin [$_{\text{FinP}}$ Fin TP]}] FinP complement

Agree OK by (19)

5 Refining the analysis

There are, however, some details to work out to realize this analysis in a consistent way. These concern details of phase boundaries, whether the same phase boundaries affect dependent case and upward Agree, and so on. Part of the challenge here is harmonizing this analysis with previous research. We proceed now to these refinements, to the degree that they are of some general interest and fit in a work of this size.

First, we acknowledge that the "small" version of the SS complement in (20c) is a FinP, hence not all that small. The clearest Wurmbrandian opposition is between full CPs, which definitely have phase heads, and bare VPs, which definitely do not. But Wurmbrand's work shows that "small" constituents can often be somewhat larger than VP, with some inflectional material as well. In the typology of Wurmbrand (2001), YW and SK have "reduced non-restructuring complements", which include tense/aspect information (T) and an internal subject position, rather than restructuring proper. A more detailed structure of (4a) then is (21b), which shows FinP and TP in the SS complement. Fin finds the controlling subject in the case of 'know' and the higher copy of the raised subject in the case of 'begin'. T finds the controlled PRO embedded subject in the case of 'know' and the lower copy of the raised subject in the case 'begin'. In both cases, the two subjects are interpreted as instances of the same bound variable.[6]

[6] A reviewer asks whether allowing SS markers to point to two copies in the same movement chain opens the door to unwanted structures in which SS morphology is licensed in a single clause by SR heads agreeing downward with the copy of the subject in Spec vP and upward with the copy of the subject in Spec TP. In fact, SS couldn't do this in YW/SK because of our lexical stipulation that one of the probes is Fin and Fin probes upward. As a result, it cannot find a DP in the Spec TP, which is below Fin. Some other head – a double-Agreeing T, say – might be able to find these two copies. But a morpheme that did only this would not be recognized as an SS morpheme at all.

(21) Yawanawa (fieldwork)

a. Shaya-N yuma pitxaN-ki-N tapiN-a.
Shaya-ERG fish cook-SS-ERG know-PFV
'Shaya knows how to cook fish.'

b. [$_{TP}$ Shaya [$_{vP}$ t [$_{VP}$ [$_{FinP}$ [$_{TP}$ [$_{vP}$ PRO [$_{VP}$ fish cook] v] T$_{SS}$] Fin$_{SS}$] know] v] T]
Agree
Agree
head mov't

There is some converging evidence that SS complements do contain TPs, as CS discusses in detail. First, "T" is clearly semantically present in the SS complement. What we call T in Panoan primarily expresses the perfective/imperfective distinction, which concerns whether two eventualities overlap or not. The SS marking in the 'begin' and 'know' constructions is always the imperfective form *-i/-kiN*, not the perfective form *-ashe/-shuN*. And indeed it is the imperfective form that is semantically appropriate here, given that the event of (say) reading a book necessarily coincides with the event of beginning in an example like (3a).

Further evidence that SS complements contain TP comes from the fact they can contain *derived* subjects – NPs that become subjects by way of movement to Spec TP (or perhaps Spec SubjectP, as in B&CS). This movement internal to the SS complement is clearest in the applicative of unaccusative construction (see Baker 2014). The affectee argument of an applicative construction is generated in Spec ApplP, above the base position of a theme argument inside VP. When the verb root is transitive, this hierarchical order is maintained. But when the verb is unaccusative, without an agent argument, the affectee argument is blocked from moving to Spec TP to satisfy the EPP property in these languages. Instead, the theme argument moves to Spec TP, becoming the subject for purposes of case and agreement. Now this applicative-of-unaccusative structure can be embedded in a 'begin' construction, as in (22). In this case, the theme argument further raises from the embedded Spec TP to the matrix Spec TP, and SS marking succeeds. If there were no TP inside the SS complement, NP-movement would have to go straight from inside VP to the matrix Spec TP. Then the downward-looking SR probe at the edge of the complement would find the affectee argument in Spec ApplP rather than the theme argument in VP and SS marking would fail, since the affectee argument is not the same as the subject of the matrix clause.

(22) Yawanawa (fieldwork)
Ewẽ ketxa mixti-hãui [$_{TP}$ t$_{i}$ [$_{ApplP}$ e-a [$_{VP}$ t$_{i}$ muxi]-shun]-i]]
my plate little-PL.ERG me-ACC break-APPL-SS.NOM
tae-a-hu.
begin-PFV-PL
'My little plates began to break on me.'

The last refinement we consider is a closer look at the role of v heads in these constructions. If SS complements are FinPs, then they must contain vP projections as well, that being a lower projection in the clausal spine. But v is also a phase head, at least in active/agentive clauses like (3) and (4). The question is whether this spoils our aimed-for result, that 'begin' and 'know' constructions count as a single domain for processes like O=S switch reference and ergative case assignment. If so, there is a contradiction within our analysis.

For simple O=S switch reference, there is no real difficulty, given that we have adopted the PIC in (19), where syntactic dependencies can cross over one phase boundary but not two. The crucial probe in the O=S construction is in the v head associated with 'begin' or 'know'. Probing downward, it needs to see into the VP headed by 'begin' or 'know', its complement FinP, TP, vP, and the lower VP to find the direct object. Only one of these is a phase head, the embedded v. Therefore, there is no PIC violation in this structure, given (19).[7]

The role of v-induced phase boundaries is more of an issue for the assignment of ergative case. Dependent ergative case assignment happens at the spell out of the complement of matrix Force in our framework (see 12). By that time, the matrix subject is in Spec TP, so it is separated from an in situ lower object by two v heads, the matrix one and the embedded one. Moreover, at least in the case of a 'know' construction like (4a), both vs are active and agentive. So the matrix subject getting ergative case under the influence of the lower object should count as a PIC violation according to (19).

Fortunately, we have a tool already in hand to address this issue, namely Baker's (2015) claim that in some languages v is a soft phase head rather than a hard phase head. A hard phase head is the normal kind, which triggers the spell out of its complement *and* removes it from the syntactic representation. In contrast, a soft phase head triggers the spell out of its complement, fixing many of the PF-oriented properties of elements inside the complement (e.g., word order, morphosyntactic features), but the complement is not actually removed from the representation. This distinction was introduced with languages like YW and SK in mind, where a direct object always triggers ergative on the subject, without the object having to leave the VP by a process of object shift. (In contrast; object shift is required for ergative case assignment in languages like Niuean and Nez Perce.) But two soft phase heads are no different from one soft phase head in this respect. We now interpret (19) as saying that when a higher phase head Z is

[7]A different locality issue is how the v associated with the matrix verb can look past the null subject of the SS complement in order to find the object inside that complement. Perhaps the null subject is rendered invisible to further probing once it becomes the goal of the SS probe in T. We do not pursue this here.

inserted, the phase head H triggers the spell out and removal of its complement if H is a hard phase head, and it triggers only spell out if H is a soft phase head. So in the structure in (21b), when the matrix v is merged, the embedded v triggers spell out but not removal of its VP complement. Therefore the object DP inside that VP is still present to trigger ergative case on the matrix subject.

The view that v is a soft phase head also has a pay-off when it comes to more complex O=S structures. An anonymous reviewer points out that the soft phase head analysis predicts that O=S in YW and SK should be able to reach into more than one SS-complement, in a potentially unbounded fashion. This is because these complements have only v-headed phases, and those are always soft phases, not hard ones. And indeed the prediction is correct, as (23) is possible.

(23) Yawanawa (fieldwork)
[Ẽ [[wixi ane-kĩ] tae-wa-kĩ] xinãvenu-a], wixi venu-a.
I book read-ss begin-ss forget-OS book disappear-PFV
'I forgot to begin reading the book, and it disappeared.'

Finally, we need to make sure that having a soft phase head v in the matrix clause is still enough to block the Fin_{SS} inside a full ForceP complement from finding the matrix subject as its goal, as our analysis requires. This result follows straightforwardly from the fact that C/Force is always a hard phase head (Baker 2015: 149). Therefore, when the matrix v is merged, the FinP complement of Force is removed as well as spelled out. Therefore Fin_{SS} disappears from the structure before the matrix subject comes in. It never finds a goal, so SS marking is impossible in a full ForceP complement, as desired.

This analysis raises plenty of other questions, especially our move to the PIC in (19). Much of our previous work was cast in a Chomsky (2000) type system, where one phase boundary gives impenetrability. For example, Baker's (2015) analysis of languages like Niuean and Nez Perce in which object shift is needed to trigger ergative case assignment on the subject needs to be recast. The same is true for B&CS's claim that O=S switch reference in Panoan cannot pick the object of an adposition or the possessor of a DP as its goal, equating it with the matrix subject, because P and D are phase heads which hide DPs in their domain from Agree coming from outside. Perhaps now it can be argued that there are really two phase heads in more articulated PP and DP structures. If so, little else will need to be changed. But we leave exploration of this to future research.

6 General discussion and conclusion

We close with a few more general remarks about the implications of this analysis for those who are not primarily concerned with the details of Panoan clause structure. There are important typological patterns concerning the interaction of switch-reference and complementation which our analysis begins to explain, we claim. It is well-known that SS-marking is more common on adjunct clauses than on complement clauses – an asymmetry that Finer (1984, 1985) already wrestled with. This is seen clearly in McKenzie's (2015) survey of almost 70 North American languages with switch-reference systems. He lists some 29 languages that have SR marked on adjunct clauses but not complement clauses, but only one (Mikasuki) that might have SR marked on complement clauses but not on adjunct clauses. There seems to be a robust implicational universal here: a language has SR on complements only if it has SR on adjuncts. We have a general strategy for explaining this: SS involves Agree with the matrix subject, and it is easier for adjunct clauses outside of vP to do that than for complement clauses inside vP, given the PIC.

We have also made progress on a second order effect in this domain. For some languages in which SR is primarily a property of adjuncts, it creeps into the realm of complements a little bit, but not very far. McKenzie thus observes that SS marking can be used in auxiliary constructions as well. This is where SK fits in, if 'begin' constructions are counted as a type of auxiliary construction (see also note 2). YW is similar but expands the domain of SS somewhat further, to 'know' type constructions. Other languages that allow SS on adjuncts and in auxiliary constructions, but not on complements more broadly, are the Yuman languages Cocopa, Hualapai, and Yavapai, according to McKenzie's survey. In B&CS, we conjectured that the Panoan generalization is that SS constituents cannot receive thematic roles, perhaps because they are not nominal enough to do so. But that now seems wrong, given CS's discovery of the 'know' construction in YW, where an SS-constituent is an alternative to a nominal clause (see (4) and (5b)). These SS-constituents presumably receive the same thematic role that the nominal clauses do. We now suggest that a more accurate generalization is that SS-constituents can be complements only in reduced (non-ForceP) constructions. And we claim that this follows from the need of the SS head to Agree with the matrix subject.

There is of course more to do in order to fully explain the typological distribution of SR constructions. For example, there are languages that have SR marked on a fuller range of complement clauses as well as on adjunct clauses. McKenzie (2015) lists about 13 of these in North America, including Muskogean languages, some Yuman languages, and the Ute/Paiute cluster. Take for example the Muskogean language Choctaw. It differs from YW and SK in two ways, illustrated in (23). First, an SS complement is possible even with a verb like 'think', as in (24a), where 'think' is not capable of taking a small complement in most languages (Wurmbrand 2001). Second, Choctaw allows different subject (DS) complement clauses as well as SS complements, as in (23). This is not attested in YW and SK: there is nothing like [Shaya [$_{\mathrm{CP}}$ Shukuvena fish cook-DS] know], meaning "Shaya knows how/that Shukuvena can/should cook fish." A fuller account wants to understand these differences as well.

(24) Choctaw (Broadwell 2006: 269)

a. John-at anokfilli-h [pisachokma-ka-t].
John-NOM think-TNS good.looking-COMP-SS
'John$_{i}$ thinks he$_{i}$ is goodlooking.'

b. John-at anokfilli-h [pisachokma-ka-N].
John-NOM think-TNS good.looking-COMP-DS
'John$_{i}$ thinks he$_{k}$ is goodlooking.'

As to why (24a) is possible in Choctaw but not in Panoan, several hypotheses come to mind. CS proposes one that fits the details of Choctaw well, saying that the upward probing head in SS constructions is Force in Choctaw, whereas in Panoan it is Fin+T. This coheres with the fact that the SS marker *-t* does not replace other T and C morphology, the way that it does in Panoan; rather, it attaches outside of *ka*, arguably a Fin head. Now if the SS probe is at the edge of CP phase in Choctaw, then it can agree with the matrix subject only crossing one phase boundary (the matrix v). This is consistent with the PIC in (19). There are other possibilities as well, and future research will need to sort out which ones might work for which languages.[8]

As to why a DS complement is not possible in Panoan, that needs a different story, and it may not be a very deep one. According to B&CS, DS clauses do not enter into the same kind of Agree relationship with the higher and lower subjects as SS clauses do. They are just ordinary ForcePs which fail to receive a certain kind of interpretation when an SS clause is possible and is dedicated to expressing that interpretation – a pragmatic blocking account. If that is right,

[8] Another language with SS marked on complement clauses is Washo, and Arregi & Hanink (2022) develop an analysis that is very similar to ours of Choctaw. However, the SS marker in Washo is not right at the edge of the complement, as it is in Choctaw; rather the CP is embedded in a DP layer. Arregi and Hanink claim that D is not a phase head (nor is v) so this has no effect, but we are not entirely comfortable with this assumption and might entertain alternatives.

then an extra phase boundary here or there should not be too relevant to the distribution of DS clauses. Here we would just give a surface morphological account for Panoan: C/Force happens to be spelled out as *-kẽ* and *-nũ* (the so-called DS forms) in adjunct clauses, but not in complement clauses, as a kind of contextually determined allomorphy. (This might in turn be related to category features: full clausal complements need to be nominal to get a thematic role and clausal adjuncts need to not be. Then the adjectival Force is *-kẽ/-nũ*, but the nominal Force is *-tũ*.) How well this line of thinking holds up crosslinguistically is yet another topic for future research.

In conclusion, one important lesson we have learned from Susi Wurmbrand's career to date is how much there is find out about the topic of complementation if one investigates it crosslinguistically and with a high attention to detail. Here we have shown that the same is true for the topic of same subject clauses. There is even an important interaction between the two topics, such that SS constructions can be complements in reduced clause constructions but not otherwise.

Abbreviations

ACC	accusative
APPL	applicative
CAUS	causative
COMP	complementizer
DES	desiderative
DS	different subject
ERG	ergative
EV	evidential
F	feminine
INF	infinitive
INT	interrogative
IPFV	imperfective
NMLZ	nominalizer
NOM	nominative
OS	object-to-subject SR
PFV	perfective
PL	plural
SG	singular
SS	same subject

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Chapter 9

Singular *-st* syncretism and featural pied-piping

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An often discussed fact about Icelandic dative-nominative constructions is that nominative objects cannot trigger 1st or 2nd person agreement on the finite verb; but when the agreement form is morphologically syncretic with 3rd person, the example is judged to improve. What is not often discussed is that the ameliorative effect of syncretism is stronger when the verb ends in the "middle" *-st* morpheme. In this article, I propose that this effect is related to another morphological fact about *-st* verbs, namely, that they are always syncretic across all persons in the singular, but not in the plural. I present a syntactic account of this syncretism which captures its morphological properties and predicts the difference between ameliorative syncreticism when *-st* is present and when it is not.

1 Introduction

The Icelandic *-st* morpheme is often described as a "middle" or "medio-passive" suffix, though it is acknowledged that *-st* verbs do not comprise a unified class of a certain "voice". That is, *-st* verbs are a class of verbs bearing a formal resemblance, the *-st* morpheme, but from a syntactic perspective, the *-st*/non-*st* distinction is not analogous to the passive/non-passive distinction. However, there are aspects of the morphosyntax of *-st* verbs which cut across all classes of them, and it is (a subset of) these aspects that are the focus of this paper. More specifically, for all *-st* verbs in all tenses and moods, person distinctions are lost in the singular but not the plural. This syncretism, which will henceforth be referred to as *-st syncretism*, correlates with a higher acceptability of 1st/2nd person object

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agreement in dative-nominative (DAT-NOM) constructions than that found with non-*st* syncretism.

I present an overview of the syntax of *-st* put forth in Wood (2014, 2015) and propose that singular *-st* syncretism is derived in the syntax. I then show how the syntactic account of *-st* syncretism presented here predicts the kind of improvement seen with 1st and 2nd person singular nominative objects. Crucial to the analysis is the observation that the size of the feature bundle realized as *-st* affects the availability of syntactic Agree relations that underlie the syncretism and nominative object agreement.

1.1 Syntax and syncretism

In a number of reported cases, syntactic constructions can vary in acceptability depending on the availability of syncretic forms. For example, across-the-board (ATB) movement in Polish is normally only possible when the *wh*-word would have the same morphological case from both conjuncts; but if the different cases happen to be realized with the same morphological form, the result is acceptable (Citko 2005, Hein & Murphy 2020; see also Ximenes 2007: fn. 2). Citko (2005) proposes that the syntax underlying ATB movement with verbs that assign different cases is fine, but that it fails when the grammar attempts to insert the appropriate case morpheme – unless the different case forms are morphologically syncretic.

Many accounts of ameliorative effects of syncretism involve an explanation like this (Pullum & Zwicky 1986, Béjar & Massam 1999, Kratzer 2009, Ussery 2009, Bjorkman 2016): syncretic forms allow the grammar to realize a syntactic configuration which would otherwise make contradictory demands on the morphology.[1] Without denying the validity of this kind of explanation (in fact, I will adopt it for certain cases), I will take a different approach to the person syncretism in the singular paradigm of Icelandic *-st* verbs.

The *-st* morpheme, commonly known as the “middle” voice, induces a complete collapse of person distinctions in the singular. An example of this is illustrated in Table 1. Interestingly, along with this syncretism comes an improvement in acceptability of certain DAT-NOM constructions, to be discussed below. I will propose that in this case, both the syncretism itself and the improvement in acceptability are underlain by the syntax, specifically with respect to the size of the feature bundle that is realized as *-st*.

[1] Săvescu Cuicivara (2009) has a syntactic account of syncretism effects on Romanian clitic order which, like the present one, involves the intrinsic features of elements in the derivation.

Table 1: *mylja* 'pulverize' – Present

	Active		Middle	
	SG	PL	SG	PL
1	myl	mylj-um		mylj-um-st
2	myl-ur	mylj-ið	myl-st	mylj-i-st
3	myl-ur	mylj-a		mylj-a-st

1.2 Dative-nominative constructions

Icelandic DAT-NOM constructions exhibit number agreement with 3rd person nominative objects, but cannot agree in person with 1st or 2nd person objects. This holds for verbs which take dative subjects in the active, as in (1), as well as for DAT-NOM constructions which are derived by passivization of a ditransitive, as in (2). The significance of the latter is that the properties of DAT-NOM constructions cannot easily be reduced to a special, "quirky" little v selecting for an oblique subject.

(1) a. Henni *höfðu* líkað þeir.
her.DAT had.3PL liked they.NOM
'She had liked them.'

b. * Henni *höfðum* líkað við.
her.DAT had.1PL liked we.NOM
'She had liked us.' (Sigurðsson 1996: 38)

(2) a. Maríu *voru* gefnir báðir drengirnir.
Mary.DAT were.3PL given.3PL.M both boys.the.NOM
'Mary was given both the boys.'

b. * Maríu *vorum* gefnir við.
Mary.DAT were.1PL given.3PL.M we.NOM
'We were given to Mary.' (Sigurðsson 1992: 71)

In several approaches to person restrictions on nominative objects, the verb must in some sense agree with both the dative subject and the nominative object (Boeckx 2000, Schütze 2003, Koopman 2006, Sigurðsson & Holmberg 2008, Ussery 2009). Agreement with the dative yields default 3rd person singular agreement (regardless of the actual person/number of the dative), as can be independently verifed by constructions with non-nominative subjects and no nominative object.

(3) a. *Hafði* þér ekki leiðst?
had.3SG you.DAT not bored
'Were you not bored?' (Sigurðsson 1989: 225)

b. *Var* þér boðið í veisluna?
was.3SG you.DAT invited to party.the.ACC
'Were you invited to the party?' (Sigurðsson 1989: 309)

If the verb agrees with both a dative subject and a non-3rd person object, then there is a feature clash – the verb must simultaneously be 3rd and 1st/2nd person. However, if the paradigm of a given verb happens to exhibit syncretism for the two forms, the sentence is judged to be improved. The agreement paradigm for *líka* 'like' in the past tense has a syncretism between the 1st and 3rd person singular forms, but a distinct form for 2nd person singular (Table 2).[2]

Table 2: *líka* 'like'

1	*likaði*	líkuðum
2	líkaðir	líkuðuð
3	*líkaði*	líkuðu

Thus, when a nominative object is 1st person singular, the result is better than when it is 2nd person singular, as shown by the following judgments from Sigurðsson (1996).

(4) a. ?? Henni líkaði ég.
her.DAT liked.1/3SG I.NOM
INTENDED: 'She liked me.'

b. * Henni líkaðir þú.
her.DAT liked.2SG you.SG.NOM
INTENDED: 'She liked you.' (Sigurðsson 1996: 33)

[2]Since *líka* 'like' is an asymmetric dative-nominative verb, where the dative is always the subject, unambiguous 1st/2nd person agreement is generally ungrammatical, so these forms (other than 1/3SG *líkaði* and 3PL) *líkuðu* are quite rare; the forms shown are what the agreeing forms would be, based on the general rules of inflection in Icelandic. Einar Freyr Sigurðsson points out to me that these forms are, however, used by many speakers with a more recent, agentive sense of the word *líka*, with a nominative subject, which refers to clicking the "like" button on Facebook.

The claim, then, is that the availability of a form which can express both sets of features allows a way to avoid the feature clash.

However, it turns out that not all syncretisms are equally ameliorative: if syncretism occurs with the morpheme *-st*, in the singular, the ameliorative effect of syncretism is stronger than in other cases of syncretism, and this is not predicted by the analyses outlined above. The data in Table 3 from Sigurðsson (1992) show the number of speakers who judged each sentence as "OK" or "?" on the one hand, and "??" or "*" on the other.

Table 3: Data from Sigurðsson (1992: 74–76)

				OK/?	??/*
a.	Henni	*líkaðir*	þú.	0	9
	her.DAT	liked.2SG	you.NOM		
b.	Henni	*líkaði*	ég.	5	4
	her.DAT	liked.1/3SG	I.NOM		
c.	Henni	*leiddust*	þið.	5	4
	her.DAT	bored.2/3PL	you.PL.NOM		
d.	Henni	*leiddist*	ég.	8	1
	her.DAT	bored.1/2/3SG	I.NOM		

With *líka* 'like', the agreeing form of 2nd person singular is rejected by all speakers, while the syncretic 1st and 3rd person form leads to a split among speakers (see Table 4; syncretic forms in italics). The same split is witnessed for the syncretic 2nd and 3rd person plural of the *-st* verb *leiðast* 'bore'. However, the singular form *leiddist*, which is syncretic across all persons in the singular, is even more improved: only one speaker rejected it outright.

I will claim that the stronger ameliorative effect of singular *-st* syncretism is related to a more general aspect of *-st* morphology: the *-st* suffix collapses all person distinctions in the singular, and this holds across all inflectional classes, in all tenses and moods, and cannot be due to phonology. In the proposed analysis, the presence of *-st* prevents the building of the "contradictory" feature bundles which are typically assumed to cause problems in non-syncretic cases.

1.3 Proposal

The analysis developed here is basically as follows. Independently of DAT-NOM constructions, the *-st* suffix has a Person feature, which I will suggest to be

Table 4: Past tense forms of *líka* 'like' and *leiðast* 'bore'

	líka 'like'		*leiðast* 'bore'	
	SG	PL	SG	PL
1	*likaði*	líkuðum	*leiddist*	leiddumst
2	líkaðir	líkuðuð	*leiddist*	*leiddust*
3	*líkaði*	líkuðu	*leiddist*	*leiddust*

[−PARTICIPANT], but no number feature. This allows it to be merged in an argument position under various conditions. It moves to a clitic position in the inflectional domain lower than the Number (Nm) head (which is lower than Person (Pn)), but higher than verb-phrase-internal arguments.

The singular syncretism can be understood by adopting Kratzer's (2009) proposal that Agree involves ϕ-feature union, with the auxiliary assumption that singular number agreement is non-number agreement (see Nevins 2011). When Nm establishes an Agree relation with a plural object, Nm takes not only the number features but its other ϕ-features as well – including person. When Pn probes, it has access to these person features only because they have been "pied-piped" past *-st* by feature union. They are present on the next inflectional head down, Nm, in line with Baker & Willie (2010). When the object is singular, there is no such pied-piping and Pn can only Agree with *-st*.

The account can then be extended to capture object agreement restrictions in DAT-NOM constructions in a manner very similar to previous analyses (e.g. D'Alessandro 2003, Holmberg & Hróarsdóttir 2004, Schütze 2003, Sigurðsson & Holmberg 2008, Ussery 2009). Specifically, feature union builds up "contradictory" ϕ-feature bundles, which are highly unacceptable when they correspond to different morphological exponents, but the result improves somewhat when all the features in this bundle are realized by identical exponents. The present account, however, can also explain why *-st* can help ameliorate such restrictions more than ordinary syncretism: when there is no featural pied-piping, it allows the syntax to proceed without building up the contradictory feature bundles to begin with. The question for the present account is why such forms are not completely perfect, a question which I will address but not answer. Importantly, the present proposal allows us to understand the three-way distinction between non-syncretic forms, morphologically syncretic forms, and "syntactically" syncretic forms.

2 *-st* syncretism

2.1 *-st* syncretism is meta-paradigmatic and not phonological

An occasionally noted fact about *-st* verbs is that they are syncretic for person in the singular, but not the plural (Einarsson 1949: 100, Thomson 1987: 434–440, Anderson 1990: 242, Taraldsen 1995: fn. 2, Sigurðsson & Holmberg 2008: 270). This is odd because usually, when distinctions are collapsed like this, it is in "marked" categories like plural, rather than "unmarked" categories like singular (cf. Ottósson 2008: 334).[3] The *-st* verbs syncretism is thus meta-paradigmatic in Harley's (2008) terms: it occurs with every verb no matter what the morphological shapes of the non-*st* variant are.[4] In the following tables, this meta-paradigmaticity is illustrated by means of examples across various verb classes, in both strong and weak paradigms. In Table 5, I show the phenomenon for the present tense paradigm for weak *i*-verbs and weak *a*-verbs.

Table 5: Weak verbs

(a) Weak *i*-verb: *gera* 'do' – Present

	SG	PL	SG	PL
1	ger-i	ger-um		ger-um-st
2	ger-ir	ger-ið	ger-i-st	ger-i-st
3	ger-ir	ger-a		ger-a-st

(b) Weak *a*-verb: *hagga* 'budge' – Present

	SG	PL	SG	PL
1	hagg-a	högg-um		högg-um-st
2	hagg-ar	hagg-ið	hagg-a-st	hagg-i-st
3	hagg-ar	hagg-a		hagg-a-st

In Table 6, I show a full paradigm in past and present tense, indicative and subjunctive mood, for a particularly irregular strong verb *þvo* 'wash'. In both tenses and both moods, the same syncretism occurs. In the present indicative,

[3]See also Aalberse & Don (2010) (and the references on page 3 there), where it is argued that neutralization is usually induced in marked categories, the plural being their primary example.

[4]Harley (2008) cites Williams (1994) as being the first to identify the "meta-paradigm" as a phenomenon.

the 2nd singular *-rð* and the 3rd singular *-r* disappear with *-st*, collapsing all person distinctions. In the singular present subjunctive, past subjunctive, and past indicative, the 2nd singular *-r* is lost with *-st*. Table 7 shows that when the 2nd singular past tense suffix is itself *-st*, as with *bera* 'carry', distinctions are still lost and there is no sign of two *-st* morphemes.

Table 6: Strong *rð*-verb: *þvo* 'wash' – Full paradigm

	SG	PL	SG	PL
		Present		
1	þvæ	þvo-um		þvo-um-st
2	þvæ-rð	þvo-ið	þvæ-st	þvo-i-st
3	þvæ-r	þvo		þvo-st
		Past		
1	þvo-ð-i	þvo-ð-um		þvo-ð-um-st
2	þvo-ð-ir	þvo-ð-uð	þvo-ð-i-st	þvo-ð-u-st
3	þvo-ð-i	þvo-ð-u		þvo-ð-u-st
		Present subjunctive		
1	þvo-i	þvo-um		þvo-um-st
2	þvo-ir	þvo-ið	þvo-i-st	þvo-i-st
3	þvo-i	þvo-i		þvo-i-st
		Past subjunctive		
1	þvæg-i	þvægj-um		þvægj-um-st
2	þvæg-ir	þvægj-uð	þvæ-i-st	þvægj-u-st
3	þvæg-i	þvægj-u		þvægj-u-st

Table 7: Past tense of *bera* 'carry' – Past

	SG	PL	SG	PL
1	bar	bár-um		bár-um-st
2	bar-st	bár-uð	bar-st	bár-u-st
3	bar	bár-u		bár-u-st

Anderson (1990) observed that this cannot be a (solely) phonological effect. It is true that there are morphophonological effects with the *-st* suffix. For example, dentals (*s, st, t, tt, d*) are often lost from the stem, as illustrated in Table 8. In one case, [ð] is lost from the stem in the present tense: *bregð* + *st* → *bregst* (Table 9). Usually, it is retained in the present tense, as exemplified by *býðst* 'offer'. This could be (partly) phonotactic, since *býð* and *bregð* have different coda structures. However, [ð] is usually dropped in supine forms, unless it is preceded by /*á*/ (IPA = [au]) in the supine stem form (Thomson 1987: 380), so it is also at least partly *morpho*phonological.

Table 8: Dental deletion with *-st* (data from Thomson 1987: 380)

Dental	*-st* verb	non-*st* stem				output	
-s-	kjósast	kýs	+	st	→	kýst	PRESENT
-t-	látast	læt	+	st	→	læst	PRESENT
-d-	haldast	held	+	st	→	helst	PRESENT
-st-	brestast	brast	+	st	→	brast	PAST
-tt-	hittast	hitt	+	st	→	hist	SUPINE

Table 9: Dental deletion with *-st* (data from Thomson 1987: 380)

-st verb	non-*st* stem				output	
bjóðast	býð	+	st	→	býðst	PRESENT
bregðast	bregð	+	st	→	bregst	PRESENT
sjást	séð	+	st	→	sést	SUPINE
dást	dáð	+	st	→	dáðst	SUPINE

Given these facts, the question becomes whether these rules are responsible for the meta-syncretism of person in the singular. It turns out that they cannot be (Anderson 1990). One main reason is that [r] is often lost when *-st* is added (cf. Table 6), but the sequence [rst] is allowed, even with *-st* verbs:

(5)

Attested form	No reason to rule out…	Actual form
færst 'move' (supine)	*þvær* + *-st* → **þværst*	*þvæst* 'wash'
berst 'carry' (SG, pres, *-st* form)	*sér* + *-st* → **sérst*	*sést* 'see'

Anderson (1990: 241) points out another near-minimal pair with **sérst*: the superlative form of 'bad', which is *verst* 'worst'. This shows that the loss of the inflectional *-r* suffix is not due to the incompatibility of the [r] phone with the *-st* suffix.

Another indication that phonology is not to blame for *-st* syncretism comes from the form of strong *-ur* verbs, an example of which is given in Table 10. If *-st* syncretism were due to phonology, the /u/ (IPA = [ʏ]) would be expected to be retained, predicting, for example, *mylur* + *-st* → **mylust*, contrary to fact. Instead, the observed form is *mylur* + *-st* → *mylst*, and the same person syncretism in the singular as with all other verbs.[5]

For these reasons, the meta-paradigmatic collapse of person distinctions in the singular with all *-st* verbs cannot be due to phonology. The fact that such a heterogeneous class of suffixes (including *-ur, -r, -rð, -ð, -st*) fails to appear further suggests that it is not due to any simple kind of morphophonology either. I will discuss the particular morphological forms further in §2.3, after presenting my syntactic account of this syncretism.

2.2 A syntactic account of singular *-st* syncretism

My syntactic account of singular *-st* syncretism relies on the following assumptions. First, Person and Number are separate probes (Sigurðsson & Holmberg 2008, Béjar 2008), and more specifically are separate functional heads in the inflectional domain.[6]

(6) [Pn^0 [Nm^0 [T^0 […]]]]

Second, ϕ-Agree is ϕ-feature union/unification (Kratzer 2009, Harbour 2011).[7] The following definitions are taken from Kratzer (2009).

[5]The loss of certain phones, such as [ð] on *berð* + *-st* → *berst*, however, could be derived by phonological deletion. Note that in the case of *bregð* + *-st* → *bregst*, it is a non-inflectional stem [ð] that is deleted, whereas with *berð* + *-st* → *berst*, it is an inflectional suffix *-ð*; since this is the only distinguishing suffix in this subparadigm, it is not possible to tell if this is phonological deletion or not. Similarly, it may be that [ð] deletion in the 2nd person plural, illustrated for example by *þvo-ið* + *-st* → *þvo-i-st* 'wash', is similarly phonological.

[6]It is not strictly necessary in the present account that they be separate heads, as I assume, as long as Person and Number probe separately, and Number probes first.

[7]The mechanism I adopt is from Kratzer (2009), but Harbour (2011) has a similar approach. Specifically, he argues that a probe can pick up two sets of features, even if they conflict in feature values, and proposes that there are morphemes in Kiowa which are specifically sensitive to conflicting feature values; see also Oxford (2019). A reviewer points out the present proposal is conceptually similar to Kotek's (2014) notion of parasitic agreement and van Urk's (2015) notion of "best match", although the details of these proposals are different enough that they cannot be imported without modification into the present analysis.

Table 10: Strong verbs

(a) Strong *-rð*-verb: *sjá* 'see' – Present

	SG	PL	SG	PL
1	sé	sjá-um		sjá-um-st
2	sé-rð	sjá-ið	sé-st	sjá-i-st
3	sé-r	sjá		sjá-st

(b) Strong *-ð*-verb: *bera* 'carry' – Present

	SG	PL	SG	PL
1	ber	ber-um		ber-um-st
2	ber-ð	ber-ið	ber-st	ber-i-st
3	ber	ber-a		ber-a-st

(c) Strong *-ur*-verb: *mylja* 'pulverize' – Present

	SG	PL	SG	PL
1	myl	mylj-um		mylj-um-st
2	myl-ur	mylj-ið	myl-st	mylj-i-st
3	myl-ur	mylj-a		mylj-a-st

(7) a. *Agree*: The ϕ-feature set of an unindexed head α that is in need of ϕ-features (the probe) unifies with that of an item β (the goal) if β is the closest element in α's c-command domain that has the needed features. (Kratzer 2009: 197)

b. *Phi-feature unification*: [Unification] applies to expressions $\alpha_1, \ldots, \alpha_n$ with associated feature sets $A_1, \ldots, A_n$ and assigns to each $\alpha_1, \ldots, \alpha_n$ the new feature set $\bigcup\{A_1, \ldots, A_n\}$. (Kratzer 2009: 195)

Third, *-st* is an argument clitic which occupies a low clitic position, higher than VoiceP/vP, but lower than Pn/Nm/T, as argued extensively in Wood (2015: ch. 2) (see also Eythórsson 1995, Kissock 1997, Sigurðsson 2012, Svenonius 2005, 2006). Thus, *-st* can in principle be an intervener for ϕ-Agree.

(8) [Pn^0 [Nm^0 [T^0 [… *-st* … [(DP) Voice^0]]]]]

Fourth, *-st* has a person feature but no number feature. This is plausibly an independently necessary assumption if *-st* merges in an argument position (see Wood 2015). This assumption is supported empirically by the fact that *-st* developed diachronically from a 3rd person reflexive which was itself invariant for number, and by the fact that it has no other forms – it is insensitive to person/number.[8] The specific proposal that the morpheme is [−PARTICIPANT] captures the intuition that non-1st/2nd person features are involved that are not quite 3rd person (since there is no specification for [±AUTHOR]).

Finally, morphological singular agreement is "non-number" agreement. Nevins (2011) argues for something along these lines, on a number of empirical grounds. The strongest of these is the typological absence of "number-case" constraints analogous to "person-case" constraints.[9] He proposes that while Person features consist of two binary features [±AUTHOR, ±PARTICIPANT], number features are privative and involve either the presence or absence of (for example) [PLURAL]; there is no "singular" feature in the syntax. For the present proposal, what is necessary is that singular DPs do not establish an Agree relation with Nm; Nevins's stronger claim entails this. However, in the derivations below I will still represent DPs as though they contain "singular" features, for expositional purposes, since only the absence of singular agreement is important.

First, I will show how this works for a 1st person singular example without *-st* (and thus without the syncretism in question).

(9) Ég græt.
I.NOM cry.1SG
'I cry.'

[8] In addition, there are precedents in the literature. D'Alessandro (2003) argues that Icelandic *-st* and Italian impersonal *si* have a person feature which is not 1st or 2nd person, but does not say more about exactly what kind of person feature this is. Taraldsen (1995) also claims that Italian *si* is 3rd person and has no number feature.

[9] He also cites, among other things, agreement phenomena in languages like Georgian, the absence of "inverse" constructions based on number (as opposed to person, where inverse constructions are common), and agreement attraction, which is always for number and not person.

(i) The key to the cabinets are missing.

(ii) * The story about you are interesting.

In (i), the plural *cabinets* is able to trigger number agreement on the verb, while in (ii), the embedded *you* is not able to trigger person agreement.

(10) No-*st* – No Person syncretism in the singular

a.		Pn	Nm	DP[1sg]	→ Nm probes
b.		Pn	**Nm**[**dflt(sg)**]	DP[1sg]	→ Pn probes
c.		**Pn**[**1sg**]	Nm[dflt(sg)]	**DP**[**1sg**]	→ DP moves for EPP
d.	**DP**[**1sg**]	Pn[1sg]	Nm[dflt(sg)]	~~**DP**[**1sg**]~~	

In step (b), Nm probes for the nearest plural feature, on the above assumption that singular agreement is "non-number" agreement. It finds no plural feature, and thus takes on the default "singular" feature. In step (c), Pn probes for the nearest Person feature, and finds one on the subject DP. It establishes an Agree relation (Chomsky 2001), and given the assumption that ϕ-Agree is ϕ-feature union, Pn takes the DP's number as well as person. Finally, in step (d), the nearest DP, which happens to be the subject, moves to the left of Pn.

Now consider what happens when *-st* is present and intervenes between Pn and the potential DP goal.

(11) Ég meiddi-st.
I.nom hurt.1/2/3sg-st
'I got hurt.'

(12) *-st* – Person syncretism in the singular

a.		Pn	Nm	-st[3]	DP[1sg]	→ Nm probes
b.		Pn	**Nm**[**dflt(sg)**]	-st[3]	DP[1sg]	→ Pn probes
c.		**Pn**[3]	Nm[dflt(sg)]	**-st**[3]	DP[1sg]	→ DP moves for EPP
d.	**DP**[**1sg**]	Pn[3]	Nm[dflt(sg)]	-st[3]	~~**DP**[**1sg**]~~	

Step (b) is the same as above. However, in step (c), *-st* intervenes between Pn and the DP – the would-be goal. Since *-st* has a Pn feature, an Agree relation is established between Pn and *-st*. Finally, the DP moves to the left of Pn to satisfy the EPP. Note that EPP, in this case, is dissociated from agreement. This is a necessary assumption about movement anyway to account for dat-nom constructions, where EPP-driven movement of a dative is dissociated from agreement with nominative objects.

Here, I take this dissociation to be even more general, so that Pn can Agree with *-st*, but the subject can move to satisfy the EPP (see also Baker & Willie 2010: 118, where non-finite T has an EPP feature which triggers movement even though it is not a probe for agreement).

Now consider how number agreement along with feature union can avoid syncretism.

(13) Við gef-um-st upp.
we.NOM give-1PL-ST up
'We surrender.' (Kissock 1997: 3)

(14) *-st* – No Person syncretism in the plural

a.		Pn	Nm	-st[3]	DP[1PL]	→ Nm probes
b.		Pn	**Nm**[1PL]	-st[3]	**DP**[1PL]	→ Pn probes
c.		**Pn**[1PL]	**Nm**[1PL]	-st[3]	DP[1PL]	→ DP moves for EPP
d.	**DP**[1PL]	Pn[1PL]	Nm[1PL]	-st[3]	~~DP[1PL]~~	

When Nm probes for a plural feature, it finds one on the DP and establishes an Agree relation. Since Agree is feature union, Nm takes on the Person features of the goal as well. When Pn probes, it finds the Person features on the Nm head and establishes an Agree relation. It picks up both the Person and Number features of the Nm head. Thus, establishing an Agree relation with the plural DP allows the Person features to be "pied-piped" across *-st*, preventing intervention of the latter.

2.3 The morphology of *-st* syncretism

So far, I have argued that *-st* has a 3rd person feature, [−PARTICIPANT], so that person agreement past *-st* is not possible. It is worth considering how this specific choice of feature leads to the morphological forms observed. It cannot be an ordinary 3rd person feature bundle (e.g. [−PARTICIPANT,−AUTHOR]) because that would predict the syncretic form to look more like the non-*st* 3rd person form than it does. Consider Table 11. If it were an ordinary 3rd person feature bundle, the expected singular form of *myljast* would be *myl-ur-st*, when in fact it is *myl-st*.

Table 11: Strong *-ur*-verb: *mylja* 'pulverize' – Present

	SG	PL	SG	PL
1	myl	mylj-um		mylj-um-st
2	myl-ur	mylj-ið	myl-st	mylj-i-st
3	myl-ur	mylj-a		mylj-a-st

This issue is resolved by assuming that that the *-ur* ending reflects the feature [−AUTHOR]. Where there is a distinction between 2nd and 3rd person, the 2nd person morpheme is [−AUTHOR, +PARTICIPANT].

(15) a. [−AUTHOR, +PARTICIPANT] ↔ [rð], [ð], …
b. [−AUTHOR] ↔ [r], [ur], …
c. elsewhere ↔ ∅, [a], …

Given this much, the intuition that *-st* is 3rd person but not fully 3rd person can be captured by saying that it is [−PARTICIPANT] (compare Figures 1 and 2). Since there are no forms to realize just this feature, it adopts the “elsewhere” zero agreement allomorph.[10]

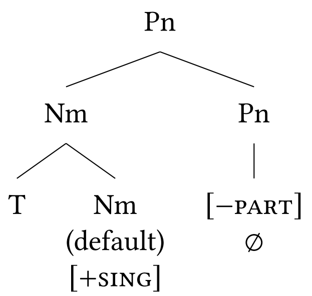

Figure 1: Singular agreement with *-st*

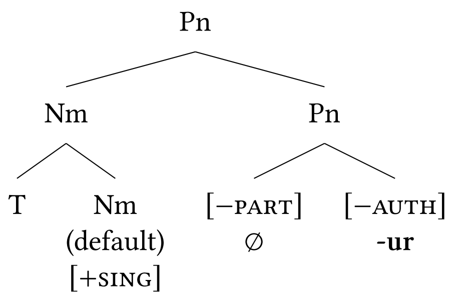

Figure 2: “True” third-person singular agreement

3 Ameliorative effect of *-st* syncretism

Recall from earlier that a range of analyses in the literature cited above argues that both the 1st/2nd person agreement restrictions and the improvement in the context of syncretic forms stem from the verb agreeing in person with both the dative and the nominative. When verbal inflectional heads successfully Agree with a dative argument, they may continue to probe and, when possible, enter into a Multiple Agree relation with a nominative as well (Schütze 2003, Sigurðsson & Holmberg 2008, Ussery 2009, Atlamaz & Baker 2018, Coon & Keine 2021).[11]

[10] Another possibility, pointed out to me by Neil Myler (p.c.), is that *-st* itself is a person agreement morpheme, and that what appears to be plural person agreement is actually just number agreement with allomorphs determined by person. While I find this idea appealing, it is challenged by the fact that *-st* appears on infinitive forms and supine forms, neither of which shows agreement inflection of any other kind.

[11] I assume that dative arguments are special in this regard, and that Multiple Agree does not occur when Pn agrees with a nominative subject, the *-st* clitic, etc.

The Agree relation with the nominative, however, is only licit if the dative subsequently moves to the left of the probe (Holmberg & Hróarsdóttir 2004, Kučerová 2007, 2016, Sigurðsson & Holmberg 2008, see also Chomsky 2008). In this situation, the probe receives default 3rd person features from the dative (regardless of whether the dative is actually 3rd person), and whatever features the nominative bears. I adopt this analysis as well, but only for a subset of cases, namely person sycretism in the plural and non-*st* cases.

Without the analysis of *-st* given above, these accounts predict two situations: either there exists a syncretic form, and the example improves, or there exists no syncretic form, and the example is out. These predictions are summarized in Table 13 for the forms in Table 12 (syncretic forms italicised in both tables).

Table 12: Syncretic Forms

	líka 'like'		*leiðast* 'bore'	
	SG	PL	SG	PL
1	*likaði*	líkuðum	*leiddist*	leiddumst
2	líkaðir	líkuðuð	*leiddist*	*leiddust*
3	*líkaði*	líkuðu	*leiddist*	*leiddust*

Table 13: Predictions of Multiple Agree accounts

	Verb	Feature bundle	Syncretic form?	
a.	*leiðast* 'bore'	1/2SG+3	Yes	→ Improved
b.	*leiðast* 'bore'	2PL+3	Yes	→ Improved
c.	*leiðast* 'bore'	1PL+3	No	→ Bad
d.	*líka* 'like'	1SG+3	Yes	→ Improved
e.	*líka* 'like'	2SG+3	No	→ Bad
f.	*líka* 'like'	1PL+3	No	→ Bad
g.	*líka* 'like'	2PL+3	No	→ Bad

However, as shown in Table 14, there seem to be three classes of acceptability rather than two. Most speakers found the 1st and 2nd plural singular nominative objects with the *-st* verb *leiðast* 'bore' either OK or "?". The plural syncretism of *leiðast* in the 2nd/3rd person fared on par with the 1st/3rd person singular syncretism of the non-*st* verb *líka* 'like', where the judgments split.

Table 14: Acceptability of syncretic and non-syncretic forms (Data from Sigurðsson 1992: 74–76)

	Improvement due to singular *-st* syncreticism			OK/?	??/*
a.	Henni her.DAT	*leiddist* bored.1/2/3SG	ég. I.NOM	8	1
	Henni her.DAT	*leiddist* bored.1/2/3SG	þú. you.NOM	8	1
	Improvement due to syncreticism			OK/?	??/*
b.	Henni her.DAT	*líkaði* liked.1/3SG	ég. I.NOM	5	4
	Henni her.DAT	*leiddust* bored.2/3PL	þið. you.PL.NOM	5	4
	No syncretism – no improvement			OK/?	??/*
c.	Henni her.DAT	*líkaðir* liked.2SG	þú. you.NOM	0	9
	Henni her.DAT	*líkuðum* liked.1PL	við. we.NOM	0	9
	Henni her.DAT	*líkuðuð* liked.2PL	þið. you.PL.NOM	0	9
	Henni her.DAT	*leiddumst* bored.1PL	við. we.NOM	2	7

I now show how the account of *-st* syncretism provided above captures these data. Specifically, while my account admittedly predicts the singular *-st* cases to be fully grammatical (contrary to fact), it makes the cut in the right direction: it predicts a difference between Table 14a and 14b. There are arguably further constraints on 1st/2nd person nominative objects which account for the fact that the examples in Table 14a are not perfect (see discussion below).

First, consider improvement due solely to syncretism (Sigurðsson 1996: 33).

(4) a. ?? Henni líkaði ég.
her.DAT liked.1/3SG I
INTENDED: 'She liked me.'

b. * Henni líkaðir þú.
her.DAT liked.2SG you.SG
INTENDED: 'She liked you.' (Sigurðsson 1996: 33)

(16) DAT-NOM singular non-agreement (2nd person NOM)

a.		Pn	Nm	DAT[3]	NOM[2SG]	→ Nm probes
b.		Pn	**Nm**[**DFLT(SG)**]	DAT[3]	**NOM**[**2SG**]	→ Pn probes DAT/NOM
c.		**Pn**[2SG,3]	Nm[DFLT(SG)]	**DAT**[3]	**NOM**[**2SG**]	→ DP moves for EPP
d.	**DAT**[3]	Pn[2SG,3]	Nm[DFLT(SG)]	~~**DAT**[3]~~	NOM[2SG]	

The Nm head does not pied-pipe any Person features since NOM is singular. The Pn head agrees with both DAT and NOM, and thus has the feature bundle [2SG, 3]. This is ungrammatical since there is no form syncretic for both 2nd and 3rd person singular. However, if NOM had been 1st person, there is a syncretic form, so the example improves slightly. Note that even in the syncretic form, the syntax still contains a phi-feature bundle with contradictory values.[12]

Now consider what happens when *-st* is involved.

(17) a. ? Henni leiddist ég.
her.DAT bored.1/2/3SG I
'She found me boring.'

[12] I assume, following Bjorkman (2016), that when one head has two feature sets of the same type, Vocabulary Insertion must apply twice, once for each feature set, and the result is only grammatical if those two separate competitions result in the same form. For other proposals in the same spirit (but with different details), see Citko (2005), Kratzer (2009), Bhatt & Walkow (2013), Asarina (2013) and Coon & Keine (2021), among others. Coon & Keine (2021) develop an insightful account of ameliorative syncretism in Icelandic DAT-NOM constructions very much in the spirit of the present paper. Their analysis does not account for the special effects of singular *-st* syncretism, and something different from the present account would have to be said about why *-st*, despite being third person, intervenes for person agreement.

b. ? Henni leiddist þú.
her.DAT bored.1/2/3SG you.SG
'She found you boring.' (Sigurðsson 1996: 33)

c. Mér leiddist hún.
me.DAT bored.1/2/3SG she.SG
'I found her boring.' (Sigurðsson 2011: 16)

(18) DAT-NOM singular *-st* non-agreement (2nd person NOM)

a.	Pn	Nm	-st[3]	DAT[3]	NOM[2SG]	→	Nm probes
b.	Pn	**Nm**[**DFLT(SG)**]	-st[3]	DAT[3]	NOM[2SG]	→	Pn probes *-st*
c.	**Pn**[3]	Nm[DFLT(SG)]	**-st**[3]	DAT[3]	NOM[2SG]	→	DP moves for EPP
d. **DAT**[3]	Pn[3]	Nm[DFLT(SG)]	-st[3]	~~DAT[3]~~	NOM[2SG]		

This time, when Pn probes, it agrees with *-st* rather than NOM. Thus, when *-st* is present, there is no conflict. The question that arises on my approach is why these examples are marked at all. Unlike above, the syntax here never builds a contradictory feature bundle in the first place. The difference in acceptability judgments thus has to be linked to the different elements present in the syntax.

Finally, consider *-st* with a plural nominative object (Sigurðsson 1996: 33).[13]

(19) a. * Henni leiddumst við.
her.DAT bored.1PL we
INTENDED: 'She found us boring.'

b. ?? Henni leiddust þið.
her.DAT bored.2/3PL you.PL
INTENDED: 'She found you (plural) boring.' (Sigurðsson 1996: 33)

(20) DAT-NOM plural *-st* non-agreement (2nd person NOM)

a.		Pn		Nm	-st[3]	DAT[3]	NOM[2PL] → Nm probes
b.		Pn		**Nm**[2PL]	-st[3]	DAT[3]	**NOM**[2PL] → DAT moves
c.		Pn	**DAT**[3]	**Nm**[2PL]	-st[3]	~~DAT[3]~~	NOM[2PL] → Pn probes DAT/Nm
d.		**Pn**[2PL,3]	**DAT**[3]	**Nm**[2PL]	-st[3]	~~DAT[3]~~	NOM[2PL] → DP moves for EPP
e.	**DAT**[3]	Pn[2PL,3]	~~DAT[3]~~	Nm[2PL]	-st[3]	~~DAT[3]~~	NOM[2PL]

[13] Sigurðsson marks both examples as ungrammatical, but recall from Table 14a that the improvement of (19b) over (19a) is comparable to the improvement of (4a) over (4b).

Here, featural pied-piping allows the contradictory feature bundles to be built. Nm enters into an Agree relation with the nominative, and thus obtains 2nd person plural features. The dative is thus required to move to its left, as discussed above. Pn agrees with the dative and the Nm head, picking up 3rd person and 2nd person plural features. Thus, plural forms of *leiðast* 'bore' pattern like all forms of *líka* 'like': they are ungrammatical unless syncretism improves acceptability slightly. The fact that *leiðast* 'bore' behaves in the 2nd person plural like the non-*st* verb *líka* 'like' shows that it is not the -*st* morpheme plus syncretism which improves the example per se; -*st* only improves it (beyond the non-*st* cases) when its presence prevents the syntax from building up the contradictory feature bundle which needs a syncretic form to survive. The syntactic approach to -*st* syncretism proposed for here predicts this to be the case.

As a final remark, note that nothing in the present account predicts singular 1st/2nd person objects of *leiðast* 'bore' to be less than perfect. Possibly, 1st/2nd person nominatives are subject to special constraints. Cartographic work often posits particular positions for 1st/2nd person (Săvescu Cuicivara 2009). Note that even in infinitive contexts, where agreement should not be an issue, such objects are slightly degraded.

(21) ? Hún vonaðist auðvitað til að leiðast við/þið/þeir ekki mikið.
she hoped of.course for to bore.INF we/you/they.NOM not much
'She of course hoped not to find us/you/them very boring.' (Sigurðsson & Holmberg 2008: 271)

Sigurðsson & Holmberg (2008: 271) suggest that this is due to the difficulty of controlling non-agentive predicates. However, it is suggestive that when agreement is not at issue, 1st/2nd person objects are only slightly degraded. Why they are degraded at all is a question I must set aside for now.[14]

4 Conclusion

In this paper I have proposed that syncretism can shed light on the size of feature bundles involved in Agree relations and the nature of those relations. At a general level, ϕ-features are individually active in Agree relations and in syntactic primitives, but since Agree works as unification, collections of ϕ-features are

[14] Einar Freyr Sigurðsson points out to me that in principle this should hold for all dative-nominative verbs, whether -*st* is present or not. However, independent factors may vary, and as far as I know there has not been any thorough study of the matter. See Sigurðsson (2010) for a proposal that may bear on the question.

quickly assembled into bundles in the course of the derivation. But they are not always assembled in the same way. The *-st* clitic has a person feature (proposed to be [−PARTICIPANT]) which induces person syncretism in the singular for all *-st* verbs, but which also ”shields” the grammar from building contradictory feature bundles in the presence of 1st and 2nd person nominative objects – again, though, only in the singular. The special status of plural in this collection of facts stems from what I have called “featural pied-piping”: the presence of a plural feature leads to the establishment of an Agree relation with the consequence that person features are “pied-piped” to the Nm head – past *-st*, which now can neither induce syncretism nor shield the grammar from the person features of 1st/2nd person nominative objects. Why plural features are like this remains to be established, but if singular is really the absence of a privative number feature, then perhaps “singular agreement” *must be* the absence of number agreement. The broad implication is that the larger a feature bundle is, the harder it will be for the grammar to stop that bundle from being a goal in an Agree relation.

Abbreviations

1	1st person	DAT	dative	NOM	nominative
2	2nd person	DFLT	default	PL	plural
3	3rd person	INF	infinitive	SG	singular
ACC	accusative	M	masculine	ST	*-st* clitic

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Chapter 10

The morphosyntax of andative forms in the Campiota vernacular: The synthetic behavior of restructuring roots

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This article investigates the syntactic and morphological properties of andative motion verb constructions – i.e., constructions that are composed of the motion verb *go* and a main lexical verb – in Campiota, a southern Italian Salentino dialect. Campiota displays two of such constructions; one is mono-clausal/mono-eventive, and the other bi-clausal/bi-eventive. It will be shown that both constructions share the same root /*ʃ*-/*B*-/ 'GO' with its idiosyncratic morphophonological properties, including its suppletive patterns. The same motion verb root, thus, displays a lexical use and an affixal one, which it will be argued results from a semantic bleaching operation. In its lexical use, the motion verb root may select argument structure and a full clause; on the other hand, when used as an affix, it is part of the full extended projection of the lower verb and has special morphological behavior: it can be reduplicated and is attached to the participle in participial compound tenses. It will be argued that the relation between the lexical verb GO and its bleached affixal counterpart in Campiota motion verb constructions (MVCs) is better understood if bleaching may entail an operation – referred to here as Syntactic Truncation – in which the higher motion verb selects a vP constituent and, therefore, all the projections of the lower verb are prevented from being projected. The characteristic properties of MVCs in other Italo-Romance varieties will also be investigated: this will lead to an analysis of the restructured and non-restructured infinitival MVCs and MVCs with double inflections found in these other varieties. It will then be shown how they correlate to the two andative MVCs in Campiota.

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1 Introduction

An examination of the syntactic and morphological properties of *motion verb constructions* (MVCs) (Cruschina 2013, Cruschina & Calabrese 2021), i.e., constructions that are composed of a motion verb (*go*, *come*, *pass (by)*, etc.) and a main lexical verb, in southern Italian dialects, reveals different types of morphosyntactic structures.[1] Specifically, the higher verbal form in such constructions can in principle be a lexical verb, but can also be analyzed as an aspectual marker. In the case of the verb GO, Cruschina (2013), along the lines of Cinque (1999, 2006), refers to this aspect as the "andative", which signals that a distance, possibly also temporal, away from the speaker, must be covered for the action to be realized or executed, matching in this way the directional properties of this verb's lexical semantics, (see Cinque 2006 for further references on this aspect, cf. also Heine & Kuteva 2018).[2] The Salentino "andative" verbal forms have been recently investigated in Ledgeway (2016) and Manzini et al. (2017), Cardinaletti & Giusti (2019) (see also Andriani 2017, Cardinaletti & Giusti 2001, 2003, Cruschina 2013, Cruschina & Calabrese 2021, Di Caro 2015, 2018, 2019, Di Caro & Giusti 2015, Manzini & Savoia 2005 on related constructions in other southern Italian and Sicilian dialects).

In this article, I will focus on Campiota, the Salentino dialect of Campi Salentina, in the northern part of the Lecce province, which displays two andative motion verb constructions (cf. 2–4). They have approximately the same meaning, insofar as Campiota speakers may translate the same Italian sentences in either way (1a = 2), (1b = 3), (1c = 4) and readily switch from one construction to the other despite the striking differences they may have in some cases[3] (4, for example):

(1) a. stasera vado a coricarmi presto
tonight go-PRS.1SG. to go.to.bed-INF-self.CL earlier
'Tonight, I will go to go to bed earlier.'

b. stasera vado a comprarlo
tonight go-PRS.1SG. to buy-INF-it.CL
'Tonight, I will go to buy it.'

[1]For ease of recognition, I decided to use the commonly used Italianized form Campiota to refer to this variety, instead of the most proper vernacular Kampiotu.

[2]Further bleaching of the original movement of GO meaning in MVCs may lead to the development of a future tense. This is a cross-linguistically common grammaticalization path (see Bybee et al. 1994). However, there is no southern Italian dialect in which GO has developed the temporal function that it has in many other Romance varieties, such as Spanish, Portuguese, and French, where in MVCs the GO element functions as a future marker (see, e.g., Squartini 1998, among many others).

[3]But see below on the subtle semantic differences between (10a) and (10b).

c. ieri sono andato a comprarlo
tonight BE-PRS.1SG. go-PTCP-M.SG to buy-INF-it.CL
'Yesterday, I went to buy it.'

(2) a. stasira au ku mme kurku mprima
tonight go-PRS.1SG. ku self.CL go.to.bed-PRS.1SG earlier

b. stasira me bba kkurku mprima
tonight self.cl GO- go.to.bed -PRS.1SG. earlier
'Tonight, I will go to bed earlier.'

(3) a. stasira au ku llu kkattu
tonight go-PRS.1SG. ku it.CL buy-PRS.1SG

b. stasira lu bba kkattu
tonight it.CL GO- buy-PRS.1SG
'Tonight, I will buy it.'

(4) a. jeri su ʃutu ku llu kkattu
yesterday BE-PRS.1SG. go-PTCP-M.SG ku it.CL buy-PRS.1SG

b. jeri l' addʒu ʃʃa kkattatu
yesterday it.CL HAVE-PRS.1SG. GO- buy-PTCP-M.SG
'Yesterday, I went to buy it.'

As shown below,[4] the first construction is a bi-clausal/bi-eventive structure where a fully-fledged bundle of Tense and Agreement features is morphologically realized on the matrix verb. The matrix verb GO selects a clause introduced by the complementizer /*ku*/ which is similar to an independent infinitive in Italian or to a subjunctive in the Balkan languages (see Calabrese 1993), and may involve a reduced CP (FinP in Rizzi's (1997) terms). I will refer to it as the Full-Fledged MVC.

The second construction is a mono-clausal/mono-eventive structure where it is the lower verb that is morphologically marked with the full-fledged bundle of Tense and Agreement features.[5] The verbal GO element in it appears as an uninflected particle and behaves as an affix attached to the lower verb.[6]

[4]In order to demonstrate the mono-clausality/bi-clausality of Campiota MVCs I will use the diagnostics proposed by Cardinaletti & Giusti (2003) to test the mono-clausality/bi-clausality of Doubly Inflected Constructions (DICs) and the related Infinitival MVC in Sicilian dialects (see below for more discussion and Section 3.7 on the DICs).

[5]See Prete & Todaro (2020), Todaro & Prete (2018) for a semantic analysis of the single event interpretation of MVCs in Sicilian dialects.

[6]See Cruschina (2013), Cruschina & Calabrese (2021), and Ledgeway (2016) on the invariant forms as the final morphological step of a grammaticalization due to different morphophonological reduction processes. I will refer to it as the Reduced MVC.

A crucial issue will be the morphosyntactic status of the verbal GO element in Campiota Reduced MVCs. Cardinaletti & Giusti (2003) argue that the motion verbs that appear as the higher verbs in mono-clausal MVCs are "lexical categories merged as functional heads" in the extended projection of the lower verb. On the other hand, they define these verbs as "semi-lexical verbs" because, while it is true that they lack, or have lost, their canonical lexical properties, they still retain their motion semantics. The morphosyntactic status of the higher motion verbs in mono-clausal MVCs is, however, not fully investigated in their work. This is what I will do in this article building on their analysis. Specifically, I will propose that the GO element in Campiota Reduced MVCs is actually an affix (see Section 3.7 for the DICs studied by Cardinaletti & Giusti 2003). However, as expected in Cardinaletti & Giusti's analysis, this affixal element shares semantic and crucially morphophonological properties – in particular, the same suppletive allomorphy – with its lexical counterpart. So, I will also propose that both Campiota MVC constructions share the same root */ʃ-/B-/* 'GO' with its idiosyncratic morphophonological properties, including its suppletive patterns.

It follows that the same motion verb root displays a lexical use and an affixal one: in its lexical use it may select argument structure and a full clause; when used as an affix, it is part of the full extended projection of the lower verb, and has special morphological behavior: it can be reduplicated and is attached to the participle in participial compound tenses. I will argue that the relation between the lexical verb GO and its bleached counterpart in Campiota MVCs is better understood if the bleaching involves an instance of an operation – referred to here as Syntactic Truncation – in which the higher motion verb selects a vP constituent and, therefore, all the projections of the lower verb are prevented from being projected (Wurmbrand 2014, 2015, 2017). This relation is instead not adequately captured in an approach like Cinque (2004, 2006), where all restructuring verbs are always functional heads. If we adopt this hypothesis, on the one hand, the fact that the reduced and full-fledged andative constructions of Campiota share the same lexical root becomes a matter of pure coincidence. In this approach, in fact, the sharing of the root can only be motivated historically, but not synchronically in which case one could expect totally different lexical exponents. On the other hand, the semantic interchangeability of these constructions also becomes a problem in the sense that one must also assume that there is an andative interpretation of the Full-Fledged MVC, which implies that the "andative" GO can be an aspectual functional head, not only in Reduced MVCs but also in full-fledged ones, something which is not explainable in this approach.

The article is organized as follows: Section 2 discusses the basic facts concerning the Campiota MVCs starting with the diagnostics for their bi-clausality/ mono-causality, and shows that the Reduced MVCs are mono-clausal and the full-fledged ones bi-clausal (§2.1). The following sections deal with the special properties of these MVCs: §2.2 discusses the *ku*-clauses that are embedded in Full-Fledged MVCs; §2.3 shows that the *ʃʃa*/*bba* piece that characterizes Reduced MVCs can be analyzed as having the same root of the andative element appearing in Full-Fledged MVCs insofar as they share the same basic morphophonological properties; §2.4 investigates the progressive aspect constructions which often co-occur with the reduced andative MVCs. §2.5 deals with the reduplication process targeting the *ʃʃa/bba* piece in Reduced MVCs, and §2.6 with the peculiar position of the *ʃʃa/bba* piece in compound tenses where it appears attached to the lower participle. Section 3 provides an analysis of the Campiota facts. §3.1 shows how abstract syntactic structures are converted into surface morphosyntactic head-complexes in Distributed Morphology (Halle & Marantz 1993), the morphology model adopted here. §3.2 discusses the process of syntactic truncation, which converts Full-Fledged MVCs into reduced ones. §3.3 accounts for the progressive structure morphosyntax, and §3.4 for the formation of periphrastic structures, and the peculiar positioning of the *ʃʃa/bba* piece in compound tenses. §3.5 analyzes the reduplication process characterizing the Reduced MVCs. The relation between the *ku*-clauses embedded in Full-Fledged MVCs in Campiota and the infinitival clauses of the same constructions in other Italo-Romance varieties is dealt with in §3.6. Finally, Section 3.7 deals with the Doubly Inflected MVCs of other southern Italo-Romance varieties in which both the higher motion verb and the lower verb share the same inflectional features. A brief conclusion ends the paper.

2 Facts

2.1 Diagnostics for clausality and the Motion verbs construction in Campiota

The first diagnostic used by Cardinaletti & Giusti (2003) is clitic climbing (Rizzi 1976). In fact, since clitic pronouns are clause-bound and target the first T-layer above them, they provide a good diagnostic for mono-clausality/bi-clausality. Clitic climbing to the higher GO element in the MVCs only occurs in the Reduced ones, as in (5a-ii), (6a-ii), (7a-ii) (vs. (5b-ii), (6b-ii), (7b-ii)), but not in the

Full-fledged ones (see (5a-i), (6a-i), (7a-i) vs. (5b-i), (6b-i), (7b-i)); in the latter case the pronoun follows the connecting element /*ku*/ and procliticizes onto the lower verb:[7]

(5) a. i. Stasira ʃamu ku nne kurkamu mprima
tonight go-prs.1pl ku self.cl go.to.bed-prs.1pl earlier
ii. Stasira ne ʃʃa kkurkamu mprima
tonight self.cl GO- go.to.bed-prs.1pl earlier
b. i. * Stasira ne ʃamu ku kkurkamu mprima
ii. * Stasira ʃʃa nne kurkamu mprima
'Tonight we will go to bed earlier.'

(6) a. i. Stasira ʃamu ku llu kkattamu
tonight go-prs.1pl ku it.cl buy-prs.1pl
ii. Stasira lu ʃʃa kkattamu
tonight it.cl GO- buy-prs.1pl
b. i. * Stasira lu ʃamu ku kkattamu
ii. * Stasira ʃʃa llu kkattamu
'Tonight we will buy it.'

(7) a. i. jeri simu ʃuti ku llu kkattamu
yester. BE-prs.1pl go-ptcp-m.pl ku it.cl buy-prs.1pl
ii. jeri l' imu ʃʃa kkattatu
yesterday it.cl HAVE-prs.1pl GO- buy-ptcp-M.SG
b. i. * jeri lu simu ʃuti ku kkattamu
ii. * jeri imu lu ʃʃa kkattatu / *jeri imu ʃʃa llu kkattatu
'Yesterday, I went to buy it.'

If a Reduced MVC is mono-clausal and the GO verbal element is a functional head, we expect that the latter cannot project its argument structure. This leads to Cardinaletti and Giusti's second diagnostic: while a Full-Fledged MVC allows arguments – such as the directional locative in (8a) and the mean of transportation in (8b) – or lexically selected clitic clusters (8c), a Reduced MVC does not allow either (cf. 9a, 9b, 9c):

[7] The attentive reader will note that there are alternations in the length of the word-initial consonants in the following examples, e.g. *kurkamu* in (5a-i) vs. *kkurkamu* in (5a-ii). They are governed by the Raddoppiamento Sintattico process analyzed in Figure 1 (page 222). The word-initial geminate in the verb *kkattare* 'buy' (6) and (7), however, is underlying.

(8) a. au rittu a mare ku mme ddifrisku
go.PRS.1SG towards to sea ku self.CL freshen.up-PRS.1SG
'I am going to the seashore to get some fresh air.'

b. au ku ffatiu ku la makina
go.PRS.1SG ku work.1p.sg with the car
'I go to work with the car.'

c. oɲɲi ssira se ne ʃʃia ku ffatia
every evening self.CL from-it.CL go.IPF.3SG ku work.PRS.3SG
fore
to.the.countryside
'Every evening, he used to go to work in the countryside.'

(9) a. * mme bba ddifrisku rittu a mare
self.CL go.PRS.1SG freshen.up-PRS.1SG towards to sea
'I am going to the square to get rest.'

b. * bba ffatiu ku la makina
GO work-PRS.3SG with the car

c. oɲɲi ssira (*se ne) ʃʃa ffatiava
every evening (self.CL from-it.CL) GO work-IPF.1SG
fore
to.the.countryside

Strong support for a bi-clausal analysis of the Full-Fledged MVC comes from the third diagnostic proposed by Cardinaletti & Giusti (2001, 2019). Discussing Salentino examples from Lecce, Cardinaletti & Giusti (2019) observe that Full-Fledged MVCs refer to two different events, while reduced ones have a single event interpretation. Here I adapt their examples in the Campiota vernacular. By stating (10a) with a Reduced MVC, the speaker not only claims that she goes to buy chicory but, crucially, that she actually buys it every day. For this reason, the continuation, which implies that the event of buying has not taken place, is ungrammatical. This is not the case in the Full-Fledged MVC (10b), where the two verbs have separate Tenses:

(10) a. bba kkattu le tʃikorie oɲɲi dʒurnu (*ma nu lle
GO buy-PRS.3SG the chicories every day (but not them.cl
trou mai)
find.PR3SG never)

b. au ku kkattu le tʃikorie oɲɲi dʒurnu (ma nu lle
go.1p.sg ku buy.PRS.3SG the chicories every day (but not them.cl
trou mai)
find.PR3SG never)
'I go to buy the chicories every day but I never find them.'

In conclusion, a Reduced MVC is a mono-clausal/mono-eventive structure: the higher verbal element GO appears in a reduced and uninflected form; it lacks arguments, and there is obligatory clitic climbing onto it. Tense and Agreement are morphologically realized only on the lower verb. The Full-Fledged MVC is a bi-clausal/bi-eventive structure: the higher GO selects a clause introduced by the complementizer */ku/*, shows full Tense and Agreement realization, and cannot be reduced morphologically; it has arguments, and does not allow clitic climbing.

2.2 *ku*-clauses

In Full-Fledged MVCs, the higher GO verb selects a clause introduced by */ku/*. A brief discussion of such clauses is required. A */ku/*-clause can be analyzed as a reduced subordinate clause (FinP) with an independent TP. In this regard, they are parallel to the well-established subordinate clauses found in Balkan languages (Albanian, Romanian, Greek), which replace infinitival clauses (see Calabrese 1993, Rivero 1994, Manzini & Savoia 2005, Roberts & Roussou 2003 a.o.). *Ku* embedding in Salentino varieties covers all obligatory control and raising environments as well non-obligatory control contexts and subjunctive contexts in general. The particle */ku/* is typically used to introduce clauses embedded under verbs of ordering, desiring, warning, requesting, urging, fearing, etc., as well as purpose clauses, and "before that" clauses (but not "after that" ones). Thus, as detailed by Calabrese (1993), */ku/* introduces the clausal complement of verbs that express an attitude towards, or an attempt to bring about, an event, or eventuality, which is yet to come.[8]

With certain verbs, the *ku*-clauses may alternate with the full finite clause introduced by *ka* 'that'.

(11) a. speru lu Karlu ku bbene kraj
hope.PRS.1SG the Karlu ku come.PRS.3SG tomorrow

[8] In this sense, the eventuality identified in the clause introduced by */ku/* does not refer to a specific point of reference in time: it does not have a deictic tense. Thus, in order to acquire a time reference so that it can be interpreted, the tense of this clause must refer to the time reference of the matrix clause (see Section 3.6 for analysis).

b. speru ka lu Karlu ene kraj
hope.PRS.1SG ka the Karlu come.PRS.3SG tomorrow
'I hope that Charles comes tomorrow.'

Note that the position of the subject of the lower verb is above *ku* in (12) (see also 11a). This makes this finite clause different from the embedded clause introduced by the complementizer *ka*, which occurs above the subject position (see (11b) above).

(12) ojju lu Marju ku *lu Marju (bb)ene kraj
want.PRS.1SG the Marju ku the Marju come.PRS.3SG tomorrow
'I want Mario to come tomorrow.'

Following Calabrese (1993: 36), I take the subject to be in the usual preverbal subject position, where it receives nominative case. One can hypothesize that the connecting element *ku* occurs in a position of the IP field, which Roberts & Roussou (2003) takes to be MoodP, the same position as infinitival *to* in English and subjunctive *na* in Greek.

The independent subject position of the *ku*-clause can, but does not have to be, anaphoric to the subject of the main predicate:

(13) a. ojju ku bbeɲɲu kraj
want.PRS.1SG ku come.PRS.1SG tomorrow
'I want to come tomorrow.'

b. ojju ku bbene kraj
want.PRS.1SG ku come.PRS.3SG tomorrow
'I want that he comes tomorrow.'

When it is anaphoric, other languages require the clause to be infinitival (cf. (14a) in Italian and (14b) in English):

(14) a. * Voglio che venga domani / voglio venire domani
want.PRS.1SG che come.PRS.1SG tomorrow / want.PRS.1SG come.INF tomorrow
'I want to come tomorrow.'

b. * I want that I come tomorrow. / I want to come tomorrow.

As observed by Calabrese (1993), tense distinctions are neutralized in *ku*-clauses; so, sequence-of-tense restrictions are absent in such a clause. As discussed in

Calabrese (1993), the *ku*-clause contains a Tense anaphoric to the Tense in the higher verb (see Footnote 6) as is the case in subjunctives (cf. Calabrese 1993: 46–48 and Manzini & Savoia 2005: 652).

(15) a. ulia ku llu kkattu
want.IPF.1SG ku it-CL- buy-PRS.1SG
'I would have liked to buy it.'

b. * ulia ku llu kkattava
want.IPF.1SG ku it.CL- buy.IPF.1SG

Aspectual contrast, though, may occur in the *ku*-clause:

(16) ulia ku ll' ia kkattatu mprima (cf. (15))
want.IPF.1SG ku it.CL- HAVE-past buy-PRS.1SG earlier
'I would have liked to have bought it.'

Note, however, that aspectual contrasts are not possible in the Fully-Fledged MVC:[9]

(17) a. ʃia ku llu kkattu
go-IPF.1SG ku it.CL buy-PRS.1SG
'I was going to buy it earlier.'

b. * ʃia ku ll' addʒu kkattatu / l' ia kkattatu
go.IPF.1SG ku it.CL have.PRS.1SG buy.PTCP / it.CL have.IPF.1SG buy.PTCP

It should also be noted that the subject of the embedded clause in this type of construction must always be anaphorically bound by the subject of the matrix clause:

(18) Lu Rontsu$_i$ ʃiu pro$_{i, *j}$ ku llu kkatta
The R. go-PRF.3SG pro$_{i, *j}$ ku it.CL buy-PRS.1SG
'Oronzo went to buy it.'

[9]The use of the progressive *sta* makes this sentence more felicitous (see Section 2.4):

(i) sta ʃia ku llu kkattu

It should be noted that as an alternative to the present in the embedded clause in (17a), also the imperfect could be used as in (ii) in striking contrast with (15b). The reasons for this are unclear to me at this moment:

(ii) sta ʃia ku llu kkattava

The connecting *ku* element may be absent in *ku*-klauses (see Ledgeway 2015 for an investigation of *ku*-omission patterns in Salentino). Note that, in this case, the neutralized temporal patterns discussed above are also found in the absence of *ku*. Note also that in this case the clitic pronoun remains on the lower verb:[10,11]

(19) a. ulia ku llu mandʒu
want.IPF.1SG ku it.CL eat.PRS.1SG

b. ulia llu mandʒu
want.IPF.1SG it.CL eat.PRS.1SG
'I would like to eat it.'

It is worth observing, finally, that the fact that clauses that would be infinitival in languages like Italian and English are replaced by *ku*-clauses in Salentino is not due to the morphological absence of infinitival morphology in this Romance variety (see Calabrese 1993). In fact, infinitival forms can actually be used when a verb is a complement of restructuring verbs such as modal or aspectual ones:

[10] In Northern varieties of Salentino (e.g. in the dialect of Mesagne) clitic climbing may occur when *ku* is absent (Calabrese 1993, Terzi 1992, 1994, 1996):

(i) nɔ lu vɔɟɟu ffattsu ccui
not it.CL want.1p.sg do.PRS.1SG anymore
'I no longer want to do it.'

[11] However, */ku/* omission is deprecated in Campiota in Full-Fledged MVC:

(i) a. stasira au ku mme kurku mprima
tonight go-PRS.1SG ku self.CL go.to.bed-PRS.1SG earlier

b. stasira au ku llu kattu
tonight go-PRS.1SG ku it.CL buy- PRS.1SG

(ii) a. ??? stasira au me kurku mprima
b. ?? stasira au llu kattu

In some other varieties *ku*-deletion is accepted: Carmiano: *ʃamu nne kurkamu* GO-PRS.1PL self.cl go.to.bed -PRS.1PL. Note the absence of clitic climbing: **nne ʃamu kurkamu*. Other varieties of the same type, especially from southern Salento, display neutralization of AGR distinction for the higher motion verb in the singular, as in (iii). Also these varieties do not allow clitic climbing if the higher verb is inflected: **nne ʃamu kurkamu*:

(iii)

bba	mme	korku	(Tricase)
GO-PRS.1SG	self.cl	go.to.bed-PRS	1SG
bba	tte	korki	2SG
bba	sse	korka	3SG
ʃamu	nne	korkamu	1PL
ʃati	bbe	korkati	2PL
ane	sse	korkane	3PL

must, *be able*, *begin*, *finish*, *continue*, *stay*, *try*, etc. In this case, we are dealing with a restructuring configuration, in which the restructuring verb behaves as a functional head (see Rizzi 1976, 1978, Cinque 2004, 2006, Wurmbrand 2001, 2004, 2015, 2017). As expected, clitic climbing is obligatory in this case:

(20) a. llu pottsu kkattare kraj
it.CL can-PRS.1SG buy-INF tomorrow
'I can buy it tomorrow.'

b. ll' addʒu kkattare kraj
it.CL must-PRS.1SG buy-INF tomorrow
'I must buy it tomorrow.'

c. llu ntʃiɲɲu a ffare kraj
it.CL begin-PRS.1SG a do-INF tomorrow
'I begin to do it tomorrow.'

d. llu spittʃu te pulittsare stasira
it.CL finish-PRS.1SG te clean-INF tonight
'I finish to clean it tonight.'

Many of these verbs can also appear with *ku*-clauses – with no apparent meaning changes. In this case, no climbing is possible, as expected:[12]

(21) a. ntʃiɲɲu ku llu fattsu kraj (cf. (20)c)
begin-PRS.1SG ku it.CL do-PRS.1SG tomorrow

b. spittʃu ku llu pulittsu stasira (cf. (20)d)
finish-PRS.1SG ku it.CL clean-PRS.1SG tonight

2.3 Reduced MVC

As already discussed, Reduced MVCs are characterized by an uninflected morphological piece *ʃʃa/bba* attached to the lower inflected verb.

Note, first of all, that the *ʃʃa/bba* piece and the verb to which it is attached are tightly connected and cannot be separated by adverbials or other materials.

(22) a. au sempre ku llu leggu allu bar
go-PRS.1SG always ku it-CL read-PRS.1SG to-the bar

b. * lu bba ssempre leggu allu bar

[12] Note that *ku*-deletion is again deprecated in these cases in Campiota:

(i) a. ??? ntʃiɲɲu llu fattsu kraj

b. ??? spittʃu llu pulittsu stasira

c. lu bba lleggu sempre allu bar
it-CL GO read-PRS.1SG always to-the bar
'I always go to read it at the bar.'

The complex piece *ʃʃa/bba* plus the following verb appears to be a single morphosyntactic constituent. This is also shown by the fact that it can be syntactically moved as a single syntactic piece in imperative forms. Note that even in these imperative forms, the clitic cannot appear between the andative form and the following verb:

(23) a. bba kkatta=lu!
GO buy-IMPER.2SG=it-CL
'Go buy it.'
(cf. lu bba kkatti)
it-CL GO buy-PRS.2SG
'You go buy it.'

b. ʃʃa kurkamu=ne!
GO go.to.bed-IMPER.1PL=self-CL
'Let's go to bed.'
(cf. ne ʃʃa kurkamu)
self-CL GO go.to.bed-PRS.1PL
'We go to bed.'

c. * bba -lu kkatta!

d. * ʃʃa -ne kurkamu!

The *ʃʃa/bba* piece does not correspond to any surface verbal forms. It is analyzed below. To understand its nature and composition it is necessary to consider the forms of *ʃire* as the main verb, and analyze them:

(24) *ʃire* as a main verb:

a. Present:

i.

	Today	go-PRS.	to.the.country.side
1SG	Oʃe	áu	fore
2SG	Oʃe	ái	fore
3SG	Oʃe	áe	fore
1PL	Oʃe	ʃámu	fore
2PL	Oʃe	ʃáti	fore
3PL	Oʃe	áune	fore

ii.

	Today	not	go-PRS	to.the.c.
1SG	Oʃe	nu	bbáu	fore
2SG	Oʃe	nu	bbái	fore
3SG	Oʃe	nu	bbáe	fore
1PL	Oʃe	nu	ʃʃámu	fore
2PL	Oʃe	nu	ʃʃáti	fore
3PL	Oʃe	nu	bbáune	fore

b. Imperfect:

quannu era vaɲɲone, ʃía fore oɲɲi dʒurnu
when be.IPF.1SG child go-IPF-1SG to.country.side every day
'When I was a child, I used to go to the countryside every day.'

c. Perfect:

jeri ʃívi a lla kasa te l' isabbella
yesterday go-PRF.1SG to the house of the Isabella.
'Yesterday I went to Isabella's home.'

d. Infinitive:

pottzu ʃíre aɖɖai moi
be.able go-INF there now
'I can go there now.'

Comparing forms such as *ʃámu*/*ʃíamu* with counterparts in other verbs such as *kattámu*/*kattá(v)amu*, *rumpímu*/*rumpíamu*, and *tenímu*/*teníamu*, the simplest segmentation leads to consider /*-mu*/ the suffixal marker for the 1st plural. We are therefore left with the bases *ʃá-*/*ʃía-*, *kattá-*/*kattá(v)a-*, *rumpí-*/*rumpía-*, *tení-*/*tenía-*. It can be assumed that the marker of the imperfect is the suffixal element /*-(v)-a-*/.[13] This further segmentation gives us the following verbal themes: *ʃa-*/*ʃi-*, *katta-*, *rumpi-*, *teni-* (note that in these forms, I am removing the accent that is determined by rules that are not relevant to the discussion carried out here). One problem now is the state of the final vowel of the theme. The comparison of *katta-*, *rumpi-*, *teni*, with other themes such as *manda-*, *parla-*, etc., *endi*, *pendi-*, etc., shows that the final vowel is common in different sets of themes. This final vowel can then be segmented into an element that is traditionally called the "thematic vowel". To explain the distribution of thematic vowels, we must say that it is lexically conditioned: some verbs take the thematic vowel /*-a-*/, and others the thematic vowel /*-i-*/. At this point, it can be observed that the lexical meaning of the theme is due to the piece that precedes the thematic vowel. This piece is traditionally called the root. So, in the case of *ʃámu*/*ʃíamu* we have the root /*ʃ-*/, *katt-*, *rump-*, *ten-*, *mand-*, *parl-*, *end-*, *pend-*, etc., for the other verbs mentioned above. Note that *ʃire* is also characterized by a change in the quality of the thematic vowel between the forms of the present and those of the non-present, as in the imperfect, perfect, infinite: the thematic vowel is /*-a-*/ in the present (e.g. $[[\text{ʃ-}]_{\text{Root}}\ \text{a-}]_{\text{Thematic Vowel}}$) otherwise it is /*-i-*/ (e.g. $[[\text{ʃ-}]_{\text{Root}}\ \text{i-}]_{\text{ThematicVowel}}$).

[13]The element /*-a-*/, in this case, is the thematic vowel of the imperfect node. The exponent of the imperfect is actually /*-v-*/ which is deleted, as in this case, unless it is between identical vowels. See below for a brief discussion of the allomorphy of this element.

We can now consider the other forms of the verb *ʃire* in (1). It is evident that the root does not always appear in the same form, as happens with other verbs. There is a surface alternation between radical allomorphs such as [∅-], [*bb*-], [*ʃ*-] and [*ʃʃ*-] (e.g., *∅-a-u/bb-a-u/ʃ-a-mu/ʃʃ-a-mu*).

In order to account for these alternations, we need to deal with some aspects of the phonology of consonants in Salentino, and specifically in Campiota. I begin with the phonology of voiced labial obstruents since it is of fundamental importance to understand the alternations involving the root GO.

Note first of all that there are no single voiced stops in Salentino. They were affected by a process of lenition that turned them into fricatives ([b]→[v], [g]→[j/∅]), although they could also devoiced ([d]→[t], [g]→[k] (see Calabrese 1988a for discussion and an analysis). Voiced stops were preserved only when geminated [bb/dd/gg]. I will consider only the labial ones here and neglect the other ones.

The outcome [v] of single /b/ is neutralized with the etymological single voiced labial fricative [v] in Campiota as shown by the fact that the latter does not alternate with a geminated [vv][14] but with a geminated [bb] (see below for examples).

At the same time, in Campiota, single voiced labial fricatives are deleted unless they are found between identical vowels in word-medial positions. For example, the imperfect suffix */-v-/* is systematically deleted after the TV [i] of the second conjugation although preserved after the TV [a] of the first conjugation when another suffixal low vowel follows: *fatʃ-i-[∅]-a-mu* make-TV-ipf-TV-1pl 'we were making', *fin-i-[∅]-a-mu* finish-TV-ipf-TV-1pl 'we were finishing', but *kkatt-a-[v]-a* buy-TV-ipf-TV-1sg 'I was buying', *kkatt-a-[v]-a-mu* buy-TV-ipf-TV-1pl 'we were buying'[15] (cf. also *ʃ-i-v-i* 'GO-perf-1sg' vs. *ʃ-i-∅-u* 'GO-perf-3sg'). In the same way, word-initial [v] is deleted in Campiota: *inire* 'come', *itire* 'see', cf. the Salentino dialect of Latiano: *vinire* 'come', *vitire* 'see' (Urgese 2003). This created situations where one observes alternations between [∅] and [bb]. To understand these alternations, one must consider the so-called *raddoppiamento sintattico* (RS) ('syntactic doubling'), another process that characterizes Salentino as well as other central and southern Italo-Romance varieties. It triggers gemination of word-initial consonants in certain phonological and morphological contexts (Chierchia 1986, Loporcaro 1997). In Salentino, it is triggered by morphemes such as *kkju* 'more', *pi* 'for', *ku* 'with', *nu* 'negation', elements such as *ku* 'ku', *sta* 'STAY$_{[+progr]}$', *bba/ʃʃa* 'GO$_{[+and]}$' etc.

[14] Other Northern Salentino varieties, such as that of Latiano for example, do indeed have geminated [vv], cf. Latiano: *veni* come- prs.3sg 'he comes' vs. *ku vveni* '*ku* he comes' (Urgese 2003).

[15] Note the ipf.2sg form *kkatt-a-[v]-i* buy-TV-ipf-TV-2sg 'you(sg) were buying' without [v]-deletion. This form points out to a derivation in which [v]-deletion precedes the independently needed rule of TV -deletion before vowels (TV→∅/___V), i.e., *kkatt-a-[v]-a-i→[v]Del:* ***n/a***→*kkatt-a-[v]-a-i→TVDel→kkatt-a-[v]-∅-i*

(25) a. i. ete pattʃu
be.prs.3sg crazy
'He is crazy.'

ii. ete kju *p*pattʃu
be.prs.3sg more crazy
'He is crazier.'

b. i. kraj
tomorrow

ii. pi *k*kraj
for tomorrow

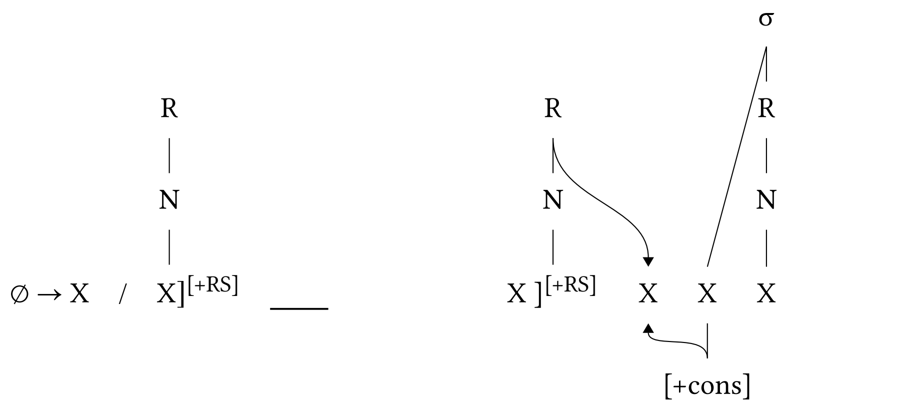
c. i. lu tene
it.cl hold-prs.3sg
'He holds it.'

ii. lu sta *t*tene
it.cl STAY[+progr] hold-.3sg
'He is holding it.'

d. i. le kattsa
them.cl crack-prs.3sg
'S/he cracks them.'

ii. ole ku *k*kattsa mennule
want-prs.3sg ku crack-prs.3sg almonds
'S/he wants to crack almonds.'

The RS rule is proposed in Figure 1. It inserts a skeletal position after diacritically marked morphemes. Automatic resyllabification and melodic spreading, as in Figure 1b, leads to gemination.



(a) RS rule (b) Resyllabification and melodic spreading after RS

Figure 1: Formal analysis of Raddoppiamento Sintattico

We can now consider the surface alternations between [∅] and [bb] in Campiota. Consider the words in (26), which etymologically have an initial */b/* or */v/* (cf. Italian *battere* 'beat', *basso* 'short', *venire* 'come'). These words always display a geminated [bb] in RS environments:

(26) a. i. lu atte
it.CL beat-PRS.3SG
'*s*/he beats.'

ii. lu sta *bb*atte
it.CL STAY[+progr] beat-PRS.3SG
'S/he is beating it.'

b. i. aʃʃu
short

ii. kju *bb*aʃʃu
more short

c. i. eɲɲu
come-PRS.1SG
'I come.'

ii. ojju ku *bb*eɲɲu
want-PRS.1SG ku come-PRS.1SG
'I want to come.'

I assume that they all contain an underlying abstract labial obstruent /*B*/, i.e., [+consonantal, −sonorant, +labial] segment, which is assigned the feature [−continuant] when geminated (27) but is otherwise deleted (28).[16]

(27)
X X
(+consonantal −sonorant)
∅ → [−continuant]/ ___ Labial

(28)
X → ∅
+consonantal
−sonorant
Labial

We now have all the machinery needed to account for the surface alternations between [∅-], [bb-], [ʃ-], and [ʃʃ-] displayed by the root GO in (1). The first step

[16]The same alternations occur with vowel initial words that were etymologically onsetless (cf. Italian: *alto* 'high', *alzare* 'lift'). One must assume that they were reanalyzed as having an initial [B]:

(i) a. i. ete autu
be-PRS-3sg high
'He is high.'

ii. gll ete kju *bb*autu
be-PRS-3sg more high
'He is higher.'

b. i. lu ausu
it.CL lift-PRS.1SG
'I lift it.'

ii. lu sta *bb*ausu
it.CL STAY[+progr] lift-PRS.1SG
'I want to lift it.'

is the observation that in this case there is a root suppletivism as in Italian GO verbal forms where one finds the suppletive alternant /*vad-*/ in the present forms with the exception of the 1PL and 2PL, otherwise one finds the alternant */and-/* (cf. ***vad**o/**vai**/**va**/**and**iamo/**and**ate/**va**nno* 'GO-PRS-1SG/2SG/3SG/ 1PL/2PL/3PL', ***an-dav**o* 'GO-IMPF-1SG', ***and**are* 'GO-INF').[17] For the root GO in Campiota, one can propose the underlying suppletive alternants */B-/* and */ʃ-/*. As seen in (24), the alternant */ʃ-/* has a wider distribution than that of the alternant */B-/*, which is restricted only to the present with the exception of 1PL and 2PL (i.e., like that of the Italian *vad-* with respect to *and-*). This alternant can, therefore, be considered the basic elsewhere suppletive exponent of the root GO, as shown in the VI in (29):

(29) a. */B-/* ⟷ GO / ____ $[-\text{Past}]_{T^0}$
b. */ʃ-/* ⟷ GO

The geminated instances of these exponents are due to RS, cf. (24a-ii), where they are triggered by the negation particle */nu/*. Furthermore, */B-/* is either deleted by the rule in (28) when it is single or is assigned the feature [−continuant] by the rule in (27) when it is geminated.

The alternations for the root GO observed in the present forms in (24) can now be analyzed as in (30):

(30) a. $[[[[\text{B-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-u}]_{T^0\ [-\text{Pst}]+\text{AGR}} \rightarrow (28) \rightarrow$
$[[[[\varnothing\text{-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-u}]_{T^0\ [-\text{Pst}]+\text{AGR}}$ (cf. *au* in (24a-i))
b. $[[[[\text{B-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-u}]_{T^0\ [-\text{Pst}]+\text{AGR}} \rightarrow \text{RS} \rightarrow$
$[[[[\text{BB-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-u}]_{T^0\ [-\text{Pst}]+\text{AGR}} \rightarrow (27) \rightarrow$
$[[[[\text{bb}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-u}]_{T^0\ [-\text{Pst}]+\text{AGR}}$ (cf. *bbau* in (24a-ii))
c. $[[[\text{ʃ -}]_{\text{Root}}\text{-}]_{\text{TV}}]_{v^0}\ \text{-mu}]_{T^0\ [-\text{Pst}]+\text{AGR}}$ (cf. *ʃamu* in (24a-i))
d. $[[[\text{ʃ-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-mu}]_{T^0\ [-\text{Pst}]+\text{AGR}} \rightarrow \text{RS} \rightarrow$
$[[\text{ʃʃ-}]_{\text{Root}}\text{-a}]_{\text{TV}}]_{v^0}\ \text{-mu}]_{T^0\ [-\text{Pst}]+\text{AGR}}$ (cf. *ʃʃamu* in (24a-ii))

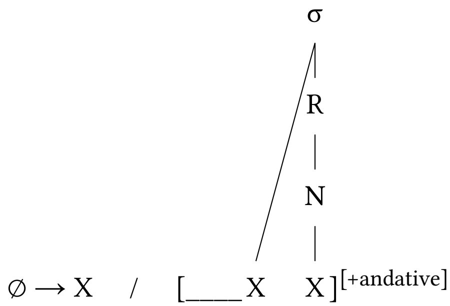
Once this is analysis is done, we can observe that the root suppletive alternants found in Reduced MVCs have the same distribution as their counterparts in the Full-Fledged MVCs and in the uses of *ʃire* 'GO' as a main verb with the proviso that the TV of the Reduced MVC is always */a/*.[18]

[17] The same pattern is found in most other Italo-Romance varieties. Calabrese (2012, 2015), following Embick (2010), accounts for it in terms of impoverishment of the special diacritic triggering suppletion. Due to space restrictions, I cannot deal with this issue further here.

[18] The extension of the thematic vowel */a/* to all forms of GO in the Reduced MVC is characteristic of Campiota. Other northern Salentino varieties, such that of Latiano (Urgese 2003), display

Now, as noted above, the initial consonant of the exponent of GO in the Reduced MVC is systematically geminated in Campiota. So, we not only always have *bb* but also *ʃʃ* in this case.[19] I assume that this is due to the fact that the rule in Figure 1a was generalized in this context as (31) – plausibly a case of analogical levelling due to the frequent occurrence of this allomorph in an RS environment, e.g., after progressive *sta*.[20]

(31)



2.4 Progressive constructions

A description of the behavior of the andative requires discussion of the progressive since the andative forms are more felicitous when used with the progressive. Whereas progressive aspect in standard Italian is realized periphrastically with the auxiliary verb *stare* 'stay' followed by the verbal root inflected as a gerund (i.e., /-ndo/) (*sto mangiando una mela* stay-PRES.1SG eat-TV-Gerund an apple 'I am eating an apple' (see Section 3.4 below on periphrastic structures), in Campiota,

the same alternation in TV *a/i* one observes when GO is the main verb: Present: *Stasira mmi va kurku mprima/nni ʃa kurkamu mprima* vs. Non-present: *oɲɲi sera mmi ʃi kurkava alle noe/m' aggju ʃʃi kurkari* 'Tonight I am going to bed earlier. / Tonight we are going to bed earlier.' vs. 'Every night, I was going to bed at 9 o'clock./I have to go to bed.' (cf. Campiota: Present: *stasira me bba kurku mprima/stasira ne ʃʃa kurkamu mprima* vs. Non-present: *oɲɲi sira me ʃʃa kurkava alle noe/m'addʒu ʃʃa kurkare*).

[19] This is again a characteristic feature of Campiota. Thus, in the northern Salentino varieties of Latiano, the initial consonant of the Reduced MVC andative exponent is geminated only in RS contexts; otherwise, it is single. See examples in the preceding note.

[20] Note that Salentino allows onset geminates, as in the imperative of the verb *kkattare* 'buy':

(i) # kkatta-lu
buy.Imperative.2SG it.CL
'Buy it.'

So, the onset geminate consonant generated by the application of (31) (and 32) is left untouched.

as in other Salentino varieties of Italo-Romance, this aspect is realized with a construction parallel to that of the Reduced MVC, in which the invariant piece *sta* is attached to the main verb where inflectional T and AGR contrasts are marked:

(32) a. ne sta kkurkamu
self-CL STAY go.to.bed-PRS.1PL
'We are going to bed.'

b. se sta kkurkane
self-CL STAY go.to.bed-PRS.3PL
'They are going to bed.'

There is also another construction displaying the verb *stare*, in addition to its use as a main verb (see 33). This construction is parallel to a Full-Fledged MVC insofar as here the inflected verb *stare* governs a clause introduced by */ku/*. However, unlike a Full-Fledged MVC that is readily interchangeable with a Reduced one from a semantic point of view, this construction does not have a progressive meaning, rather an inceptive or inchoative one that can be translated in English with "being about to".

(33) kraj stau a kkasa tutta la matina
tomorrow stay-PRS.1SG at home all the morning
'Tomorrow, I will stay home all morning.'

(34) a. stamu ku nne kurkamu
stay-PRS.1PL ku self-CL go.to.bed-PRS.1PL

b. staune ku sse kurkane
stay-PRS.3PL ku self-CL go.to.bed-PRS.3PL
'We are about to go to bed. / They are about to go to bed.'

As in the case of the Reduced MVC, in progressive constructions, clitic climbing is required (35), and no adverbial can occur between */sta-/* and the verb, differently than in its Italian counterpart *lo sta già facendo* (36):

(35) a. ne sta kkurkamu / se sta kkurkane
self-CL STAY go.to.bed-PRS.1PL / self-CL STAY go.to.bed-PRS.3PL

b. * sta nne kurkamu / * sta sse kurkane

(36) a. * lu sta ddʒa face
it-CL STAY already do-PRS.3SG

b. lu sta ffface dʒa / dʒa lu sta ffface
'He is already doing it.'

Although durative or frequentative present forms do not require the presence of */sta-/* as in (37), present forms normally appear with */sta-/* (37):

(37) au fore oɲɲissira
go.prs.1sg to-the.countryside every night
'I go to the countryside every night.'

(38) sta bbau fore
STAY- go.prs.1sg to-the.countryside
'I am going to the countryside.'

As observed earlier, andative forms are more felicitous when used with the progressive. The same properties discussed earlier for the non-progressive Reduced MVC hold for the progressive ones, in particular clitic climbing and the same suppletive patterns:

(39) Clitic climbing:

a. i. stau ku mme bba kkurku mprima
stay-prs.1sg ku self-cl GO- go.to.bed-prs.1sg earlier
'I am going to bed earlier.'

ii. stau ku llu bba kkattu
stay-prs.1sg ku it-cl GO- buy-prs.1sg
'I am going to buy it.'

b. me sta bba kkurku mprima / lu sta bba kkattu

(40) Clitic climbing & suppletion:

stau ku llu bba kkattu / llu sta bba kkattu prs.1sg
stay-prs.1sg ku it-cl GO- buy-prs.1sg

stai ku llu bba kkatti / llu sta bba kkatti prs.2sg
stae ku llu bba kkatta / llu sta bba kkatta prs.3sg
stamu ku llu ʃʃa kkattamu / llu sta ʃʃa kkattamu prs.1pl
stae ku llu ʃʃa kkattati / llu sta ʃʃa kkattati prs.2pl
staune ku llu bba kkattane / llu sta bba kkattane prs.3pl

(41) a. stia ku mme ʃʃa kkurkava
stay-prs.1sg ku self-cl GO- go.to.bed-prs.1sg

b. me sta ʃʃa kkurkava
self-cl STAY GO- go.to.bed-prs.1sg
'I was going to go to bed.'

2.5 Elative reduplication of the andative

The andative particle that appears in Reduced MVCs can be reduplicated "per rafforzare il suo significato" ('to strengthen its meaning') as reported by a Campiota speaker. I will refer to it as the elative reduplication of the andative.[21] It is shown in (42) (observe that elative reduplication does not interfere with clitic climbing):

(42) a. i. oʃe me bba kkurku mprima
Today self.cl GO- go.to.bed -prs.1sg. earlier
ii. → oʃe me *ʃʃa* bba kkurku mprima
b. i. oʃe me sta bba kkurku mprima
Today self.cl STAY GO- go.to.be-prs.1sg. earlier
ii. → oʃe me sta *ʃʃa* bba kkurku mprima
'Today I am going to bed earlier.'

The order of the reduplicative element appears to be fixed:

(43) ??? oʃe me bba *ʃʃa* kkurku mprima

The sequences *bba bba/ʃʃa ʃʃa* are disallowed: the second andative element always appears as *bba* regardless of what the base should be, and the first one as *ʃʃa*:

(44) a. * me sta bba bba kkurku mprima
self.cl STAY GO- go.to.bed -prs.1sg. earlier
me sta ʃʃa bba kkurku mprima
'I am going to bed earlier.'
b. * ne sta ʃʃa ʃʃa kkurkamu mprima
self.cl STAY GO- go.to.bed -prs.1pl. earlier
nne sta ʃʃa bba kkurkamu mprima
'We are going to bed earlier.'
c. * me sta ʃʃa ʃʃa kkurkava kwannu ete rriatu
self.cl STAY GO- go.to.bed -ipf.1sg when be-prs.3sg arrive-PP
me sta ʃʃa bba kkurkava kwannu ete rriatu
'I was going to bed when he arrived.'

[21] I must admit that I am unable to express the difference in meaning brought about by the reduplication in the translation and to make explicit what "rafforzare il suo significato" ('strengthen its meaning') really conveys in this context. Note that in some speakers, reduplication appears to be obligatory. Perhaps, as a morphological device, reduplication simply emphasizes the presence of the reduced construction, and its semantic effect, which has become obligatory for some speakers. In any case, given my doubts and unclarity about the semantic purport of reduplication, I decided to neglect referring to meaning changes in the translation.

d. * m addʒu ʃʃa ʃʃa kkurkare subbra lu tivanu
self.cl must-PS-1SG GO- go.to.bed -INF on the sofa.bed
m addʒu ʃʃa bba kkurkare subbra lu tivanu
'I must go to bed on the sofa bed.'

2.6 *ʃire* in periphrastic construction with an auxiliary

As already noted, in Reduced MVCs, tense and aspectual contrasts appear on the lower verb, as shown in (45) by comparing Full-Fledged MVCs to reduced ones:

(45) a. i. sta bbau ku llu kkattu
STAY go-PRS.1SG ku it.CL buy-PRS.1SG
ii. → lu sta bba kkattu
it.CL STAY GO buy-PRS.1SG
'I am going to buy it.'
b. i. sta ʃʃia ku llu kkattu
STAY go-IPF.1SG ku it.CL buy-PRS.1SG
ii. → lu sta bba kkattava
it.CL STAY GO buy-IPF.1SG
'I was going to buy it.'
c. i. ʃivi ku llu kkattu
go-PRF.1SG ku it.CL buy-PRS.1SG
ii. → lu ʃʃa kkattai
it.CL GO buy-PRF.1SG
'I went to buy it.'

Now observe what happens in the case of compound tenses with an auxiliary and a participle: the participial morphology that in the Full-Fledged MVC appears on the andative verb appears on the lower verb in the reduced one; the andative *ʃʃa* appears between the auxiliary and the participle and attaches to the latter; at the same time, the auxiliary[22] is obligatorily selected from the lower verb and displays the Tense and Mode features of the higher andative verb of the Full-Fledged MVC:

[22] *ʃire* appears to be the only unaccusative verb that selects the auxiliary essere 'be' in Campiota. All other unaccusative verbs appear to select *aire* 'have', e.g. *enire* 'come' ~ *addʒu inutu* 'I have come', *partire* 'leave' ~ *addʒu partutu* 'I have left', *murire* 'die' ~ *a muertu* 'he has died'. Optionally, *ʃire* can also select *aire* 'have': *addʒu ʃutu.* No optionality is possible in the case of the Reduced MVCs in (46).

(46) a. i. su ʃutu ku llu kkattu
be-PRS.1SG. go-PTCP-M.SG ku it.CL buy-PRS.1SG

ii. → l' addʒu ʃʃa kkattatu
it.CL have-PRS.1SG. go buy-PTCP-M.SG

'I went to buy it.'

b. i. era dʒa ʃutu ku mme kurku
be-IPF.1SG already go-PTCP-MSG ku self.cl go.to.bed-PRS.1SG
quannu e' rriatu
when be-PRS.3SG arrive-PP

ii. → m' ia dʒa ʃʃa kkurkatu quannu
self.cl have-IPF.1SG already GO go.to.bed-PTCP-M.SG when
e' rriatu
be-PRS.3SG arrive-PP

'I had already gone to bed when he arrived.'

c. i. lu Pissu ulia ku (bb) era dʒa
the P. want.PTCP.IPF.3SG ku be-IPF.3SG already
ʃutu ku sse kurka
go-PTCP-MSG ku self.cl go.to.bed-PRS.1SG

ii. → lu Pissu ulia ku ss ia dʒa ʃʃa
the P. want.PTCP.IPF.3SG ku self.cl have-IPF.3SG already GO
kkurkatu
go.to-bed PTCP-MSG

'Pissu would have liked to have already gone to bed.'

2.7 Summary

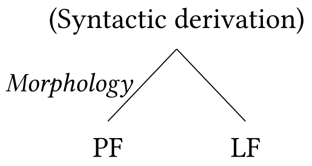
As shown in the previous sections, Full-Fledged and Reduced MVCs have a close relationship despite their clear structural differences. This is demonstrated not only by the fact that these constructs can be easily exchanged semantically but also by the fact that they seem to share the same root */ʃ-/B-/* with all its idiosyncratic suppletive properties. At the same time, when this root is in a Full-Fledged MVC, it behaves like a lexical root in being capable of selecting an argument structure. In contrast, when it is in a Reduced MVC, it becomes a functional element syntactically and semantically integrated into the extended projection of the adjacent verb. In this case, it behaves morphologically like an affix so that it can appear attached to the participle and in a position lower than that of the auxiliary in structures such as that of *l'addʒu ʃʃa kkattatu* (see 46). In this case, it can also undergo a morphological operation such as reduplication in *ofe me* ***ʃʃa*** *bba kurku mprima* (see 42). Any analysis of these constructions must explain how their root can be converted from a verbal position capable of syntactic projection into a functional element included in the extended projection of the lower verb and behaving like an affix.

3 Analysis

3.1 A morphosyntactic analysis of lexical and functional restructuring

The theory of Distributed Morphology proposes a piece-based view of word formation, in which the syntax/morphology interface is made as transparent as possible by incorporating hierarchical structure into morphology. Thus, it assumes the input to morphology to be syntactic structure where morphosyntactic and semantic features (or feature bundles) are distributed over nodes forming morphemes (see Halle & Marantz 1993). Morphology manipulates these syntactic structures and eventually converts them into linear sequences of phonological representations:

(47) The grammar



The derivation of all morphological forms then takes place in accordance with the architecture given in (47). Roots and other morphemes are combined into larger syntactic objects, which are moved when necessary (Merge, Move). Words, i.e., X^0 complexes, are generated by head movement operations. These X^0-complexes are the (abstract) morphosyntactic representations that are the input to phonological spell-out. During phonological spell-out, phonological realizations are assigned to the terminal nodes via the cyclic application of a process called *Vocabulary Insertion* from the inside out. By this process, individual *Vocabulary Item* (VI) rules that pair a phonological exponent with a morphosyntactic context are consulted. The most specific VI that can apply to an abstract morpheme is inserted (in the so-called Elsewhere (Subset, Paninian) ordering). Finally, after Vocabulary Insertion, morphophonological and phonological rules apply. These rules eventually determine the surface allomorphy of words. I will not deal with these rules here.

Along the lines of Wurmbrand (2015), I will assume the verbal functional structure in (48), which expresses the basic core temporal, aspectual, and modal structure of eventualities:

(48) $[_{\text{MoodP}}$ Mood^0 $[_{\text{TenseP}}$ T^0 $[_{\text{AspP}}$ Asp^0 $[_{\text{VoiceP}}$ Voice^0 $[_{\text{vP}}$ v^0 $[_{\sqrt{\text{p}}}$ $\sqrt{}$Root^0]]]]]]

Additional functional heads may be provided by bleached lexical roots (= verbs triggering syntactic truncation/restructuring).[23] I will refer to these bleached roots using the term semi-lexical roots as Cardinaletti and Giusti do for andative verbs of Reduced MVCs. The semi-lexical roots express additional "nuances" of the eventualities. I assume that the progressive and the andative are nuances of this type.

Semi-lexical roots have the property of being syntactically merged as normal lexical roots; therefore, from the formal point of view, they can select sentences and arguments and project a functional structure. Their other essential property, however, is that of being able to lose this ability. Thus, once inserted, they can trigger an operation of syntactic truncation/restructuring that will be discussed later.

Before doing that, however, I want to consider the question of how a universal hierarchical structure like that in (48) is mapped onto surface morphological forms. In Calabrese (2019), I try to account for this mapping of functional structure into surface verbal forms. This model also accounts for when periphrastic morphology occurs. Here I will introduce this model by illustrating the derivation of simple forms such as Campiota *kkattavamu* 'buy.IPF.1PL'.

As mentioned above, X^0 complexes are generated by head movement operations. Along the lines of Calabrese & Pescarini (2014), I assume that morphological operations and syntactic derivation are cyclically *interleaved.* So, head-movement operations, during what I call morphological spell-out (Calabrese 2019), may first generate X^0-complexes, i.e., words, that can then be targeted by other syntactic head movement operations such as V-to-C movement, etc. The word-forming head movement operations are the only ones of relevance here.

[23] It can be hypothesized that the root, in this case, is subject to an operation of semantic impoverishment (= bleaching) that affects the root semantics in such a way that 1) it removes its ability to identify and describe an independent eventuality but 2) it preserves its abstract logical framework (see Roberts 2010 for a more detailed discussion). This logical framework can describe aspectual or other properties of another eventuality. Thus, the impoverished form of the root ANDARE in Salentino loses its ability to refer to a separate event of movement and comes to indicate an aspectual property – the "andative" one – of the eventuality described by the lower verb.

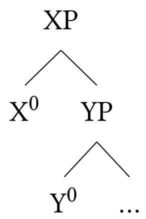
I assume that the affixal properties of functional heads during morphological spell-out follow from the morphological requirement in (49):

(49) Synthetic morphology constraint: Each functional head X^0 in an extended projection, with the exception of the topmost one,[24] must be adjoined to a root or to a Y^0 complex including a root.

In this system, syntactic representations in violation of (49) are repaired through the operation in (50), from Harizanov & Gribanova (2019) (for the sake of simplicity, the alternative operation of head lowering is not covered in this paper since it is not directly relevant to the analysis developed here; see Calabrese (2019) for more discussion):[25]

(50) A syntactic complementation relation $[_{XP} \ldots X^0 \ldots [_{YP} \ldots Y^0 [_{ZP} \ldots]]]$ may be realized in the morphology as a complex head by:
Head Raising:
$[_{XP} \ldots X^0 \ldots [_{YP} \ldots Y^0 [_{ZP} \ldots]]] \rightarrow [_{XP} \ldots [_{X^0} Y^0 X^0] [_{YP} \ldots [_{ZP} \ldots]]]$
(where X^0 and Y^0 are heads, X^0 c-commands Y^0, and there is no head Z^0 that c-commands Y^0 and is c-commanded by X^0)

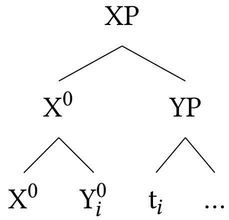
Given the syntactic structure in (51), head raising generates the structure in (52):

(51)


[24] This accounts for why the functional head C is not a verbal affix but an independent particle, even if often cliticized to a verb or to another adjacent word. When C is targeted by head movement in V-to-C operations, V is always a fully formed verbal complex.

[25] In this approach, a single mechanism – the synthetic morphology constraint (49) – with head raising (and head lowering) as the associated repair implements word formation. Such an approach is simpler, and more parsimonious, than other approaches such as that of Bjorkman (2011), where m-word formation (head movement in her theory) is associated with infl-agreement, or Pietraszko (2017), where word formation can be implemented by the mechanism of c-selection with m-word formation (head movement in her theory) as an additional strategy. It is closer to what has been proposed by Arregi & Pietraszko (2018) with a single operation, Generalized Head Movement, which includes both head raising and lowering.

(52) A word generated by head raising:



Therefore, given the structure in (48), head raising to satisfy (49) will create the structure in Figure 2 by moving the root or a constituent, including the root, in a roll-up fashion upwards cyclically and adjoining them to the functional head in the extended projection.[26]

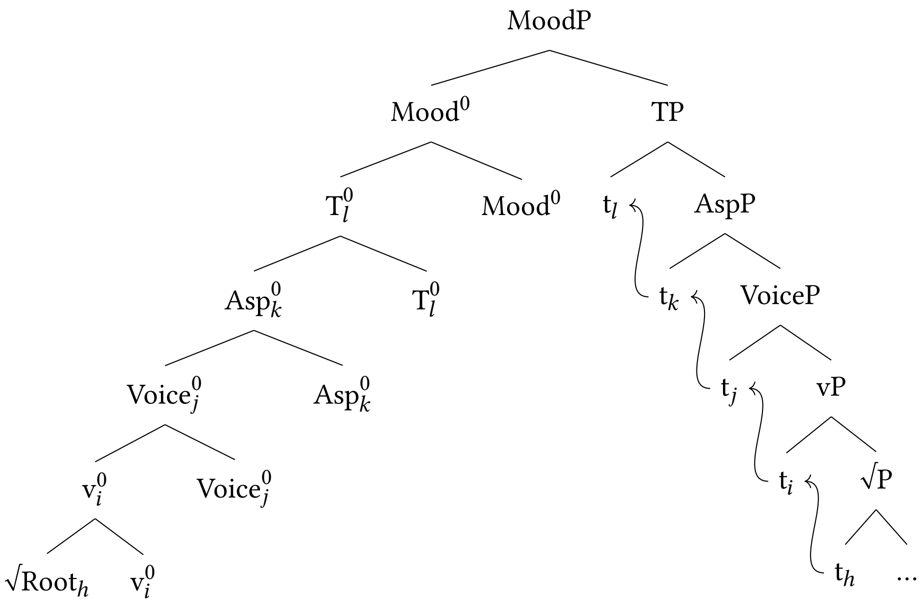


Figure 2: Derivation of verbal X^0 complex by cyclic head movement

Three important operations are needed to derive the surface structure of Romance verbal forms, including the Campiota ones. Two of them insert ornamental[27] morphological pieces such as AGR (Halle & Marantz 1993, Bobaljik 2000)

[26]The positioning of the exponent of the head as a suffix/prefix is due to information associated with the exponent and not a morphosyntactic property (see below).

[27]Ornamental means that they do not have syntactico-semantic functions or content but only a morphophonological one.

and Thematic Vowels (Oltra-Massuet & Arregi 2005). The third delinks nodes with non-overt exponents through a pruning operation.

The rules inserting ornamental pieces are the following. The rule in (53) inserts AGR. The two rules in (54a) and (54b), instead, insert Thematic Vowels (TV) in Italo-Romance verbal forms. One rule adjoins a TV to v^0 (see 54a). It applies early in the derivation before Vocabulary Insertion (and the subsequent pruning operations discussed below). Another rule of TV insertion applies after Vocabulary Insertion and the pruning operations; hence it adjoins a TV only to overt functional heads (54b):

(53) AGR insertion:
Given a complex X^0 not including inherent phi-features, adjoin AGR_V to its highest X^0 (to be revised later).

(54) a. (it applies before VI)

$v^0 \longrightarrow$ v^0

v^0 TV

b. (X^0 = functional; it applies after VI and pruning, if α is an overt exponent)

$X^0 \longrightarrow$ X^0

X^0 TV

So, (53) and (54a) apply in the case of the complex head structure in (1). Hence, Figure 3 is generated in the case of the form *kkattavamu* 'buy-IPF-1PL' (before Vocabulary Insertion).

Now let's move onto the third operation necessary to derive the surface structure of verb forms. The complex head in Figure 3 is the basic structure of the Italo-Romance verb forms, including Campiota Salentino, before the insertion of the lexical entries. It is an agglutinative structure, i.e., a cumulation of morphological nodes. However, in Italo-Romance, functional categories such as aspect, tense and mood are no longer represented as independent morphological pieces as in the Latin pluperfect subjunctive form *laud-a-vi-s-se-mus*, i.e., $[[[[\textit{laud-}]_{\mathrm{Root}}\ [\textit{-a}]_{\mathrm{TV}}]_{\mathrm{v^0}}\textit{-v-}[\textit{-i}]_{\mathrm{TV}}]_{\mathrm{[+perf]\text{-}Asp^0}}]\ \textit{-s}]_{\mathrm{[+past]\text{-}T^0}}\ \textit{-s-}[\textit{-e}]_{\mathrm{TV}}\ ]_{\mathrm{[+irr]\text{-}Mood^0}}]\ \textit{-mus}][_{\mathrm{1PL\text{-}AGR}}$ 'praise.PLUPRF.SUBJ1PL' (see Calabrese forthcoming for discussion of the constituency of Latin verbs). On the contrary, a single morpheme */-v-/* appears for the string $\mathrm{Aspect}_{[-\mathrm{perfect}]}$ + $\mathrm{T}_{[+\mathrm{past}]}$ + $\mathrm{Mood}_{[-\mathrm{irrealis}]}$ in the Campiota

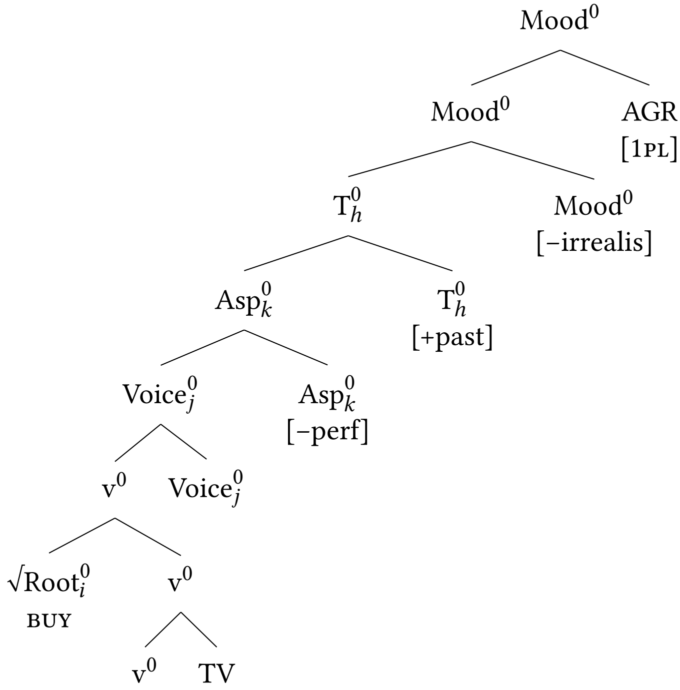


Figure 3: Basic structure of Italo-Romance verbal forms

kkattavamu. An operation that can account for this is null node pruning proposed by Calabrese (2019, forthcoming).[28] It consists of the cyclic delinking of nodes with non-overt exponence. Note that an exponent /-∅-/ is automatically inserted into a independently motivated terminal node when there is no Vocabulary Insertion rule that assigns to this node a phonologically overt exponent. After this pruning operation, the features that become floating by pruning are docked upwards onto the highest adjacent node. In a system like the Salentino one discussed so far where only the terminal node [−perfective, +past]$_{T^0}$ is as-

[28]Pruning was originally proposed by Embick (2010) only for non-overt category defining nodes. Following Christopoulos & Petrosino (2017) and Christopoulos (2018), Calabrese (2019) extended it to all types of non-overt category nodes and reformulated it as in (35) and used it 1) to simplify the phonological realization of morphosyntactic structures, 2) to account for the convergence of possibly complex morphosyntactic structures and their possibly simpler PF surface shape, and also 3) crucially to explain the fact that phonologically null exponents – regardless of their marked/unmarked status – appear not to act as interveners for morphological locality (cf. Embick 2010, Calabrese 2019). Null node pruning also provides an alternative to fusion (cf. Halle & Marantz 1993).

signed overt exponence, i.e., */-v-/*, all other nodes are assigned ∅ as in (55), and pruned away, given their cyclic bottom-up order.

(55) a. $\varnothing \longleftrightarrow v^0$
b. $\varnothing \longleftrightarrow \text{Voice}^0$
c. $\varnothing \longleftrightarrow \text{Asp}^0$
d. $/v/ \longleftrightarrow [-\text{perfective}, +\text{past}]_{T^0}$
e. $\varnothing \longleftrightarrow \text{Mood}^0$

Phonological spell-out operates cyclically node-by-node bottom-up. TV insertion and Vocabulary Insertion – where in addition to overt exponents, ∅s are inserted, followed by their pruning and feature docking – will generate the cyclic derivation in Figure 4 on pages 238–239, where some of the verbal functional nodes are fused together due to pruning – in cyclic steps, due to the cyclic nature of Vocabulary Insertion.

For the sake of the exposition, I will then represent derivations such as that in Figure 4 as in Figure 5 (page 240), where all of the different cyclic steps are compacted together. The final output is given in Figure 6 (page 241), where for simplicity, I replace the complex fused [v^0+TV] with TV, [Voice^0+Asp^0+T^0] with T^0, and [Mood^0+AGR] with AGR. Furthermore, I relabel the topmost headless Mood^0 with T^0.

3.2 A morphosyntactic analysis of the Reduced MVC

As shown in the preceding sections, the Full-Fledged MVC and the Reduced MVC, despite their clear structural differences, have a close relationship. Putting aside the striking semantic interchangeability between these two constructions, they share what appears to be the same root */ʃ-/B-/* 'GO' with its idiosyncratic suppletive properties. At the same time, whereas this root is clearly fully lexical when it is in a Full-Fledged MVC – and, therefore, it is characterized by the ability to select a CP and argumental structure, it becomes syntactically and semantically functional, and thus integrated in the extended projection of the lower verb, when it is in a Reduced MVC. At this point, I need to account for how the andative root of a Reduced MVC can be converted from its syntactic projecting verbal position into a functional head included in the extended projection of the lower verb.

I assume that the Reduced MVC is derived from the structure underlying the Full-Fledged MVC. As shown below, this accounts for the presence and preservation of the higher functional structure of the GO verb, which is identical in the Full-Fledged MVC and in the Reduced MVC:

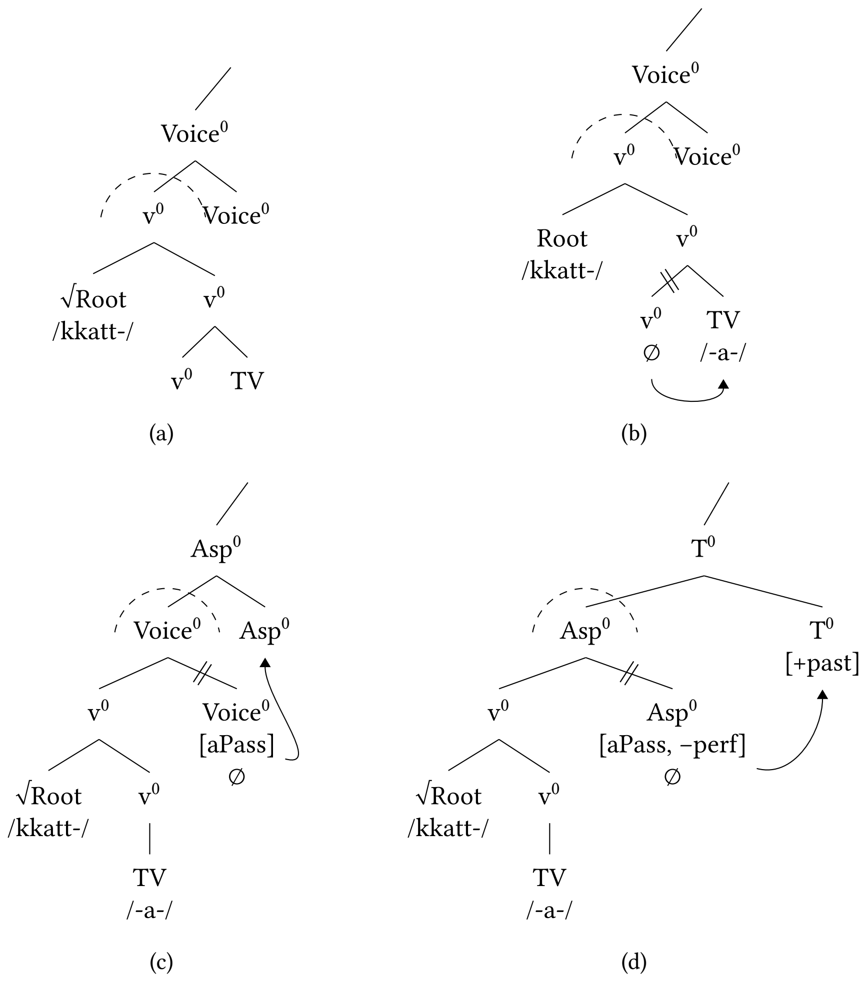


Figure 4: Step-by-step cyclic derivation of surface Campiota verb form *kkattavamu* (where dashed frames indicates a cyclic domain)

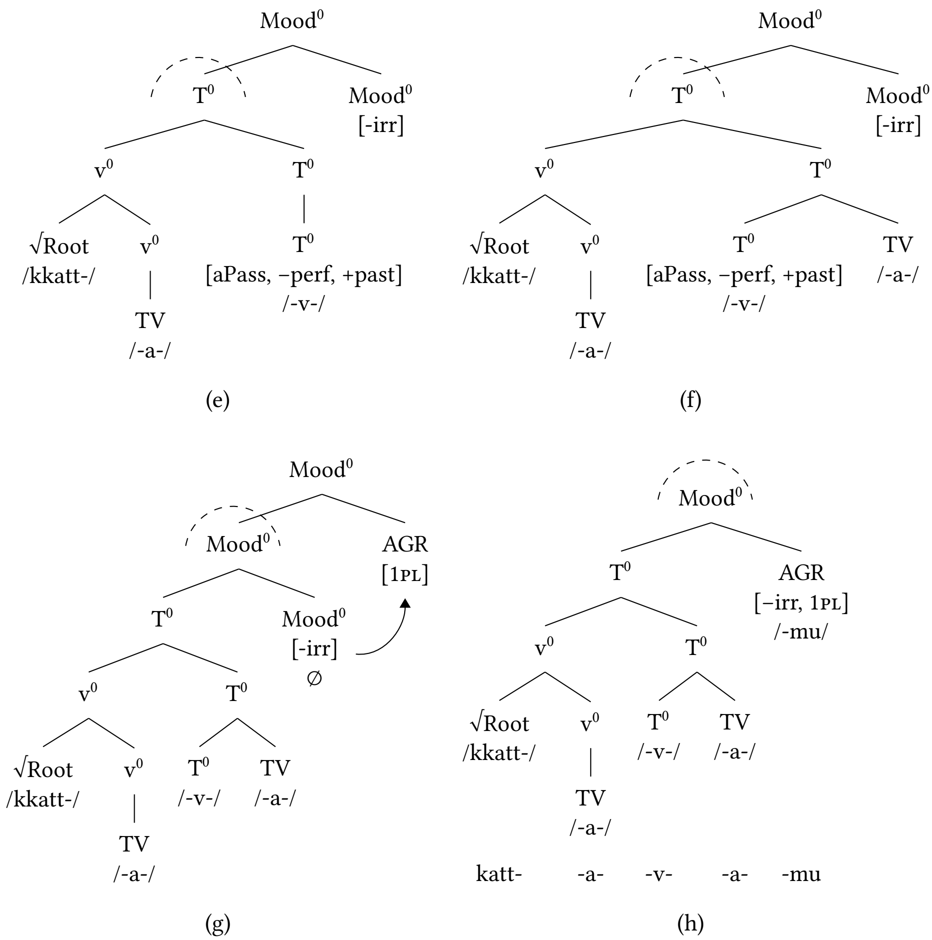


Figure 4 (continued): Step-by-step cyclic derivation of surface Campiota verb form *kkattavamu*

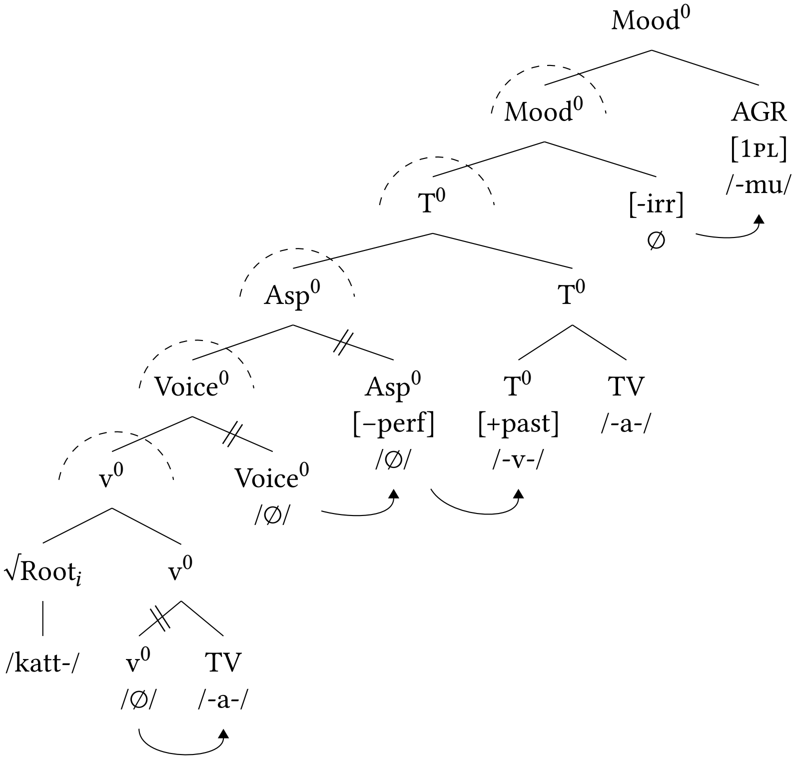


Figure 5: Compacted cyclic derivation of surface Campiota verb form *kkattavamu*

(56) a. i. ʃiunu ku llu ttʃitunu
go-PRF.3PL ku it.CL kill.PRS-3PL

ii. → lu ʃʃa ttʃiseru
it.CL GO kill-PRF.3PL

'They went to kill him.'

b. i. ʃianu ku llu kkattanu
go-IPF.3PL ku it.CL buy.PRS-3PL

ii. → lu ʃʃa kkattavanu
it.CL GO buy-IPF.3PL

I assume that in a Full-Fledged MVC, the GO root can appear not only in its regular lexical version but also in its semantically bleached form so that, in this case, this construction may have an andative meaning identical to that of the

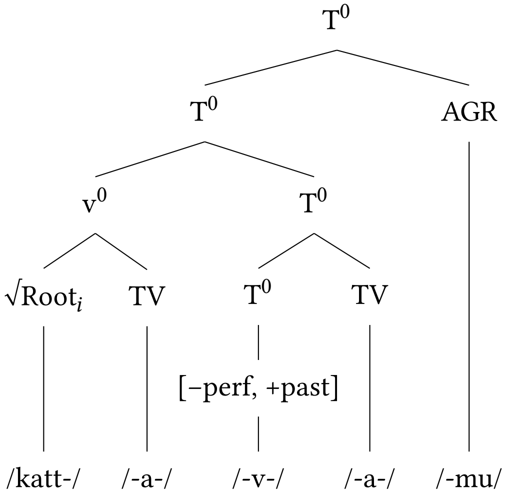


Figure 6: Output structure of verbal form *kattavamu*

Reduced MVC. This explains the possibility of a semantic interchangeability between the two constructions. In this case, however, there is no application of syntactic reduction, an operation that characterizes only Reduced MVCs.

The hypothesis is thus that semi-lexical verb roots are inserted as normal lexical roots capable of projecting an extended projection, selecting argument structure and governing clauses referring to events. In their bleached form, however, they can further undergo an operation of syntactic truncation such as that proposed in Wurmbrand (2014, 2015, 2017), that is, an operation of stripping of the structure associated with the bi-eventual interpretation of the previous construction. Thus, the temporal and aspectual structure of the lower proposition is removed, although not the v^0 of the lower verb, which must be left intact given the preservation of verbalizers in the lower verb in the examples in (57):

(57) a. (Denominal from *mattsa* ‘club’ + verbalizer *-iʃ-*)
lu ʃʃa mmattsiʃu
it-CL GO give.beating-PRS1SG
‘I am going to give him a beating.’

b. (Deadjectival from *frisko* ‘fresh’)
ne ʃʃa ddifriskamu
self.CL GO refresh
‘We are going to refresh ourselves.’

Thus through “bleaching”, the andative GO becomes a functional head. As a functional head, it selects a reduced constituent vP, as in Wurmbrand’s syntactic truncation; all unlicensed structure is then erased, including the level of complementizer phrase CP. As a functional head, the andative GO also loses the ability to select argument structure and to project its level vP. Thus, this bleached root and its extended projection become part of the extended functional projection of the lower verb:

(58)

a. … $[_{\text{AspP}}$ Asp^0 $[_{\text{vP}}$ v^0 $[_{\surd\text{P}}$ GO[+and]] $[_{\text{CP}}$ C^0 $[_{\text{TP}}$ T^0 $[_{\text{AspP}}$ Asp^0 $[_{\text{vP}}$ v^0 $[_{\surd\text{P}}$ √Root] …]]]]]]

b. … $[_{\text{AspP}}$ Asp^0 $\cancel{[_{\text{vP}}\ \text{v}^0}$ $[_{\surd\text{P}}$ GO[+and]] $\cancel{[_{\text{CP}}\ \text{C}^0\ [_{\text{TP}}\ \text{T}^0\ [_{\text{AspP}}\ \text{Asp}^0}$ $[_{\text{vP}}$ v^0 $[_{\surd\text{P}}$ √Root] …]$\cancel{]]]]}$]

c. … $[_{\text{AspP}}$ Asp^0 $[_{\surd\text{P}}$ GO[+and]] $[_{\text{vP}}$ v^0 $[_{\surd\text{P}}$ √Root] …]]

Now, the andative functional head is in violation of (49). When after syntactic stripping, word-forming head movement applies and the v^0 complex, including the lower root, is raised to this head position. (From now on, for graphic simplicity, I will omit mention of the nodes Mood^0 and Voice^0 that not only are always assigned ∅ in Campiota, and therefore pruned, but also do not play any role in the analysis.) This is illustrated in Figure 7.

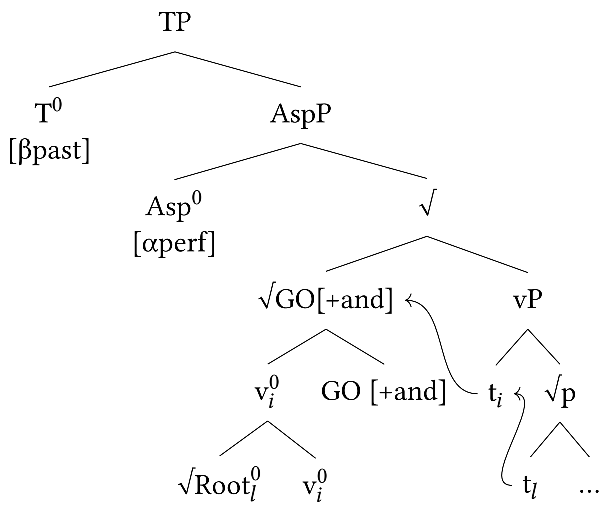


Figure 7: Derivation of the andative v^0 complex

Further cyclic movement to the higher functional heads, subsequent pruning and insertion of AGR and TVs generate Figure 8, page 244 (with the resulting structures in Figure 9, page 245) shown here after VI insertion.[29] Note that the regular application of (54b) adjoins a TV to the andative head, as expected given its functional status.[30,31]

Observe that the andative morpheme is a prefix in Figures 8–9. One can assume that the linear order of the Full-Fledged MVC is preserved in this case. This can be accounted for by hypothesizing that the And^0 exponent is marked as being antitropal, i.e. a prefix (cf. Bye & Svenonius 2012).[32]

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[29] An additional VI is needed to account for the perfect form in Figure 8b. It is given below:

(i) /-s-/ ⟷ [+perf]/Roots ____

(i) is an instance of root-conditioned allomorphy. The aspectual exponent */-s-/* requires root information to be inserted. Although it is not really relevant in the context of this paper, an important issue arises at this point: that of morphological locality. Morphological locality is assumed to require adjacency: the issue is if it is structural (Bobaljik 2012, Calabrese 2019) or linear (Embick 2010). If it is structural, the andative node should act as an intervener in the interaction between the root and the aspectual node, contrary to the facts. It must be linear then, since in this case the andative node does not interfere with the allomorphic interaction between the root and the following aspect node. It follows that if it is linear, linearization must occur cyclically but crucially preserving structural information. Thus, when the [+perf] node is reached, one must know what the TV is, so that it can be deleted. Further discussion of this topic is not possible here and must be left to future research.

[30] An anonymous reviewer wonders if two verbs can be coordinated under a single *ʃʃa/bba* since according to the structure in Figure 9 this should be impossible. As a matter of fact, this is the case: So, the Italian sentence in (i) can only be translated with a full-fledged MVC in (ii), or with a coordination including two *ʃʃa/bba* pieces as in (iii) but not with a coordination under a single one as in (iv):

(i) Ora lo andiamo a pulire e ricucire
now it.CL Go-PRS.1PL a clean and re-sew
'Now we go to clean it and re-sew it again.'

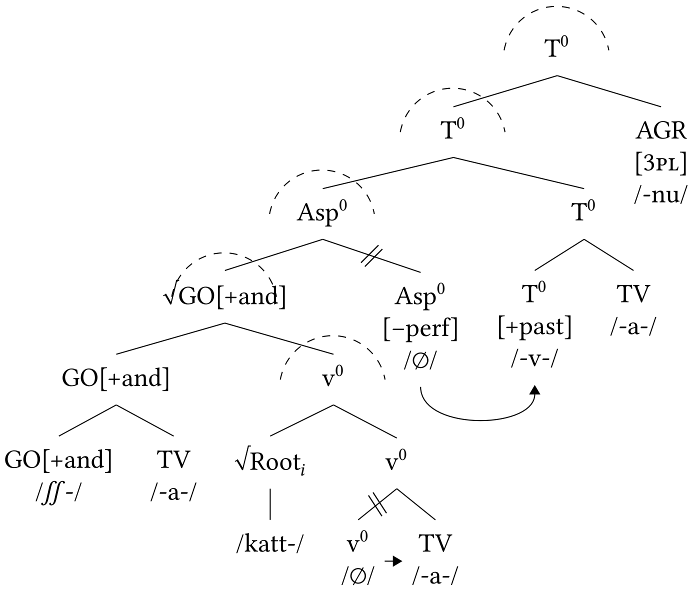
(ii) moj ʃamu ku llu pulittzamu e ku llu ripittsamu
now GO-PRS.1PL ku it.CL clean-PRS.1PL and ku it.CLsew-PRS-1PL again

(iii) moj lu ʃʃa pulittzamu e lu ʃʃa ripittsamu
now it CL GO- clean-PRS.1PL and it-CL sew-PRS-1PL again

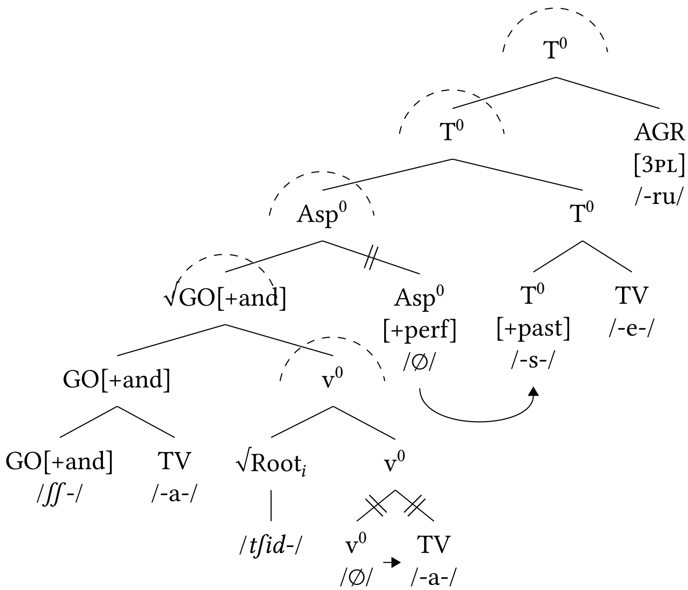
(iv) * moj lu ʃʃa pulittzamu e ripittsamu

[31] The verb *ttʃidere* 'kill' is athematic. The v^0-TV is pruned and deleted in this case (see Calabrese 2015, 2019 for discussion and analysis). A phonological rule deletes /d/ before /s/.

[32] It should be observed that the order of restructuring modal/aspectual vs. andative verbs is fixed, and appears to be independent of the morphosyntactic environment (i.e., independent

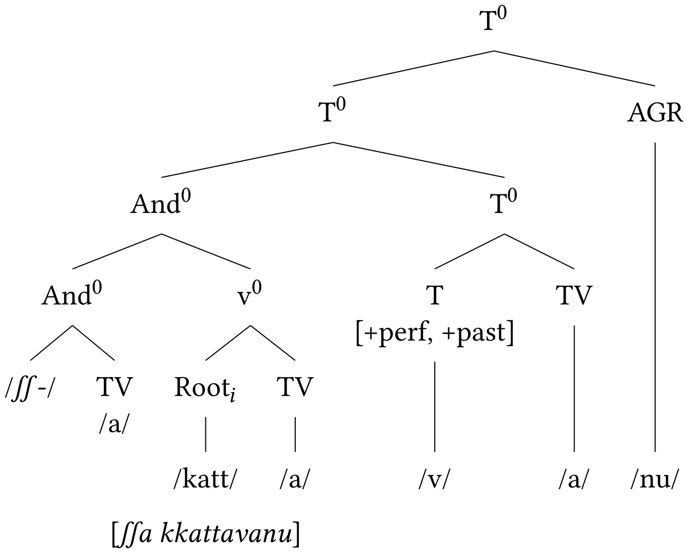


(a) Cyclic derivation of the andative form *ʃʃa kattavanu*

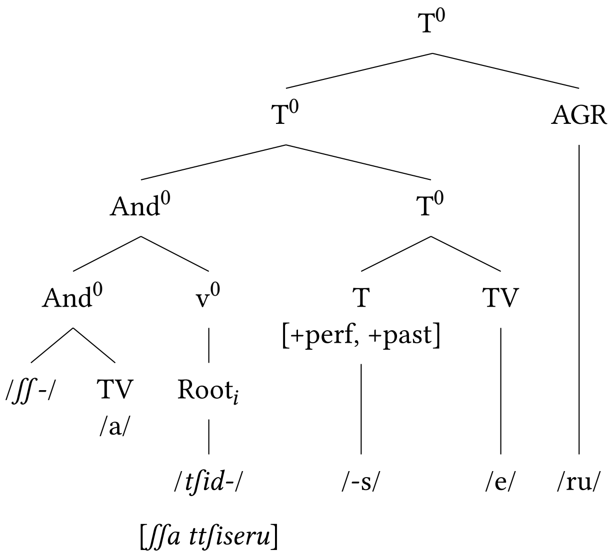


(b) Cyclic derivation of the andative form *ʃʃa ttʃiseru*

Figure 8: Cyclic derivations of Campiota andative forms



(a) Output structure of the andative form *ʃʃa kattavanu*



(b) Output structure of the andative form *ʃʃa ttʃiseru*

Figure 9: Output structures of Campiota andative forms

This can be interpreted as a general property of bleached roots in Salentino to be added to the VIs in (59) insofar as progressive *sta* also behaves in the same way.[33]

(59) The exponents of bleached roots are antitropal.

3.3 The progressive

The same analysis can be proposed for the progressive. The root for STAY may be fully lexical or bleached. One can assume the basic full-fledged structure in (60) in the case of the lexical root. This structure is associated with the inceptive meaning.

(60) …$[_{\text{AspP}}$ Asp $[_{\text{vP}}$ [STAY]$_{\text{Root}}$ $[_{\text{CP}}$ C $[_{\text{TP}}$ … [...V$_2$...]$_{\text{T}^0}$ ...]]]]

In the case of the bleached [+progressive] STAY root, the same stripping operations discussed above for the Reduced MVC generate the progressive construction in (61b):

(61) a. …$[_{\text{AspP}}$ Asp $[_{\text{vP}}$ [STAY$_{\text{[+prog]}}$]$_{\text{Root}}$ $[_{\text{CP}}$ C $[_{\text{TP}}$ … [...V$_2$...]$_{\text{T}^0}$ ...]]]]

b. …$[_{\text{AspP}}$ Asp $\cancel{[_{\text{vP}}}$ [STAY$_{\text{[+prog]}}$]$_{\text{Root}}$ $\cancel{[_{\text{CP}}\ \text{C}\ [_{\text{TP}}\ \ldots}$ [...V$_2$...]$_{\text{T}^0}$ ...]]]]

of whether or not the andative appear in a Full-fledged or Reduced MVC):

(i) a. sta bbau ku ntʃiɲɲu ku llu fattsu
STAY GO-PRS.1SG ku begin do-PRS.1SG ku it.CL do-PRS.1SG
* ntʃiɲɲu ku bbau ku llu fattsu

b. lu sta bba ntʃiɲɲu a ffare
it.CL STAY GO-PRS.1SG begin-PRS.1SG a do-INF
* lu ntʃiɲɲu a ʃʃa ffare / *lu ntʃiɲɲu a bba ffare / *lu sta ntʃiɲɲu a ʃʃa ffare / *lu ntʃiɲɲu a sta ʃʃa ffare

[33]As also observed by Ledgeway (2016) for the variety of Lecce, a Reduced MVC and a clausal one can co-occur in one and the same sentence (here adapted for the Campiota variety).

(i) a. simu ʃuti ku llu ʃʃa kkattamu
simu ʃuti ku llu ʃʃa bba kkattamu
be.PRS.1PL go-PTCP.M.PL ku it.CL. GO buy-PRS.1PL
'we went to buy it'

b. sta bbau ku me ʃʃa bba kkurku subbra lu tivanu
STAY go-PRS.1SG ku self.cl GO-go.to.bed-PRS.1SG on the sofa.bed
'I am going to go to bed on the sofa bed.'

The application of cyclic head movement to the projection of the lower verb generates the structure in Figure 10 for the sentence in (62), which also contains a bleached andative form (also, the exponent */sta/* must be marked as being antitropal, i.e., a prefix because of (59)).

(62) ne sta ʃʃa kkurkavamu
self.CL STAY GO go.to.bed-IPF-1PL

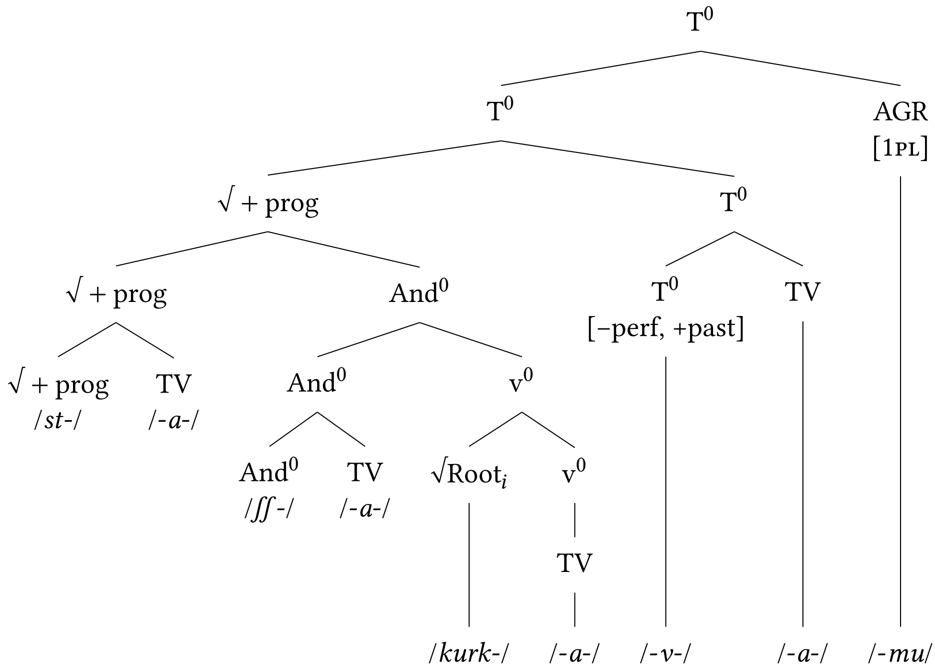


Figure 10: Output structure of the progressive andative form *sta ʃʃa kurkavamu*

3.4 Periphrastic constructions

I now turn to the derivation of the sentence in (63) where a periphrastic construction with an auxiliary and a participle is present:

(63) l' iti ʃʃa kkattatu
it-CL have-Pres.2PL GO buy-PTPL-MSG

One needs to explain why the piece *ʃʃa/bba* behaves morphologically as an affix thus appearing attached to the participle and lower than the auxiliary in a structure.

In the preceding pages, I assumed that verbal synthetic forms are due to the cyclic application of head movement, which is able to convert the extended functional projection of a verb into a single complex X^0 (i.e., a single word involving a root plus affixes). If this is correct, one can also plausibly assume that, in contrast, periphrastic verbal forms – in which similar verbal extended functional projections are broken into different complex X^0s (i.e., different words: auxiliaries and other verbal morphological pieces such as participles, gerunds and infinitives) – are due to the failure of the application of this operation to certain functional heads. In fact, this approach to periphrasis formation, which was at first formulated in Embick (2000), has been more recently fully developed by Bjorkman (2011), Pietraszko (2016), Fenger (2020), Calabrese (2019).[34] In Bjorkman and Pietrasko's works, the failure of functional heads to combine with the verb is due to the action of certain nodes (or better the feature complexes of those nodes) as interveners (Rizzi 1990) in syntactic processes – such as Agree[35] – that lead to head movement. For example, the v-complex may not raise to Tense because (marked) Aspect features intervene for the Tense feature to be agreed with and checked. In Calabrese's model, in contrast, the failure of head movement is formalized in terms of morphological filters disallowing combinations of functional head features: movement is blocked if such combination may be generated. Fenger proposes that head movement may be blocked by phasal boundaries such as that between the verbal thematic complex which includes Aspect and the higher T-C complex (see Bošković 2014, Wurmbrand 2017) – some form of phasal extension would be required to account for the cases where movement crosses these boundaries. A thorough discussion, comparison, and selection among these different theories is far beyond the goals of this paper. What matters here is that periphrasis is the result of blocking of head movement. A simple way of implementing this, without taking a stand with respect to the abovementioned theories, is to propose that head movement[36] from one head position in the extended

[34]An obvious advantage of such approaches over purely lexical ones that assume that periphrastic formation is just due to paradigmatic gaps (see Kiparsky 2005 for example) is that the periphrastic structure, and the subsequent formation of auxiliaries, follows the hierarchial functional structure: it is expected that when there are higher and lower heads, the lower head will end up on the verb, whereas the higher head ends up on the auxiliary.

[35]In Bjorkman's system this is done via a version of Agree (Chomsky 2000, 2001), namely Upward Agree (see Merchant 2011, a.o.); in Pietraszko's system this happens through a type of selection, similar to cyclic agree (Béjar & Rezac 2009).

[36]Here we are dealing only with head raising. The same blocking could also occur with head lowering, which is not considered here.

functional verb projection to the one directly higher up may be parametrized with a parameter allowing or not allowing movement between these positions. If movement to the higher up position is blocked, the complex X^0 head that was cyclically constructed up to that point remains stuck in the lower position. This leads to a periphrastic formation in which the extended functional projection is split in at least two X^0 complexes (i.e., in two words): a lower one, i.e, blocked X^0 complex, and a higher one including the higher functional heads of the projection. The head movement parameters may have their deeper grounding in the theories mentioned above, but choosing what they are will not be an issue here.

Consider the derivation of the Campiota periphrastic present perfect construction in (64):

(64) siti ʃuti a kkasa
be-PRS-2PL go-PTCP-MPL to home
'We went home.'

As proposed in the works quoted above, it is derived by blocking head movement of the lower complex with Asp^0 to the higher T^0 node.[37] It follows that the higher T^0 is in violation of (50). A dummy root – the AUX root – is therefore inserted as a "holder" for T^0 (Bjorkman 2011). Given the analysis just proposed, the participle is essentially a tenseless, moodless verbal Asp^0 constituent (see Calabrese 2020 on the derivation of perfect participle forms in Italo-Romance and Latin). In order to understand the morphological properties of the constituents of periphrastic constructions, we also need to look into their agreement patterns. As proposed in Calabrese (2019), an important feature of all verbal complexes X^0 is that they are assigned an AGR node which is adjectival in participle forms – analyzed as complex Asp^0 heads in Calabrese (2019), following Embick (2000, 2004) – but is otherwise verbal, where verbal AGR_V requires person and number features, and adjectival AGR_{Adj} requires gender and number features (and case features in languages with overt morphological case). The rule for AGR insertion proposed in that work is the following:[38]

[37] Lowering of the higher T^0 onto the lower Asp^0 complex must be prevented. A detailed discussion of how periphrastic verbal constructions are derived in Italian is unfortunately not possible here due to space restrictions; the reader is referred to Calabrese (2019) for this.

[38] An important issue I cannot address fully here is that of the root-adjacent TV in auxiliaries. Given that v^0 should not be present in the AUX constituent, the relevant TV should not be there. Many Italian dialects indeed do not have it: consider the lexical verb/AUX counterpart in the case of HAVE in Sicilian: *av-i-ti/a-ti*, and in Neapolitan: *av-i-te/a-te* have-PRS-2PL where we have the structures $[[[av\text{-}]_{\mathrm{Root}}\ [\text{-}e]_{\mathrm{TV}}]_{v^0}\ \text{-}te]_{[\mathrm{1PL\text{-}AGR+T^0}}$ vs. $[[[av\text{-}]_{\mathrm{Root}}\ ]_{v^0}\ \text{-}te]_{[\mathrm{1PL\text{-}AGR+T^0}}$. However, in standard Italian such a distinction is absent: a thematic vowel is present when *avere* occurs

(65) Adjoin AGR to the highest X^0 of a complex X^0 included in the extended projection of V^0 where AGR is:
  a. adjectival if the highest X^0 is Asp^0, and
  b. verbal otherwise.

We can now derive the surface forms. Blocking and AUX insertion are shown in Figure 11a on page 251. The outcome with further operations of AGR insertion, pruning, etc., is shown in Figure 11b. Note that the lower Asp^0 complex is assigned adjectival AGR_{Adj} and therefore displays participial morphology (see Calabrese (2020) for further discussion of participial morphology in Italian and Latin, and Calabrese (2019) for discussion of the structure of the auxiliary form).[39]

Let us turn to the sentence in (63) *l'iti ʃʃa kkattatu*, which includes the bleached andative GO. The blocking of upward head movement of the complex X^0 including this element is shown in Figure 12 (page 252).

The operations of AUX insertion in the higher T^0, AGR insertion in the lower and higher verbal X-complexes and the relevant TV insertion, subsequent VI insertion followed by the other relevant operations, all applying cyclically, generate Figure 13 (page 253).

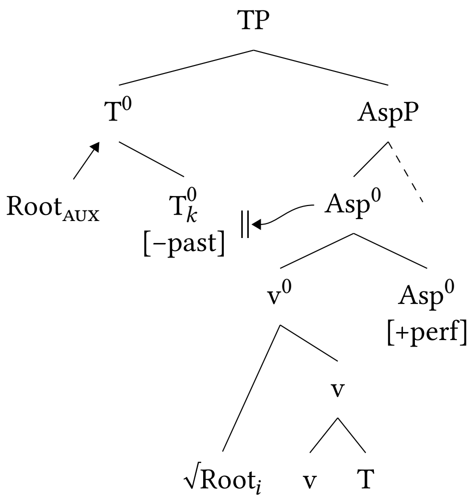
The structure in Figure 13 accounts for the properties of this construction. Firstly, the andative head belongs to the lower Asp^0 complex which is converted

as a main verb but also when aver is an auxiliary forms in (i.b)

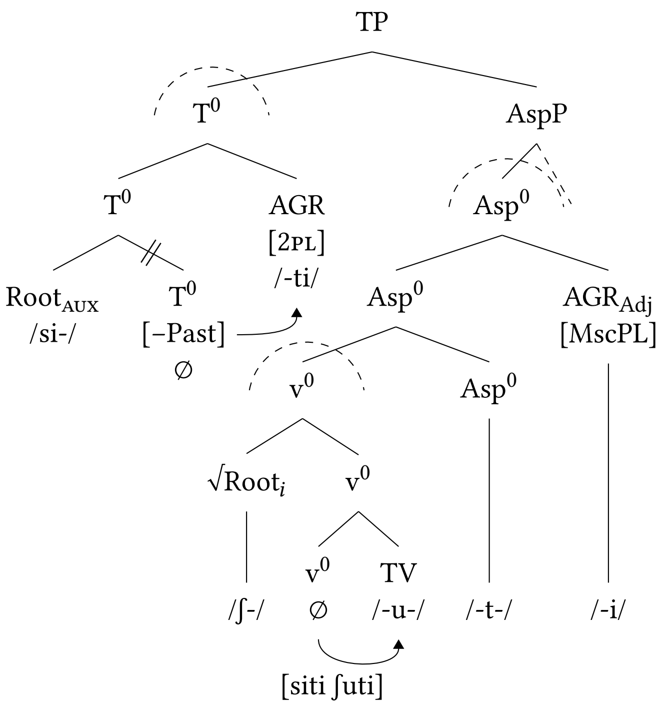
(i) a. avete una bella casa (av-e-te)
   'You have a beautiful home.'
  b. avete mangiato (av-e-te)
   'You have eaten.'

To account for what happens in this case, Calabrese (2019, 2020) proposes that this is an instance of a morphological condition. Under this analysis, morphological conditions may introduce ornamental nodes such as Thematic Vowels but also what appear to be syntactically void functional heads. They are the ways in which the outcomes of analogical, or purely morphological, changes are integrated in the PF derivation, and the means by which abstract syntactic structures are converted into surface morphophonological forms where one finds pieces that do not have a true syntactic motivation. In the case of the auxiliaries, a morphological structure condition formally generalizes verb structure to AUX – a purely morphological change – by inserting a syntactically void TV. However, it is unclear if a TV is present in the auxiliaries *avire* and *essere* in Campiota. Here I will assume that there no TV in these auxiliaries in this variety. Note that an Italian restructuring auxiliary such as *andare* 'GO' discussed below displays it as expected and that Campiota restructuring auxiliaries such as *putire, spittare*, etc., also display it, as in Italian (cf. Figure 16).

[39] The exponent of [+perf] Asp^0, when it is the topmost functional node in a X^0-complex – i.e., in a past participle – is */-t-/*. The v^0-TV, in this case, is */-u-/*.



(a) Blocking of head movement and AUX insertion



(b) Further operations

Figure 11: The derivation of Campiota periphrastic present perfect forms

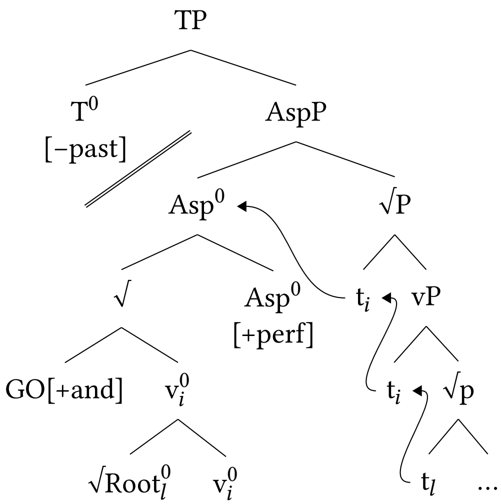


Figure 12: Blocking of head movement in periphrastic andative constructions

into a participle through application of (65a); therefore, after Vocabulary Insertion, the andative piece *ʃʃa* attaches to this participle as a prefix and therefore appears below the auxiliary. It also follows that the participial morphology that in the Full-Fledged MVC appears on the higher andative verb appears instead on the lower verb in the reduced one, since this verb is part of lower Asp^0 complex. At the same time, the T^0 (and $Mood^0$) features that appeared on the higher andative verb are now assigned to the auxiliary. Finally, since T^0 and the inserted auxiliary belong to the same extended projection of the lower v^0, auxiliary selection will be sensitive to the properties the latter. This also explains why the auxiliary is obligatorily selected by the lower verb.

3.5 Reduplication

An account of the properties of reduplication requires assuming that it applies before VI insertion insofar as the reduplicant is not sensitive to the phonological properties of the base:

(66) ʃʃa bba kkurka te
GO. go.to.bed-Imperative.2sg cl2sg
'Go to bed.'

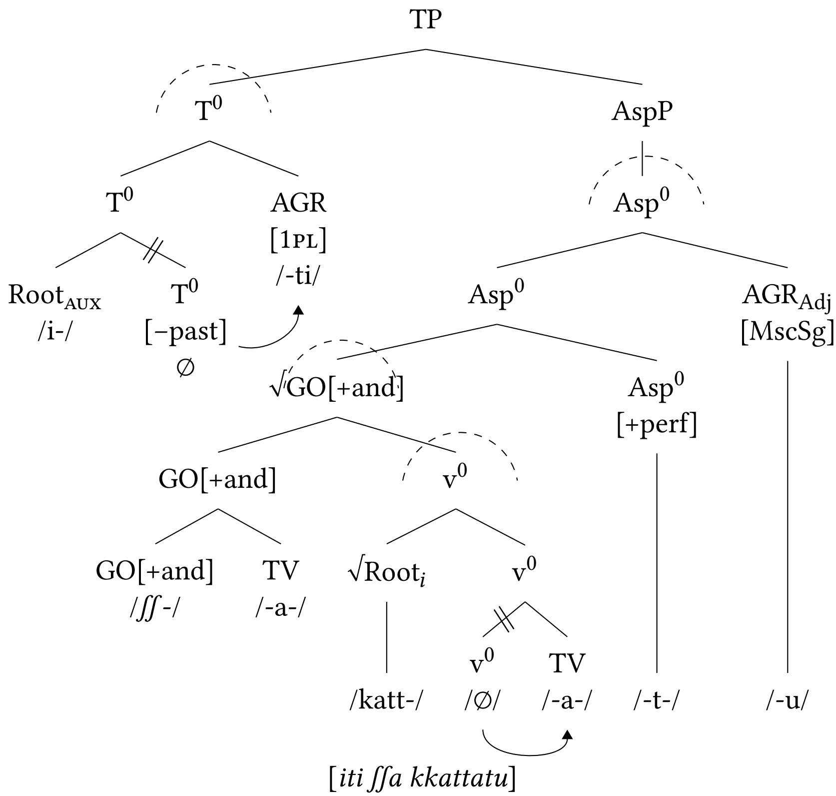
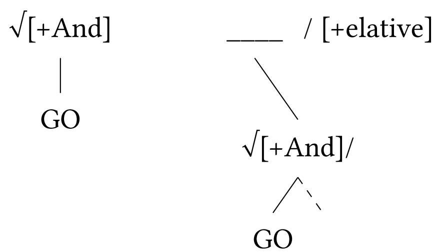


Figure 13: Cyclic derivation of periphratic present perfect andative construction in Campiota

The most adequate way of accounting for this type of reduplication is by means of a fission-like operation (Calabrese 1988b, Noyer 1992, Arregi & Nevins 2012, Calabrese & Pescarini 2014):

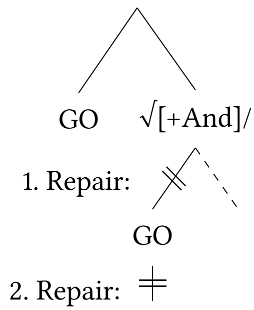
(67) ∅ →



The surface outcomes of the reduplication are governed by an OCP-like constraint that blocks the sequence of identical exponents **ʃʃ-a ʃʃ-a* (see Pescarini

2010 on the role of a similar constraint in clitic clusters). I assume that the higher position can be assigned only the default exponent */ʃʃ-/*. If the base contains */bb-/*, there is no problem and */ʃʃ-/* is inserted. If the base contains */ʃʃ-/*, instead, there is a violation of the relevant OCP constraint. Two repairs are possible, as shown in (67), before TV insertion: 1) the entire inserted GO node can be deleted, which simply results in the absence of reduplication (i.e., a case of obliteration, cf. Arregi & Nevins 2012); 2) only the terminal element of the inserted node is deleted, which results in the insertion of the alternative GO exponent */B-/* (cf. Pescarini (2010) for this type of repair) ([*bb*-] after application of the rules (31) and (27)):

(68) ∅ → √[+And] ____ / [+elative]



/ʃʃ-/ → */B-/* (→ /bb-/ after rules (31) and (27))

3.6 Full-Fledged MVC and Infinitival MVC in Italo-Romance

In most Western Romance varieties, when verbs such as GO (and COME) feature in MVCs, they are typically followed by an infinitive. We will refer to this construction as the *Infinitival MVC*. Here is an example from the Apulian dialect spoken in Bari (69). But the same structures are found in standard Italian (70):

(69) Mə vògg' a 'ccattà u cappìddə névə. (Bari, Apulia)
me go.PRS.1SG to buy.INF the hat new
'I go buy a new hat.' (Andriani 2017: 231)

(70) Andava a mangiarlo (Italian)
go.IMPF.3SG to eat.INF=it
'I went to eat it.'

An analysis of the Full-Fledged MVC requires an analysis of these Infinitival MVCs. Let us thus turn to the Infinitival MVC in Italian, like that shown in (71), which has no restructuring. The sentence in (71) has the basic syntactic structure in (72) in the model developed here. If there is no restructuring (e.g., no clitic climbing), the verb GO selects a full CP, an instance of a purpose clause. No clitic climbing can occur in this case and the verb GO is a full lexical verb that can select argumental structure (cf. 71).

(71) Andava a casa a mangiarlo (Italian)
go.PRF.3SG to house to eat.INF=it.CL
'I went home to eat it.'

(72) …[$_{\text{AspP}}$ Asp [$_{\text{vP}}$ [GO]$_{\text{Root}}$ [$_{\text{CP}}$ C [$_{\text{TP}}$ … […V2…]$_{\text{T}^0}$…

The sentence in (71), however, can be restructured as shown by the clitic climbing and removal of argumental structure:

(73) Lo andava (*a casa) a mangiare (Italian)
it.CL go.IMPF.3SG to house to eat-INF=it.CL
'He was going (*home) to eat it.'

Along the lines of the analysis proposed earlier for Salentino, I assume that restructuring involves stripping the temporal and aspectual structure of the lower proposition, with subsequent integration of the restructuring root in the extended verbal projection of the lower verb, as in (61b). However, there is a fundamental difference between Salentino and the other Romance varieties in the case of andative MVCs. Whereas in Salentino, head movement merges the lower v^0 complex with the andative GO element – whereby this becomes an affix – this does not occur in restructuring infinitival MV constructions as shown in Figure 14. I assume that head movement is parametrically blocked here as in the periphrastic constructions discussed in §3.4 (cf. Figure 11; therefore, head movement to andative GO is not allowed).

The further derivational steps that eventually lead to the surface forms are discussed below. Being a functional head, the motion verb is in violation of (49). However, being also a root makes a difference. Thus I propose that, in this case, it is licensed as is, and thus does not get adjoined to another root as stipulated by (49) – it thus becomes an auxiliary in itself – and can therefore be the host of the higher functional heads, as shown in Figure 15.

Now, insofar as the entire complex is a single extended functional projection, and therefore a single clausal structure, clitic climbing to a higher clitic landing site is allowed, as in (73).

There is still an issue that needs to be addressed here, though, in order to account for how (72) is converted to the surface MVC in (71): specifically, we need

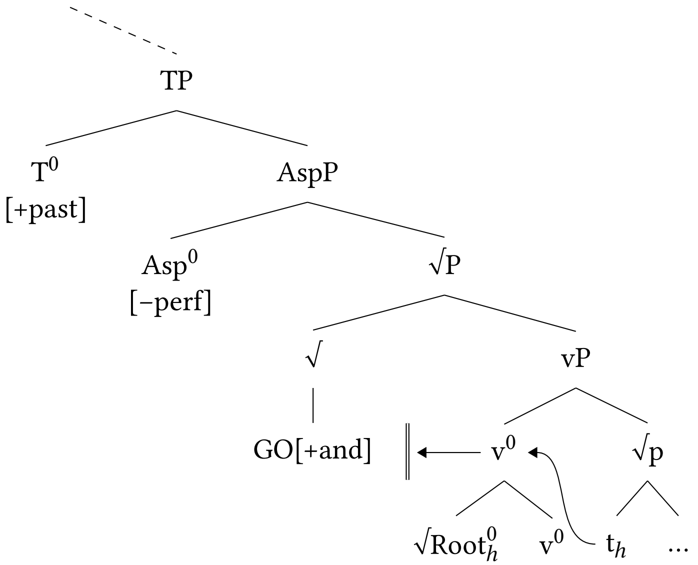


Figure 14: Blocking of head movement in restructuring Infinitival MVC

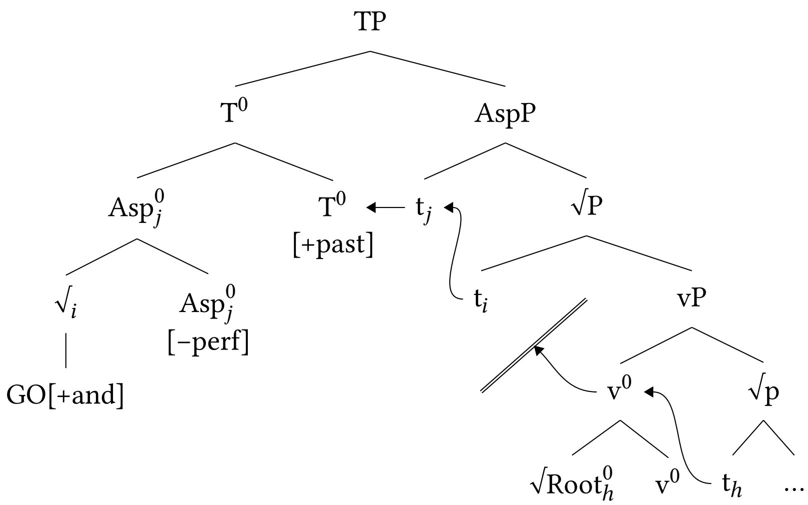


Figure 15: Further head movements in restructuring Infinitival MVC

to understand why the lower verbal X^0-complex in Figure 15 is characterized by infinitival morphology. The issue is the morphological nature of the infinitive. Now, the infinitive, with the gerund, is, by definition, the "uninflected" verbal form and occurs in a wide variety of embedded constructions, as observed by Wurmbrand (2014). Thus, an infinitive can appear in an embedded full clause as [CP [TP/FutP [AspP [vP [VP]]], but also in a restructured embedded constituent one as [vP [VP]]. In addition, Wurmbrand observes that an infinitive occurs in embedded future clauses [TP/FutP [AspP [vP [VP]]]. Importantly, for all these constructions, Wurmbrand (2014) also showed that the different temporal properties of the infinitive do not correlate with a difference between control and ECM/raising. It follows that there is no syntactic functional verbal element, or other syntactic property, that can account for the surface distribution of the infinitive. Here I propose that this distribution can be readily determined in the morphological component. Note, in particular, that in all of the infinitival constituents mentioned above, we are dealing with independent morphological words, specifically verbal complex X^0s. Unless the highest X^0 is Asp^0, they receive AGR_V by (65b). In Calabrese (1993), it is proposed that the infinitive is the morphological realization of the AGR_V and that it is, therefore, sensitive to AGR_V features. On the one hand, the AGR_V properties of inflected verbal forms are associated with the feature [−anaphoric], which triggers explicit morphological marking of phi-features. Otherwise, the AGR_V lacks explicit marking of phi-features, and can co-occur with anaphorically bound PRO subjects, with overt NPs, and with subjectless structures. In this case we have the infinitive. This then means that the infinitive is the default elsewhere realization of AGR_V:

(74) a. $\{\varphi_1, \varphi_2, \varphi_3, \text{etc.}\} \longleftrightarrow [-\text{anaphoric } AGR_V, \phi\text{-features, etc.}]_{AGR_V}$ (where $\varphi_1, \varphi_2, \varphi_3$, etc. are exponents of AGR in inflected V forms, such as /-u/, /-i/ etc.)

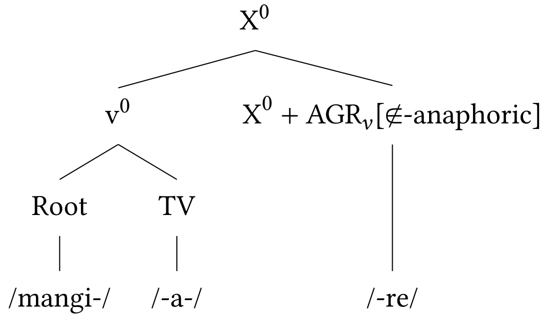
b. $\text{/-re/} \longleftrightarrow [\ ]_{AGR_V}$
(Infinitive)

The distribution of infinitives can be captured if one assumes that the presence of [−anaphoric] AGR is associated with the presence of a deictic, i.e., [−anaphoric], tense, as stated in (75). So, the infinitive occurs as a default when Tense is non-deictic, i.e., anaphorically dependent on the Tense of the matrix verb and the subject anaphorically bound (i.e., [+anaphoric AGR], see the analysis of EQUI-clauses in Calabrese (1993)), or when Tense is simply missing, as in the future infinitives or in constructions with restructuring:

(75) $[-\text{anaphoric}]_{T^0} \rightarrow [-\text{anaphoric}]_{AGR}$

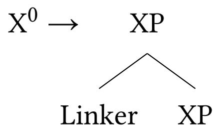
Infinitives, therefore, have a morphosyntactic structure such as that in (76), where X^0 is the highest non-Asp^0 functional head. Assuming that this head is non-overt in this context, it will be pruned and therefore fused into a single node with the higher AGR as in (76).

(76)



We can therefore have the derivation in Figure 16 (page 259) for the surface form *andava a mangiare* in (73)[40] where, as proposed in Cruschina & Calabrese (2021), the connecting preposition (the linker) is inserted by the rule in (77) as an instance of ornamental morphology and is therefore devoid of any syntactic and semantic content.

(77)



We can turn back to Salentino at this point. Whereas the Salentino counterpart of the Romance restructured Infinitival MVC is a Reduced MVC, the Salentino counterpart of a non-restructured bi-clausal one is a Full-Fledged MVC involving a *ku*-clause. As proposed in Calabrese (1993), this is due to the fact that $[\text{+anaphoric}]_{T^0}$ is not possible in this language (see Calabrese 1993 for an account). Thus, in the presence of T^0, given (75), AGR will always be [−anaphoric] thus disallowing the infinitival clause.

(78) … $[_{\text{AspP}}$ Asp^0 $[_{\text{vP}}$ $[\text{GO}]_{\text{Root}}$ $[_{\text{CP}}$ C $[_{\text{TP}}$ … [$\text{AGR}_{[-\text{anaphoric}]}$ … V_2… $]_{T^0}$…

(79) ʃivi ku llu kkattu (cf. *andai a mangiarlo*)
go-PRF.1SG ku it.CL buy-PRS.1SG
'I went to buy it.'

[40]The TV adjacent to the andative root is inserted as discussed in footnote 38.

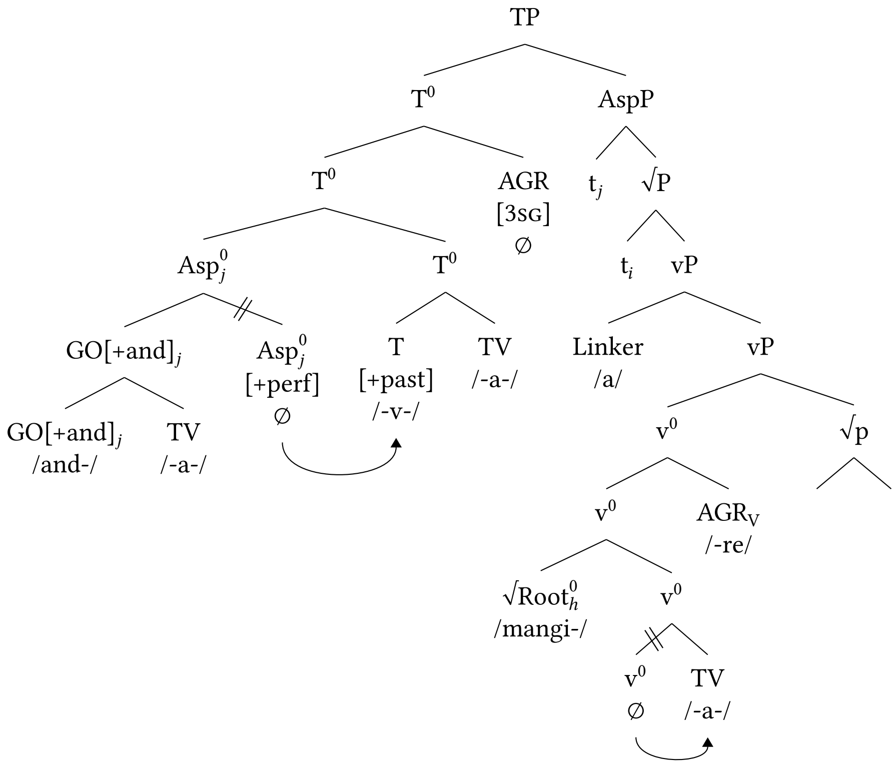


Figure 16: Full final derivation (with insertion of infinitival AGR) of restructuring Infinitival MVC

3.7 Infinitival forms in Campiota

Before turning to the Doubly Inflected MVCs of other southern Italian dialects, I need to discuss restructuring verbs that take infinitival complements in Campiota. In fact, as observed in §2.2, infinitives are indeed possible in the complements of restructuring verbs such as modal or aspectual ones: *must*, *be able*, *begin*, *finish*, *continue*, *stay*, *try*, etc. cf. (80). Given that stripping of tense and aspectual structure occurs in these cases according to the analysis developed above, the same basic structure of restructured infinitival clauses proposed above for the MVC in Romance is found here, i.e., the structure derived in Figure 16. Insofar as this is the same structure as the Reduced MVC, we must account for why infinitive-taking restructuring verbs do not behave like GO and STAY. My proposal here is to extend to these cases the analysis just proposed for the Infinitival MVC in Romance: only GO and STAY can undergo merging by head movement with the lower v^0. Instead, all other restructuring verb roots are parametrically prevented from undergoing that operation, and, therefore, cannot be merged with the lower v^0 complex via head movement. This results in structures similar to that of the andative GO in ltalian in Figure 16. Crucially, in the this structure, T^0 is not present in the lower piece; (75) will therefore not apply and an unspecified AGR_V will be inserted. Given (74b), this results in the insertion of infinitive exponence.

(80) a. lu pottsu kkattare
it.CL can-PRS.1SG buy-INF
'I can buy it.'

b. m' addʒu kurkare
self.CL must-PRS.1SG go.to.bed-INF
'I must go to bed.'

c. lu ntʃiɲɲa a ffare
it.CL begin-PRS.3SG a do-INF
'I begin to do it.'

3.8 Doubly Inflected Construction

In addition to the Salentino Reduced and Full-Fledged MVC and common Romance Infinitival MVC, another option for motion verb constructions is found in southern Italian varieties. Following Cruschina (2013), I use the name *Doubly lnflected Construction* (DIC) for this other kind of MVCs, where the two verbs, usually connected by the linker *a*,[41] act as a single predicate and share the very same inflectional features. Example of DICs are provided below, where both the higher motion verb and the lower one are in the 1st person singular (81), and in the 3rd person singular (82), of the present indicative:[42]

(81) Vaju a pigghiu u pani. (Marsala, Sicily)
go.PRS.1SG to take.PRS.1SG the bread
'I go to fetch the bread.' (Cardinaletti & Giusti 2001: 373)

[41]See Cruschina & Calabrese (2021) for further discussion of this linker.

[42]The motion verbs that most typically appear in DIC are the local equivalents of *go, come, come by/pass* and *send.* Other verbs may enter the construction as V1 in some dialects. See Di Caro (2018, 2019) for a review of the additional motion verbs that can occur in DIC in different Sicilian varieties. On the special properties of *send* as V1, which involves both a motion and a causative semantics, see Todaro & Prete (2018) and Prete & Todaro (2020).

(82) U veni a piglia dopu. (Mussomeli, Sicily)
him come.PRS.3SG to collect.PRS.3SG later
'He is coming to pick him up later.' (Cruschina 2013: 266)

Varieties displaying DICs always also have their infinitival counterparts:

(83) Vaju a piggjari u pani. (Marsala, Sicily)
go.PRS.1SG to take.INF the bread

(84) U veni a piʎʎari dopu. (Mussomeli, Sicily)
him come.PRS.3SG to collect.INF later

In their analysis, Cardinaletti & Giusti (2001) compare DICs with Infinitival MVCs and, on the basis of a number of syntactic and semantic tests (see Section 2.1), convincingly show that DICs (the inflected construction, in their terminology) are mono-clausal. It follows that DICs correspond to Reduced MVCs, and Infinitival MVCs to Campiota Full-Fledged ones.

DICs are in fact restructuring configurations in which the higher motion verb behaves as a functional head. This can account for the different properties of DICs with respect to the Infinitival MVC first examined in Cardinaletti & Giusti (2001), including obligatory clitic climbing, single event interpretation, indivisibility, and incompatibility with the arguments and adjuncts typically associated with motion verbs (see Cardinaletti & Giusti 2001, 2003, Manzini & Savoia 2005, Cruschina 2013, Di Caro 2019).

As proposed in Cruschina & Calabrese (2021), double inflection arises independently of restructuring. What is special about this set of constructions is the presence of agreement within the extended vP. In other words, DICs involve the assignment of explicit pronominal agreement features to the lower verbal X^0-complex. I have already postulated the presence of an AGR_V element in this constituent: it is introduced by the rule in (65). As postulated earlier, this AGR_V is usually assigned the feature [+anaphoric], or left unspecified, and is hence realized as an infinitive, since this constituent lacks a deictic (non-anaphoric) Tense (or lacks this node entirely) (see 75). If we assume this, then the main feature that characterizes DIC is the fact that the lower AGR_V is actually assigned the feature [−anaphoric]. DICs thus display special morphological behavior – a [−anaphoric] AGR_V in the lower X^0-complex of the structure in Figure 16, that is, the rule in (85) which is characteristic of these dialects. I assume that the rule in (85) applies cyclically when the lower complex has been constructed but the $GO_{[+and]}$ has not moved upwards yet:

(85) $\varnothing \rightarrow [-\text{anaphoric}] \;/\; GO_{[+and]}\; [[\;\_\_\_\_\_\;]_{AGR_V}\;]_{v^0}$

4 Conclusions

In this paper, I attempted to capture the syntactic and morphological properties and processes that account for the Full-Fledged and the Reduced MVC in Campiota, the Salentino variety of Campi Salentina. I showed that Reduced MVCs are mono-clausal and that Full-Fledged ones necessarily bi-clausal. It follows that the same motion verb root displays a lexical use and an affixal one: in its lexical use, it may select argument structure and a full clause; when used as an affix, it is part of the full extended projection of the lower verb and has special morphological behavior: it can be reduplicated and is attached to the participle in participial compound tenses. I argued that the relation between the lexical verb GO and its bleached counterpart in Campiota MVCs is better understood if semantic bleaching may trigger Syntactic Truncation in terms of Wurmbrand (2014, 2015, 2017), in which the higher motion verb selects a vP constituent and therefore all of the projections of the lower verb are prevented from being projected.

I also investigated the characteristic properties of MVCs in other Italo-Romance varieties: restructured and non-restructured Infinitival MVC and DICs, which are MVCs showing double inflection, and showed how they correlate to the Full-Fledged and Reduced MVC in Campiota. Restructured MVCs and DICs can be simply analyzed in terms of Wurmbrand's Syntactic Truncation, while non-restructured Infinitival MVCs correspond to Salentino Full-Fledged MVCs. I proposed that the infinitive is the default morphological realization of AGR (which occurs when AGR is [+anaphoric], or T^0 missing). This accounts for Infinitival MVC. DIC arises from an identical structure in which AGR is assigned the feature [−anaphoric], thus agreeing with V1 in person and number.

Abbreviations

CL	Clitic	IPF	Imperfect	PTCP	Participle
IMPER	Imperative	PRF	Perfect	TV	Thematic Vowel

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Chapter 11

When size matters in infix allomorphy: A unique window into the morphology-phonology interface

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This paper presents a case study of morphophonology in Nancowry, a dialect of Nicobarese (Austroasiatic; Mon-Khmer; Radhakrishnan 1981). In Nancowry, there are several affixal morphemes with exponents that are distributed based on the prosodic size of the stem they combine with, and some of these exponents are infixal, appearing in positions where they create opacity. I show that Nancowry provides evidence for (i) the bottom-up cyclicity of exponent choice, infixation, and prosodification, (ii) the serial ordering of these processes within each cycle, and (iii) the largely arbitrary (non-optimizing) nature of exponent choice and infixation. The findings point to a separation of morphology from phonology (in line with, e.g., Halle & Marantz 1993, 1994, Trommer 2001, Paster 2006, Yu 2007, Embick 2010, Bye & Svenonius 2012, Pak 2016, Dawson 2017, Kalin 2020, Rolle 2020, Stanton 2022), and are consistent with the results from investigating interactions between allomorphy and infixation in a sample of 42 languages (Kalin 2022).

1 Introduction

While there have been a number of surveys and discussions of infixation in the world's languages (Moravcsik 1977, 2000, Ultan 1975, Yu 2007, Štekauer et al. 2012, Blevins 2014, among others) and in-depth case studies on infixation in particular languages (Hardy & Montler 1991, Blevins 1999, Harizanov 2017, Yu 2017, among others), we still know relatively little about how (or whether) infixation *systematically* interacts with particular aspects of morphology and phonology. This

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paper presents a particularly revealing case study that contributes to a larger research program aiming to discover what systematic interactions there are (if any) between *infixation* and *allomorphy* across languages (Kalin 2022). These interactions have the potential to tell us a lot about the fine timing of the morphology-phonology interface, including when exponent choice happens, when exactly affixes "become" infixes, how often (re)prosodification happens during word building, and to what extent exponent choice and infixation may (or may not) be regulated by the phonology.

The case study presented here is of Nancowry, a dialect of Nicobarese (Austroasiatic; Mon-Khmer) spoken by around 800 people on the island of Nancowry (Radhakrishnan 1981: 3). The Nicobar Islands are a union territory of India, forming an arc (along with the Andaman Islands) between the Bay of Bengal and the Andaman Sea. The source for this case study is Radhakrishnan 1981, a small grammar of the morphology and phonology of Nancowry, along with an extensive word list, based on fieldwork conducted in the early 1960s. (Hereafter all references with the format "R:#" are page numbers from this work.) What makes this case study so informative is that there are several morphemes with exponents that are distributed based on the *prosodic size* of the stem they combine with, and some of these exponents are infixal, appearing in positions where they obscure earlier exponent choice and prosodification.

Paster (2005, 2006) briefly features Nancowry as an example of non-optimizing phonologically/prosodically-conditioned allomorphy. I confirm this finding and go significantly beyond it, showing that Nancowry provides evidence for the bottom-up cyclicity of exponent choice, infixation, and prosodification, applying in that order within each cycle. These findings support a separation of morphology from phonology (see, e.g., Halle & Marantz 1993, 1994, Trommer 2001, Paster 2006, Yu 2007, Embick 2010, Bye & Svenonius 2012, Pak 2016, Dawson 2017, Kalin 2020, 2022, Rolle 2020, Stanton 2022).

The paper is laid out as follows. §2 presents a brief sketch of Nancowry's phonological and morphological system. §3 investigates more deeply the two morphemes of interest – the causative morpheme (§3.1) and the instrumental nominalizer (§3.2) – and how they interact with each other (§3.4). §4 turns to the theoretical implications of this data, and §5 concludes.

2 A sketch of Nancowry phonology and morphology

Syllable structure plays a crucial role throughout Nancowry's phonological and morphological system, and so is a good entry point into understanding some basic properties of the language. All syllables in Nancowry have one of two shapes, CV or CVC, and syllabification ignores morphological structure (R:13–14). Stress is mostly predictable and is constrained to appearing only on root syllables. Roots, in turn, may be monosyllabic (CV or CVC; R:14) or disyllabic (CV.CV or CV.CVC; R:49); when monosyllabic, the sole root syllable bears stress, and when disyllabic, the second root syllable bears stress (R:15). The addition of other morphemes to a root/word never affects its stress pattern.

Words (excluding those built via compounding and with particles) range from one to four syllables long. Examples of words of different sizes and of different morphological complexity, with stress placement indicated, are given in (1).[1,2]

(1)
a. ká (fish) ‘fish’ (R:93)
b. lón (tame) ‘tame’ (R:150)
c. fáŋ-a (cut-ONOM) ‘that which is cut’ (R:135)
d. ha-tə́h (CAUS-float) ‘to float something’ (R:107)
e. t<an>ián (<INOM>file) ‘a file’ (R:105)
f. milə́h-a (play.a.game-ONOM) ‘objects used in play’ (R:147)
g. p<am><um>lóʔ (<ANOM><CAUS>loose) ‘one who loosens’ (R:150)
h. ma-ha-lép-a (ANOM-CAUS-fit-ONOM) ‘a thing that is made to fit’ (R:45)

Words built via compounding and/or with particles may be longer than four syllables, with no clear upper size limit, e.g., *ɲí-ma-ha-líap-ta-ri* ‘school’ (house-ANOM-CAUS-know-PTCL-PTCL ≈ ‘house of one who makes you know’) (R:117).

Stress placement constrains the distribution of phonemes in Nancowry. In stressed syllables, there are 10 phonemic vowel qualities, /i, e, ɛ, æ, ɯ, ə, a, u, o, ɔ/ (R:24), 9 of also have a (contrastive) nasalized variant (R:17), and 3 phonemic diphthongs, /ia, ua, ɯa/ (R:25). In unstressed syllables, only 3 vowel phonemes appear, /i, a, u/ (R:20), and neither diphthongs (R:24) nor nasalized vowels (R:17) are permitted. There are 16 consonant phonemes in Nancowry, /p, t, c, k, ʔ, m, n, ɲ, ŋ, f, s, h, r, l, w, j/ (R:33).[3] Consonants, unlike vowels, are not distributed

[1] As is traditional, infixes are indicated in angled brackets. In the gloss, the linear order of an infixal morpheme (with respect to other prefixes and infixes) corresponds to its (relative) closeness to the root in terms of selection and compositionality. The glosses ONOM, INOM, ANOM stand for objective nominalizer, instrumental nominalizer, agentive nominalizer, respectively. A full list of abbreviations is provided at the end of the paper.

[2] Since stress placement is mostly predictable, I omit stress marking in examples going forward. The only unpredictable aspect of the stress system is that stress is realized mainly on one vowel in a diphthong, and which vowel this is cannot be predicted – it is lexically determined (R:15).

[3] Note that /j/ is orthographically *y* in all examples.

based on whether a syllable bears stress or not, though unstressed *root* syllables (always of CV shape) come in a very restricted set of forms, including only the consonants /p, t, c, k, s, h, l/ (R:50). The only other major phonotactic constraint is that /r/ and /f/ cannot be codas (R:33). Consonant sequences of a wide variety occur, but only across syllable boundaries (R:36).

Nancowry has a small number of affixes, including some prefixes, infixes, and suffixes.[4] The first affixes of interest are two non-productive components of Nancowry morphology that are tied closely to the root. Recall from above that roots come in four shapes, CV, CVC, CV.CV, and CV.CVC, with the initial CV of disyllabic roots being quite restricted in its form (R:50). For some apparent disyllabic roots, there is evidence that the initial CV syllable is actually a separable morpheme (called a "root prefix"), though highly idiosyncratic and unproductive (R:48). Consider the following examples involving one such root prefix, *ka-*:

(2)
a. sõk 'index finger' → ka-sõk 'to give, to help' (R:133)
b. hay 'empty, air' → ka-hay 'to feel empty (in the heart)' (R:127)
c. yuaʔ 'to pull out, remove' → ka-yuaʔ 'to give birth' (R:156)
d. yeʔ 'to be afraid' → ka-yeʔ 'wild (animal)' (R:49, 152)

While *ka-* typically signals a verbal word/stem, it does not always, cf. (2d), and it neither makes a consistent semantic contribution nor combines with roots only of a certain category. Root prefixes never combine with disyllabic roots, and some (monosyllabic) roots may appear with different root prefixes (though not at the same time).[5] I will not attempt to formally account for the generalization that root prefixes combine only with monosyllabic roots, but speculate that it is due to a constraint on the maximum prosodic size (a foot) for the realization of this particular small chunk of morphosyntactic structure.

The second non-productive component of Nancowry morphology also takes monosyllabic roots and adds a prefix to build a disyllabic word/stem, this time with a (partially and opaquely) reduplicative affix (R:51–54). This so-called "reduplicative prefix" can be understood as having the (underlying) shape *ʔiC*,[6] with

[4] I put aside what the grammar calls "particles" here (see, e.g., R:47, 82), as there is very little information given on this aspect of the morphological system.

[5] I diverge from Radhakrishnan 1981 in my use of terminology in this paper. While the grammar refers to *all* apparent disyllabic roots as consisting of a root prefix and a (monosyllabic) root (see R:48–50), I will only segment such disyllabic forms into two morphemes (a root prefix and a root) when there is evidence for this segmentation from related word/stem forms. For disyllabic forms with no such segmentation in evidence, I will simply treat these as true disyllabic, monomorphemic roots.

[6] The reduplicative prefix may actually be underlyingly *iC*, with the glottal stop inserted phonetically to repair a vowel-initial word. This possibility is discussed more in §4.3.2.

the coda of the prefix (*C*) being a copy of the coda of the root, if there is one. However, a number of phonological alternations obscure this underlying form, including: (i) the vowel of the reduplicative prefix surfaces as *u* when there is (underlyingly, at least) a reduplicated coda in the prefix *and* this coda is non-coronal or an /l/, (ii) the coda in the reduplicative prefix is deleted *except* when it is a nasal or a non-glottal stop;[7] and (iii) surviving coda palatals become alveolar. (See Steriade 1988: 132ff. and Alderete et al. 1999: 347ff. for the implications of this data for theories of reduplication.[8]) Consider the examples in (3), which illustrate the above processes.

(3) a. ŋak 'shine, bright' → ʔuk-ŋak 'to flash' (R:116)
b. tot 'expensive' → ʔit-tot 'to borrow' (R:110)
c. hi 'clean' → ʔi-hi 'to clear field for plantation' (R:124)
d. miʔ 'moist' → ʔu-miʔ 'wet' (R:121)
e. ruay 'moving forward and backward' → ʔi-ruay 'to beckon' (R:143)
f. *luɲ (gap) → ʔin-luɲ 'axe' (R:49)

Like with the root prefixes, the reduplicative prefix does not contribute a predictable meaning (and sometimes it contributes no meaning), though the derived form is often verbal. Some roots can appear with both a root prefix and a reduplicative prefix (though not at the same time), while other monosyllabic roots never take a reduplicative prefix, and yet others never appear *without* the reduplicative prefix, like that in (3f). Finally, like with root prefixes, disyllabic roots cannot take a reduplicative prefix (R:49).[9] The same speculation applies here as above, that there is a maximum output size on the realization of this deeply embedded root-related piece of morphosyntactic structure. Indeed, one might be

[7] Coda deletion does not bleed the *i/u* alternation, and so there is still evidence for the underlying reduplication process even when there is no overt coda consonant in the reduplicative prefix.

[8] Note that a number of other publications that discuss this reduplication pattern seem to be built on a misinterpretation of several basic components of the data, e.g., Hendricks 1999: 247ff, Meek 2000, and Inkelas & Zoll 2005: 223–224. In particular, these works claim that "the reduplicant does not have morphological meaning, but simply augments the verb" (Hendricks 1999: 58) in order to "bring a stem up to the minimal size required for it to participate in another morphological construction" (Inkelas & Zoll 2005: 200–201). As the examples in (3) show, the reduplicative prefix can make a morphological contribution (albeit an idiosyncratic, non-productive one). Further, there are no morphological constructions that depend on the presence of the reduplicative prefix; even the allomorphs that will be discussed in §3 that combine *only* with disyllabic stems are in general not able to combine with stems containing the reduplicative prefix (R:55, 61).

[9] The grammar also states that both root prefixes and the reduplicative prefix can "sometimes" be dropped without informational loss in the presence of other affixes (R:49), but it was hard to confirm this with the available data.

tempted to simply treat the reduplicative prefix *as* a root prefix, but, whereas root prefixes freely co-occur with other prefixes/infixes, the reduplicative prefix only does so in a restricted way (see, e.g., fn. 11).

Beyond the two non-productive prefixes discussed above, there are several productive affixes in Nancowry. Nancowry has two suffixes, a possessive marker *-a* (R:65) and an objective nominalizer *-u* (R:66). There are also three productive prefixal/infixal morphemes, an agentive nominalizer (*-am-*/*m(a)-*; R:56–58), an instrumental nominalizer (*-an-*/*-in-*; R:60–64), and a causative morpheme (*ha-*/*-um-*; R:54–56). The latter two morphemes will be those of interest for the remainder of the paper.[10]

3 Causatives and instrumental nominalizations

This section investigates in detail the allomorphs of the causative morpheme and the instrumental nominalizer, as well as the interactions of these morphemes with each other. A thorough empirical characterization of the data sets the stage for understanding the theoretical implications of Nancowry morphophonology, which is taken up in §4.

3.1 Causatives

The causative morpheme has two suppletive allomorphs, whose properties are laid out in (4) (R:54–56) along with several examples. First, there is the prefix *ha-*, which combines only with monosyllabic stems, (4a). Next, there is the left-edge infix *-um-*, for disyllabic stems, appearing after the first consonant of the stem, (4b). This morpheme derives verbs, most typically from adjectives, though occasionally from verbs and (rarely) from nouns.

(4) Allomorphs of the causative morpheme (first pass)

a. *ha-*

i. Properties
- prefixal
- combines only with monosyllabic stems

ii. Examples
- pin 'thick' → ha-pin 'to thicken something' (R:111)
- ta 'level' → ha-ta 'to level something' (R:107)
- teh 'to float' → ha-teh 'to float something' (R:107)

[10] I mostly put aside the agentive nominalizer because it is less clear how to analyze its forms and distribution, though I will occasionally bring this morpheme into the discussion.

b. *-um-*
   i. Properties
      • infixal (appears after initial consonant; first vowel disappears)
      • combines only with disyllabic stems
   ii. Examples
      • paloʔ 'loose' → p<um>loʔ 'to loosen' (R:150)
      • tiyəh 'new' → t<um>yəh 'to make something new' (R:153)
      • saput 'to turn over' → s<um>put 'to turn sthg over' (R:114)

As can be seen in the examples in (4b), the infix *-um-* overwrites the first vowel of the stem; thus, even though *-um-* combines with disyllabic stems, the output is still disyllabic. This can be understood naturally if the "phonological pivot" (Yu 2007) of the infix is the first vowel, with the infix placed *after* this pivot, such that infixation of *-um-* creates vowel hiatus – since complex vowels are not allowed in unstressed syllables (see §2), the stem vowel deletes. In other words, a form like *p<um>loʔ* has an intermediate stage **pa<um>loʔ*.

In (4b), all provided examples involve unsegmentable disyllabic roots, but *-um-* can also combine with segmentable disyllabic stems.[11] For example, the causative can combine with stems consisting of a root prefix and monosyllabic root (see §2, (2)), as shown in (5).

(5) a. fec (tiny) 'tiny' (R:134)
    b. ka-fec (RP-tiny) 'to become tiny'
    c. k<um>-fec (<CAUS>RP-tiny) 'to make something tiny'

In addition, causativization can recurse, resulting in a double causative, (6).[12] (6c) shows the infix *-um-* combining with the already-causativized stem in (6b).

(6) a. ʔɛ̃h (near) 'near' (R:85)
    b. ha-ʔɛ̃h (CAUS-near) 'to approach'
    c. h<um>-ʔɛ̃h (<CAUS>CAUS-near) 'to cause someone to approach'

Note that the double causative in (6c) is built from a monosyllabic root, *ʔɛ̃h*.

[11] Note though that the causative only very rarely co-occurs with a reduplicative prefix. The grammar actually claims this is unattested entirely (R:55), but there are several exceptions in the word list. Exploring the reason for this rarity is outside the scope of this paper, though I have occasion to discuss one particular example of a causativized stem containing a reduplicative prefix in fn. 18.

[12] Sometimes, both causative allomorphs appear, but there doesn't appear to be a doubly causative meaning (R:55–56). Perhaps in these cases *ha-* is acting as a dummy root prefix of sorts.

While it doesn't appear that disyllabic roots/stems (prior to any causative morpheme) can undergo double causativization (R:56), it is possible that such a double causative is simply phonologically invisible. Consider, for example, the disyllabic stem from (5b), *kafec*. One application of the causative yields *kumfec*, (5c). If this were causativized a second time, the predicted outer causative allomorph would again be *-um-* (because the stem is (still) disyllabic). Infixation of the second *-um-* would yield (initially) **ku<um>mfec*, which would presumably be resolved back to *kumfec* after the loss of the first stem vowel and the simplification of the illicit CCC sequence. In other words, there would be no surface evidence of the fact that there are (underlyingly) two instances of *-um-*. This type of phonological explanation for a supposed morphological gap plays a role in understanding the interaction between the causative and instrumental nominalizer as well, as will be discussed in §3.4.

3.2 Instrumental nominalizations

The instrumental nominalizer also has two (main) suppletive allomorphs, laid out in (7) (R:60–64). As described in (7a), *-an-* appears with monosyllabic stems and is infixal, surfacing after the first consonant and before the first vowel. On the other hand is *-in-*, (7b), which appears with disyllabic stems and is also infixal, surfacing after the first consonant but overwriting the first vowel. This morpheme generally combines with verbs and derives an instrument noun.[13]

[13] I will mention here, but not pursue further, an alternative analysis of this allomorphy built on two suggestions by Heather Newell (p.c.), that (i) the stressed/unstressed vowel distinction in Nancowry corrresponds to a length distinction (where stressed vowels are bimoraic, unstressed vowels monomoraic), and (ii) *-an-* and *-in-* actually have the same infixal placement, namely, that they both want to follow the first vocalic mora. Pushing this one step further, it's even possible to posit one underlying form, *-Vn-*.

Here's how this analysis would capture the data at hand. When *-Vn-* combines with a monosyllabic stem (which, by hypothesis, has a bimoraic nucleus) and tries to take a position after the first vocalic mora, it is blocked from doing so because geminates cannot be thus interrupted; instead, the infix "repairs" to a position preceding the long vowel. When *-Vn-* combines with a disyllabic stem, the first vowel of the stem is monomoraic, and so *-Vn-* is able to take a position after this vowel; as in the paper's proposed analysis, this position for the infix results in illegal vowel hiatus and deletion of the first stem vowel. Finally, the features of the underspecified vowel are determined by whether or not the *n* in the infix is a coda (in which case the vowel is realized as assimilated front *i*) or not (in which case the vowel is realized as unassimilated central *a*).

Since this alternative analysis of the allomorphy relies on prior stress assignment (feeding lengthening), it is still compatible with the general conclusions of the paper. And further, this explanation would not obviate the need for prosodically-conditioned suppletive allomorphy of the instrumental nominalizer entirely, cf. the discussion of *-anin-* at the end of this section.

(7) Allomorphs of the instrumental nominalizer (first pass)

a. *-an-*

i. Properties
- infixal (appears after initial consonant)
- combines only with monosyllabic stems[14]

ii. Examples
- rɯk 'to arrive' → r<an>ɯk 'vehicle' (R:138)
- tuak 'to pull' → t<an>uak 'thing to pull with' (R:109)
- kap 'to bite' → k<an>ap 'tooth' (R:61)

b. *-in-*

i. Properties
- infixal (appears after initial consonant; first vowel disappears)
- combines only with disyllabic stems

ii. Examples
- kasɯ 'to trap' → k<in>sɯ 'a trap' (R:130)
- calɯak 'to swallow' → c<in>lɯak 'throat' (R:146)
- tikoʔ 'to prod' → t<in>koʔ 'a prod' (R:97)

The allomorph *-in-* behaves much like the *-um-* allomorph of the causative morpheme (§3.1): *-in-* appears after the initial consonant of the stem, and the first vowel of the stem disappears, such that the output of infixation remains disyllabic. Like with *-um-*, I propose that this is due to *-in-* infixing after the first vowel, with the subsequent loss of that vowel to resolve hiatus. Also like *-um-*, *-in-* can combine with morphologically complex stems consisting of a reduplicant and root (rare, with the same considerations as mentioned in fn. 11) or root prefix and root (common), the latter shown in (8).

(8)
a. tal (cut.flesh) 'to cut the flesh' (R:108)
b. ki-tal (RP-cut.flesh) 'to saw (e.g., wood)'
c. k<in>-tal (<INOM>RP-cut.flesh) 'a saw'

A discussion of the instrumental nominalizer combining with causativized stems (which are also disyllabic) is postponed to §3.4.

Unlike *-in-* (and *-um-*), the instrumental nominalizer allomorph *-an-* appears after the first consonant of the stem and does *not* supplant the first vowel of the stem; its phonological pivot for infixation, then, is simply the first consonant (or

[14]Cf. the discussion below about the so-called "double instrumental".

perhaps the first vowel, but preceding rather than following this vowel). While *-an-* is generally seen combining with monosyllabic roots, as in the examples in (7a), it also seems to appear in the so-called "double instrumental" (R:63). (9) provides an example, with (9d) segmented assuming there are two instrumental nominalizers in it (which I will question below).

(9)
a. kuac (trace) 'a trace' (R:63,96)
b. ta-kuac (RP-trace) 'to have a trace, to trace'
c. t<in>-kuac (<INOM>RP-trace) 'an instrument to mark/trace'
d. t<an><in>-kuac (<INOM><INOM>RP-trace) same as (9c)

The apparent double instrumental, (9d), consists of what looks like two instances of the instrumental nominalizer, but there is no associated double instrumental meaning (in contrast to the double causatives of §3.1), and the double instrumental form is typically in free variation with a single instrumental form, (9c) (again in contrast to double causatives).

What is particularly surprising here, if this is a true double instrumental, is that the instrumental nominalizer doesn't productively combine with nouns otherwise (which it must do in the hypothetical step from (9c) to (9d)); further, even if this were possible, the allomorph of the instrumental nominalizer that would be expected given a disyllabic input like that in (9c) is *-in-*, not *-an-*. A final puzzling feature of the supposed double instrumental is that stems that are (pre-nominalization) monosyllabic do not have a double instrumental form – note that the double instrumental in (9) is formed on the basis of a disyllabic stem (a monosyllabic root plus a root prefix).[15]

There are a number of possible analyses of the supposed double instrumental. The analysis that I take to be the best supported is that there is actually just a third allomorph of the instrumental nominalizer, *-anin-*, which has the same distribution as the *-in-* allomorph (first vowel as pivot; combines with disyllabic stems). Treating the "double" instrumental (synchronically, at least) as another suppletive allomorph of the instrumental morpheme would help explain all of its previously puzzling features – the nominalizer doesn't need to be able to combine with a noun, no double instrumental meaning is expected, there is a natural way to understand the restriction to disyllabic stems, and it is easy to capture the free variation between *-in-* and the "double instrumental" *-anin-*.

[15] Unlike for the absence of double causatives of disyllabic stems (discussed at the end of §3.1), no phonological "invisibility" explanation of this gap is forthcoming. For example, if *k<an>ap* from (7) took a second instrumental nominalizer, it would presumably have the hypothetical form **kinnap* (resolved from illicit **k<a<in>n>ap*), or perhaps the form **k<an><an>ap*, both of which are phonologically well-formed in Nancowry.

The other possibilities for analyzing the double instrumental take there to be true double affixation, namely, infixation of *-in-* followed by infixation of *-an-*. Such analyses immediately face the challenge of why the second (outer) nominalizer is *-an-*, rather than *-in-*, since the stem is disyllabic. There are a few ways to try to explain this discrepancy. It may be that a morphological haplology constraint prohibits the adjacent identical allomorphs. Or, it may be that *-an-* is the elsewhere allomorph, and *-in-* is more restricted, e.g.: (i) *-in-* will only combine with a CV.CVC stem; or (ii) *-in-* will only combine with certain morphological kinds of disyllabic stems (crucially excluding ones containing a nominalizer already).[16] However, solving this aspect of the morphological puzzle still would not explain why double affixation here does not have any semantic consequences, nor why only disyllabic stems can appear in the double instrumental.

I therefore adopt the first entertained analysis, that there is no real double instrumental, and *-anin-* is an additional suppletive allomorph of the instrumental nominalizer.

3.3 Interim summary of allomorphy

(10) and (11) summarize the allomorphy exhibited by the causative and instrumental nominalizer, updated following the discussions in §3.1 and §3.2, for easy reference. The next section turns to interactions between these morphemes/exponents.

(10) Allomorphs of the causative morpheme (updated; final version)
- a. *ha-*
  - i. prefixal
  - ii. combines only with monosyllabic stems
- b. *-um-*
  - i. infixal (phonological pivot: follows first vowel)
  - ii. combines only with disyllabic stems

(11) Allomorphs of the instrumental nominalizer (updated; final version)
- a. *-an-*
  - i. infixal (phonological pivot: follows first consonant)
  - ii. combines only with monosyllabic stems

[16] Radhakrishnan (1981: 64) offers yet another potential explanation, namely, that after the first round of instrumental nominalization, the first syllable (*tin* in (9c)) is reanalyzed as a monosyllabic root, thereby taking *-an-* as the appropriate allomorph.

b. *-in-*
   i. infixal (phonological pivot: follows first vowel)
   ii. combines only with disyllabic stems

c. *-anin-*
   i. infixal (phonological pivot: follows first vowel)
   ii. combines only with disyllabic stems

3.4 Causative + instrumental nominalization

The causative derives verbs, and the instrumental nominalizer takes verbs and derives nouns. Given these properties, we expect that the two morphemes should be able to combine, in particular, with the causative combining first with a root/stem, and then the instrumental nominalizer combining with the resulting verb. This is borne out, at least in part.

Consider first what happens with monosyllabic roots. The causative allomorph expected with a monosyllabic root is the prefix *ha-* (see §3.1), resulting in a disyllabic word/stem. Given this derived disyllabic verb, when adding the instrumental nominalizer, the expected allomorph given stem size is the infix *-in-* (see §3.2). This is borne out, as seen in (12).

(12)
a. kuãt (curve) — 'curve' (R:96)
b. ha-kuãt (CAUS-curve) — 'to hang, to hook'
c. h<in>-kuãt (<INOM>CAUS-curve) — 'a hook'

The infix *-in-*, as expected, replaces the first vowel of the stem and appears after the first consonant in (12c). There are also attested examples (though fewer) showing that the variant *-anin-* is allowed in instrumental nominalizations of the causative as well, in free variation with the allomorph *-in-* as before (see (9)).

(13)
a. ru (make.shade) — 'shade' (R:67,141)
b. ha-ru (CAUS-make.shade) — 'to make shade'
c. h<in>-ru (<INOM>CAUS-make.shade) — 'thing causing shade'
d. h<anin>-ru (<INOM>CAUS-make.shade)[17] — 'thing causing shade'

[17] In the examples given by the grammar, these nominalizations have further undergone possessive marking (R:67); I have removed this additional marking for clarity of the point at hand.

Thus far, then, all is as expected.

The wrinkle comes with stems that are (pre-causativization) disyllabic. The causative allomorph expected with a disyllabic stem is the infix *-um-*, §3.1, resulting in a (still) disyllabic word/stem, e.g., *saput* → *s<um>put* from (4b). Just as above, then, when adding the instrumental nominalizer, the expected allomorph is *-in-*. Consider, however, what happens when you infix *-in-* into a (complex) form like *sumput* – you derive the phonologically ill-formed **s<in>mput*. Logically speaking, this illicit CCC sequence might be resolved as either *sinput* or *simput*. Such CCC sequences elsewhere (though rare) are resolved by deletion of the medial consonant (i.e., the coda of the stem's first syllable);[18] indeed, it's easy to confirm the absence of a *simput*-type resolution using the grammar's extensive word list. But, if CCC resolution gives us the former possibility, *sinput*, then the derivationally prior causative *-um-* infix has essentially disappeared entirely, and so there would be no (obvious) evidence that this is a nominalization of a causative in the first place. (Note that this is basically the same "invisibility" situation encountered in double causatives of disyllabic stems, as discussed at the end of §3.1.)

Is there any evidence that there are, in fact, instrumental nominalizations of causatives built from disyllabic stems, despite their hypothesized surface invisibility? To try to answer this question, we can capitalize on the fact that the instrumental nominalizer only productively combines with verbs. If instrumental nominalizations of causatives built from disyllabic stems are in fact possible, then there should be cases of instrumental nominalizations that seem to take as their stem a *non*-verbal element, with meanings that semantically appear to incorporate a causative intermediate step (even though the causative affix is not visible inside it). There are indeed a number of such word forms, for example (14c) and (15c):

(14) a. putoŋ 'powder' (R:110)
  b. p<um>toŋ 'to make powder'
  c. p<in>toŋ 'white ant' (termite)

(15) a. sahuaŋ 'cool' (R:40,63,128)
  b. s<um>huaŋ 'to cool something'
  c. s<in>huaŋ 'something that cools, e.g., ice'

[18] This can be seen in the (rare) case of a causative infix appearing inside a reduplicative prefix that has a coda, where it is the infix's coda consonant which survives. For example, *koɲ* 'male' (R:97), whose form with the reduplicative prefix is *ʔin-koɲ*, has the causative form *ʔ<um>-koɲ* 'to turn into a man' (R:97); the reduplicative prefix's coda, *n*, is lost.

There are cases too of the "double causative" *-anin-* allomorph behaving similarly, e.g., *lapəʔ* 'beautiful' → *l<anin>pəʔ* 'aids to beautify' (R:112–113). It is of course possible that *-in-/-anin-* in these cases is simply combining directly with a non-verbal element, as indeed *-an-* occasionally does as well. But it is at least possible also that there is a surface-invisible causative in examples like (14c) and (15c), lost when the instrumental nominalizer is added.

4 Discussion and implications

§3 covered in detail the properties and interactions of two morphemes whose allomorphs are crucially distributed based on the size of the stem that they combine with, the causative (§3.1; *ha-* for monosyllabic stems, *-um-* for disyllabic stems) and the instrumental nominalizer (§3.2; *-an-* for monosyllabic stems and *-in-* (or less commonly *-anin-*) for disyllabic stems). This section turns to the implications of this data for the architecture of the morphology-phonology interface.

Nancowry demonstrates the need for bottom-up cyclicity of exponent choice, infixation, and prosodification (syllable/foot construction). The idea that grammatical processes apply and may repeat in a bottom-up (smallest-to-largest constituent) fashion is a common assumption in many theories (see, e.g., Chomsky & Halle 1968, Kiparsky 1982, 2000, Carstairs 1987, Anderson 1992, Bobaljik 2000, Wolf 2008, Embick 2010, Bye & Svenonius 2012), but the cyclicity of infixation and its timing with respect to exponent choice and prosodification has not previously been much discussed (though for some related discussions, see Embick 2010: §3.4.3, Bacovcin & Freeman 2016, and Harizanov 2017). The evidence for bottom-up cyclicity, elaborated and discussed below in §§4.1–4.2, comes from (i) considerations of what information must be present at different decision points in the derivation, and (ii) cases of opacity that emerge in the data. Nancowry also affords a window into the (non-)optimizing nature of allomorphy and infixation, as discussed in §4.3.

4.1 Exponent choice and prosodification are cyclic

Perhaps the most obvious implication of the Nancowry data is that phonological exponents of morphemes are chosen in a bottom-up, cyclic fashion. In the examples at hand, the most embedded element of the verbal complex is the verb root, and only once *its* phonological form is known can the right phonological form (exponent/allomorph) be chosen for the *next* layer of the morphological structure. This is true again at every structural level beyond the root – for every morpheme whose phonological form is in question, the next-smaller constituent must first have a phonological form.

Step-wise, bottom-up selection of exponents is perhaps most visible in the double causative, (6c), and instrumental nominalizations of causatives, (12c), repeated below in (16). (See the discussions below (6c) and (12c) about what happens when the root/stem is disyllabic.)

(16) a. h<um>-ʔɛ̃h (<CAUS>CAUS-near) 'to cause to approach' (R:85)
b. h<in>-kuăt (<INOM>CAUS-hang) 'a hook' (R:96)

To pick the right (inner) causative allomorph, the root's phonological form must be known (as well as the root prefix or reduplicative prefix, if there is one). To pick the right outer allomorph (a second causative, or the instrumental nominalizer), the (inner) causative's phonological form must be known, in combination with the root.

To be more precise here, it is not simply the *segmental* form of an inner constituent that needs to be visible for (outer) exponent choice, but rather its *prosodic size*: exponent choice in Nancowry relies on syllable count. Thus, there must also be cyclic (re-)prosodification at every node after exponent choice, establishing (minimally) syllable count, but potentially other prosodic structure as well. Returning to the stacked examples in (16): there must be prosodification of the root exponent before the (inner) causative exponent is chosen (such that this inner morpheme can "see" whether its stem is monosyllabic or disyllabic), and then the causative must be prosodified with the root for the right outer affixal exponent to be chosen (such that the outer morpheme can, in turn, "see" whether its stem is monosyllabic or disyllabic).

Evidence for bottom-up cyclicity of exponent choice also comes from opacity. In both (16a) and (16b), the choice of the *ha-* allomorph is opaque: *ha-* is selected on the basis of combining with a monosyllabic root, but after the infixation of the exponent of the next-outer morpheme (*-um-* or *-in-*), *ha-* is no longer local to this conditioning environment. If infixation of (outer) *-um-*/*-in-* were to have preceded exponent choice for the inner causative, then a different inner causative exponent would have been chosen (*-um-*), on the basis of the stem being disyllabic (infix plus monosyllabic root). Similar evidence comes from the non-interference of an outer infix in the relationship between the root prefix and the root, (17), examples repeated from (5c) and (8c):

(17) a. k<um>-fec (<CAUS>RP-tiny) 'to make something tiny' (R:134)
b. k<in>-tal (<INOM>RP-cut.flesh) 'a saw' (R:108)

The root prefix must be in a very close selectional relationship with the root (§2), and even though on the surface, the infix appears between the root prefix and the root, this selectional relationship is not interrupted.

Put in phonological rule terms, infixation counterfeeds/counterbleeds exponent choice (and other relationships) of/among more-embedded morphemes. In line with the findings discussed above, this means that the exponent of an inner affix is selected before that of an outer affix.

4.2 When does infixation happen?

The previous section discussed the evidence from Nancowry for bottom-up cycles of exponent choice and prosodification, but what about infixation? Infixation, too, is cyclic, and is ordered between exponent choice and prosodification within each cycle.

4.2.1 Choice of an exponent choice precedes infixation (of that exponent)

As can be seen in Nancowry, not all exponents of a morpheme have the same infixal status – one may be a prefix while the other is an infix, as is the case for the allomorphs of the causative, and even two infixes might have different phonological pivots, as is the case for the allomorphs of the instrumental nominalizer. In other words, infixation is exponent-specific – the right exponent must be chosen before it can be known whether the exponent should be infixed or not, and if so, what its infixal positioning is. This is true *even if* infixation in Nancowry is in part driven by optimization considerations – as discussed in detail in §4.3, there is still some degree of arbitrariness to the phonological pivot that must be specified alongside each exponent.

The derivational priority of exponent choice over infixation of an exponent can be confirmed by opacity. Kalin & Rolle (forthcoming) note that the choice between *-an-* and *-in-* for the instrumental nominalizer is obscured in the derived surface forms, (18), data repeated from (7).

(18) a. k<an>ap ‘tooth’ (<INOM>bite) (R:61)

b. k<in>sɯ ‘a trap’ (<INOM>trap) (R:130)

In their infixed positions, both exponents are in disyllabic words and precede main stress; the basis on which the allomorphs are differentiated (stem size) is thus not immediately apparent in the surface form (what matters of course is the size of the stem *prior* to infixation). Considering just the surface forms in (18), the only difference between (18a) and (18b) that could be potentially leveraged for differentiating between the allomorphs is that one precedes a consonant, and one precedes a vowel. However, given that this very difference is a result of the two infixes having different phonological pivots, attempting to have exponent choice be governed by the infixed environment creates a chicken-and-egg problem. An independent problem with a surface-oriented analysis of this exponent choice (i.e., in an attempt to deny the derivational priority of exponent choice over infixation) is that, more generally speaking, infixation *never* feeds exponent choice (Kalin 2022).

Given that exponent choice for a morpheme is prior to infixation of that exponent, it is natural that the conditions that govern exponent choice should be independent from those that determine infix placement (Kalin & Rolle forthcoming). And indeed, this independence is demonstrated in Nancowry: as an example, the condition regulating the choice of *-an-* as the exponent for the instrumental nominalizer is that the stem must be monosyllabic, while the condition on the placement of *-an-* as an infix is that it should immediately follow the first consonant of the stem.

4.2.2 Infixation precedes re-prosodification

Once an infixal exponent is chosen, when does that infix get integrated phonologically and prosodically into its stem? There are two types of evidence in Nancowry that infixation happens within the same cycle as exponent choice (of the infix), and that the infix is in its surface infixed position prior to prosodification within that same cycle as well.

The first relevant type of evidence, showing that infixation is "immediate", comes from agentive nominalizations of causatives built from disyllabic stems, like that in (19c).

(19)
a. paloʔ (loose) 'loose' (R:150)
b. p<um>loʔ (<CAUS>loose) 'to loosen'
c. p<am><um>loʔ (<ANOM><CAUS>loose) 'one who loosens something'

It is not entirely clear what drives the choice of exponent for the agentive nominalizer as *-am-* or *m(a)-* (see R:56–58), though *-am-* may combine with monosyllabic or disyllabic stems. What *is* clear is that *-am-* has as its phonological pivot the first consonant of the stem, e.g., *p<am>aloʔ* (<ANOM>loose) 'that which is loose'. Thus, in order for *-am-* to appear in its attested position in (19c), *-um-* must first have been placed into *its* infixal position. Since the two infixal exponents *-um-* and *-am-* have different phonological pivots, they cannot wait to be infixed at the same time without some additional stipulation about the pivot of the derived infixal complex. The form of (19c) follows straightforwardly so long as *-um-* is infixed within the same cycle as exponent choice (of *-um-*), and crucially *before* infixation of *-am-* in the next cycle.

The second type of evidence for the ordering of infixation is more tentative, and comes from double causatives of disyllabic stems and instrumental nominalizations of causatives of disyllabic stems. (See discussions at the end of §3.1 and §3.4 on the surface invisibility of the inner affix in these constructions.) Consider (20a), repeated from (14c), with its hypothesized structure given in (20b).

(20) a. p<in>toŋ ‘white ant’ (termite) (R:110)
b. [INOM [CAUS [powder]]]

Recall the explanation for the invisibility of the causative morpheme in (20a): the causative affix has the form *-um-* (because the root *putoŋ* is disyllabic); the outer morpheme, here the instrumental nominalizer, then appears in its *-in-* form (because the derived stem *p<um>toŋ* is disyllabic), and upon infixation, *-in-* wipes out any phonological trace of *-um-*. For this explanation to go through, it must be that at the point of exponent choice for the instrumental nominalizer, the inner causative exponent, *-um-*, has already been infixed and prosodified as part of the stem. If it hadn't been, then the input to exponent choice for the instrumental nominalizer would be a trisyllabic form, consisting of (potentially unordered) components *-um-* and *putoŋ*. A priori, we don't know what we'd expect the exponent of the instrumental nominalizer to be with a trisyllabic stem, but it's at least possible it would not be *-in-*. Further, if *-um-* had not already been infixed during the inner cycle, we'd face the problem of what to do with a sequence of infixes that should *not* end up simply concatenated one after the other (like they happen to be in (19c)).

Finally, one might wonder whether an infix could be placed simultaneous with prosodification (and potentially other phonological operations) within a cycle, rather than prior to prosodification. There are two arguments against simultaneity. First, recall that the phonological placement of *-in-* and *-um-* is opaque, as their phonological pivot – the first vowel – disappears; therefore, it must be that infix placement properly precedes at least vowel deletion.[19] Second, as will be elaborated in the next section, infix placement is not generally optimizing in Nancowry, and may even be anti-optimizing.

[19]The data are compatible with resolution of vowel hiatus being “late”–either late within a cycle (after/during prosodification) or post-cyclic in the sense of applying only to the whole word.

4.2.3 Interim summary

This section discussed the evidence from Nancowry that cycles are defined from the bottom-up, and that within a cycle, the ordering of operations is first (i) exponent choice, then (ii) infixation (if the exponent is infixal), and finally (iii) (re-)prosodification. For much additional data and incorporation of this ordering into a more complete model of the morphosyntax-phonology interface, see Kalin 2022.

4.3 On optimization

There is a long tradition of using phonological optimization to explain both (i) patterns of phonologically-conditioned suppletive allomorphy (McCarthy & Prince 1993, Mester 1994, Kager 1996, Mascaró 1996, 2007, Wolf 2008, Kim 2010, among others) and (ii) patterns of infixation (McCarthy & Prince 1993, Hyman & Inkelas 1997, Horwood 2002, Wolf 2008, among others). A natural question, then, is whether optimization is playing a role in the Nancowry data at hand. The answer is that optimization is at most playing a small role: exponent choice is for the most part not optimizing (and may even be anti-optimizing); and while there is a phonotactic motivation for moving certain exponents (once chosen) into the stem as infixes, a given exponent's precise infixed position inside the stem is largely arbitrary.

A preliminary reminder here is that there is no language-general disyllabic preference in Nancowry; see, e.g., the diverse set of words in (1). The *absence* of a general constraint on syllable count is amply evidenced throughout the language, including in the prefixal/infixal system itself: (i) the *-anin-* allomorph of the instrumental nominalizer builds trisyllabic words/stems from disyllabic ones (see §3.2); and (ii) both allomorphs of the agentive nominalizer can build trisyllabic words/stems from disyllabic ones (see, e.g., §4.2.2). Recall from §2 that there is also no *minimal* word size in Nancowry – monosyllabic roots (even CV-shaped roots) are well-formed words.

It is possible, however, that there is a constraint on a certain very small piece of morphosyntactic structure (the root plus root prefix or reduplicative prefix) that it be maximally disyllabic (a foot), as suggested in §2. It is further possible to speculate that there is a derived environment effect at play (applying only to morphologically complex forms), whereby the realization of this small morphosyntactic structure is required to be *exactly* disyllabic. This small morphosyntactic domain, with a disyllabic constraint, may include the causative morpheme (in addition to root prefixes and the reduplicative prefix), but it crucially cannot include the instrumental or agentive nominalizers, nor any suffixes, which are very clearly not subject to any such restriction.

4.3.1 Is exponent choice optimizing in Nancowry?

When dealing with infixal exponents, it can be tricky to evaluate exponent choice independently from infixation in terms of optimization. To ask the question of whether *exponent choice* specifically is optimizing in Nancowry, I will consider each exponent as a complete package – phonological form plus infixal placement. In §4.3.2, I separately consider the extent to which *just* the placement (infixation) of the exponents is optimizing. To foreshadow the answer here, in agreement with the brief discussion of Nancowry by Paster (2006: 167–168), exponent choice is not optimizing.

First consider the two causative allomorphs, *ha-* and *-um-* (§3.1). Is their distribution optimizing? Maybe, depending on which exponent you start from, and on what constraints you assume are active in their evaluation. I'll start by considering the causative exponent *ha-*: *ha-* is restricted to combining with monosyllabic stems (e.g., *ha-pin* from (4)), but it would be phonotactically absolutely fine for *ha-* to appear with a disyllabic stem (e.g., hypothetical **ha-saput* in place of attested *s<um>put* from (4)). In fact, *ha-* is predicted to be *preferred* over *-um-* given usual assumptions about optimization, because *-um-* introduces a coda (a marked syllable structure) and causes vowel hiatus/deletion, in addition to *-um-* being an infix (a marked affix type that disrupts constituent integrity). From an optimization perspective, there thus does not seem to be any reason to choose *-um-* over *ha-* for disyllabic stems (though cf. the discussion below about how this would change if a disyllabic constraint is taken into account).

Now considering the opposite angle on the causative allomorphs: *-um-* is restricted to combining with disyllabic stems (e.g., *s<um>put*), and there is at least some reason to *not* choose this exponent with monosyllabic stems, i.e., *-um-* is a bit worse with (some) monosyllabic stems than it is with disyllabic ones. Infixation of *-um-* into a monosyllabic root would create both vowel hiatus (as it does even with disyllabic stems) and an illicit CC coda cluster, if the root has a coda (e.g., *pin* from (4) would be hypothetical **p<um>n*, presumably resolvable as **p<um>*, cf. fn. 18). However, this coda-cluster-avoidance explanation for choosing *ha-* over *-um-* does not extend to monosyllabic roots without a coda (e.g., *ta* from (4) would have the hypothetical form **t<um>*, with no cluster problem). Further, avoidance of an illicit consonant sequence does not more generally motivate the choice of *ha-* over *-um-* – if it could, we'd then predict *ha-* to appear as the outer causative morpheme for double causatives of disyllabic stems, discussed at the end of §3.1 (e.g., *k<um>fec* from (5c) would have the hypothetical double causative form **ha-k<um>fec*), rather than this double affixation being invisible.

The only way to salvage an optimizing characterization of the distribution of causative exponents *ha-* and *-um-* would be if there were a (derived environment) constraint preferring outputs that are exactly disyllabic (no smaller, no bigger) – in such a case, indeed, *ha-* would be best distributed with all monosyllabic stems, and *-um-* with all disyllabic stems. However, as noted at the outset of §4.3, this constraint must be highly restricted to a small piece of morphosyntactic structure, and cannot apply, e.g., to the instrumental nominalizer allomorphs discussed below. So positing this constraint is only useful to a certain degree.

Now consider the allomorphs of the instrumental nominalizer, *-an-*, *-in-*, and *-anin-* (§3.2). The exponent that is restricted to monosyllabic stems, *-an-* (e.g., *k<an>ap* from (7)), would be perfectly fine phonotactically on disyllabic stems as well (e.g., *ta-kuak* from (9) would be perfectly well formed as hypothetical **t<an>a-kuak*, rather than the attested *t<in>-kuak* or *t<anin>-kuac*). Indeed, choosing *-an-* for disyllabic stems would avoid the vowel hiatus and coda introduced by *-in-* and *-anin-*, and so from an optimizing perspective, we expect *-an-* to actually be preferred for all stems. This is similar to the case of causative *ha-*, discussed above.

Starting instead from the perspective of the allomorphs *-in-* and *-anin-*, which are restricted to disyllabic stems, the picture is a little different. For monosyllabic stems with a coda, these forms would create an illicit CC coda cluster where the other allomorph, *-an-*, would not (e.g., *kap* would be hypothetical **k<in>p* or **k<anin>p*). This is like the case of causative *-um-*, with one important exception: because of the free variation between *-in-* and *-anin-*, no constraint preferring disyllabic outputs will help explain the distribution of the allomorphs of the instrumental nominalizer.[20] Further, as discussed in the context of the causative allomorphs above, avoidance of an illicit consonant sequence does not seem to

[20] Note that there is also no reason that *-an-* and *-in-/-anin-* should not be completely swapped in their behavior, with *-in-/-anin-* combining with monosyllabic stems and having as a pivot the first consonant, and *-an-* appearing in disyllabic stems with the first vowel as its pivot (Paster 2006: 167–168). The only potentially optimizing aspect of their distribution is that the vowel *i* appears before a coda coronal in *-in-* (perhaps reflecting some kind of place assimilation, as also seen in the reduplicative prefix), while the *n* of *-an-* is an onset and so exerts no such pressure on its vowel. (See also fn. 13.) However, this is not a general constraint on the distribution of *i* in Nancowry, and the only reason *-in-* ends up as the rime of a syllable is because of its non-optimizing pivot, as will be discussed in §4.3.2.

generally be able to motivate the choice of one allomorph over another. The evidence this time comes from the surface-invisible instrumental nominalizations of causatives of disyllabic stems discussed at the end of §3.4, where choosing *-an-* as the instrumental nominalizer allomorph would make this construction surface visible and free of marked structures (e.g., producing a hypothetical form **p<an><um>toŋ* rather than the attested sub-optimal *p<in>toŋ* from (14c)/(20a), by hypothesis resolved from **p<u<in>m>toŋ*).

In sum, exponent choice in Nancowry is not generally optimizing, and is sometimes even anti-optimizing. Exponent choice seems to be oblivious to phonotactic well-formedness considerations (at least for the instrumental nominalizer, though potentially also for the causative), even though these instances of exponent choice are prosodically conditioned. Paster (2005, 2006) documents a number of other such cases of non-optimizing phonologically- and prosodically-conditioned allomorphy, and so this simply confirms her overall findings.

4.3.2 Is infixation optimizing in Nancowry?

There are two ways to think about whether infixation in Nancowry is optimizing. First, given a particular exponent, is it optimizing for that exponent to be an infix, i.e., to not be a prefix? And second, given an infixal exponent, is its precise infixal position inside the stem phonologically optimizing?

The first question is easier to answer, though not wholly straightforward. The infixal exponents at hand, *-um-*, *-an-*, *-in-*, and *-anin-*, all have a vowel-initial shape, and as discussed in §2, all syllables must have an onset in Nancowry. It thus is indeed optimizing for these exponents to be infixes, since they thereby avoid creating an onsetless word.[21] This picture is complicated, however, by the fact that Nancowry arguably has another vowel-initial left-edge affix that is *not* infixal, the reduplicative prefix. In §2, I posited that the underlying shape of this prefix is *ʔiC*. However, Radhakrishnan (1981: 35) notes that it is not possible to tell whether glottal-initial words are underlyingly glottal initial, or whether such words are vowel initial and supplied with an initial glottal stop as a repair. Alderete et al. (1999: 348) propose specifically that the reduplicative prefix is underlyingly vowel-initial, as evidenced by the fact that, when the agentive nominalizer *m(a)-* combines with the reduplicative prefix, the initial glottal of the reduplicative prefix disappears, as in (21b).

(21) a. ʔi-ti (RED-laugh) ‘to laugh’ (R:58)
b. m-i-ti (ANOM-RED-laugh) ‘one who laughs’

[21] Yu (2007: §2.5.1) calls this the “ethological view of infixation,” and notes its prevalence in the infixation literature; see, e.g., Anderson 1972, Cohn 1992, Buckley 1997.

The disappearance in (21b) of both the usually-present vowel *a* in *ma-* and of the reduplicative prefix's apparent glottal stop is easily explained if the reduplicative prefix is vowel-initial: prefixation of *ma-* onto the vowel-initial stem *i-ti* creates vowel hiatus, which is resolved by deletion of the first vowel. So, is it optimizing for *-um-*, *-an-*, *-in-*, and *-anin-* to be infixes rather than prefixes? Yes, but, there still must be something lexically-specified such that these vowel-initial affixes surface as infixes rather than prefixes with an initial glottal stop, in contrast to the vowel-initial reduplicative prefix.[22]

The second question, about whether infix *placement* is optimizing, is more complex. Consider first the instrumental nominalizer *-an-* infix: *-an-* appears after the initial consonant and before the first vowel, and this positioning will always produce a phonotactically well-formed stem/word; *-an-* is *minimally* infixed. For *-an-*, then, its infixal placement is straightforwardly a maximally optimizing solution for avoiding an onsetless word.

For causative *-um-* and instrumental nominalizer exponents *-in-*/*-anin-*, however, their positioning – after the first vowel – moves them gratuitously far inside the stem (in terms of achieving the goal of avoiding an onsetless word), introduces a word-internal coda, creates vowel hiatus, and results in an opaque surface form (since the infix's phonological pivot disappears); the placement of these infixes is thus *anti*-optimizing, causing more problems than it solves – these infixes would all uniformly be more optimizing if they behaved like *-an-* in their distribution. And again, recall from the beginning of §4.3 that, at least for the instrumental nominalizer, it is not plausible to posit a constraint requiring disyllabic outputs, so this type of constraint cannot be a general motivating factor in infix placement in Nancowry. Finally, recall also that the infixal exponent of the agentive nominalizer, *-am-*, *can* combine with disyllabic stems while (like *-an-*) having the first consonant as its phonological pivot, so this configuration must not be ruled out by the language.

In sum, if infixation were purely an optimization strategy in Nancowry, all VC(VC) left-edge affixes would be infixes (counter to fact) and all would have the initial consonant as their phonological pivot (counter to fact), modulo the caveat that causative *-um-* might be subject to a disyllabic constraint, compelling its placement after the first vowel instead.

[22] Further, in the rare cases where an infix combines with a stem beginning with the reduplicative prefix, e.g., as seen in fn. 18, there is not any obvious optimization-based motivation for the infix in such a case to move inside the stem rather than stay at the left edge – no matter whether the infix is at the left edge or the reduplicative prefix is, the word will still be vowel initial.

4.3.3 Implications

While it is tempting to analyze the distribution of exponents and their infixal nature in Nancowry as optimizing, a closer look shows that this is far from straightforward. Even if *parts* of the behavior of these exponents is optimizing, there is also a significant degree of arbitrariness involved, in particular, in the precise infixal position of the exponents and in terms of which vowel-initial affixes are infixes. This arbitrariness, as well as the opacity of the post-vowel placement of *-um-* and *-in-/-anin-*, would make it difficult to account for the alternations (both exponent choice and infixation) within the phonology proper. The type of approach that fits better with this data is one where both exponent choice and infixal position are independent of the phonology, à la Paster (2006), Yu (2007), Kalin (2020, 2022), Kalin & Rolle (forthcoming).

5 Conclusions

In this paper, I have explored in depth the morphophonological behavior of two morphemes and their allomorphs in Nancowry, the causative morpheme and the instrumental nominalizer. This case study points to three core findings. First, exponent choice, infixation, and prosodification proceed cyclically from the most embedded morphosyntactic node up. Second, these three operations/processes apply serially within each cycle. And finally, exponent choice and infixation may be (together and separately) non-optimizing or even anti-optimizing, and so are not naturally regulated by the phonological component of the grammar, at least in this language.

The findings from Nancowry point to a separation of morphology from phonology (see, e.g., Trommer 2001, Paster 2006, Yu 2007, Embick 2010, Bye & Svenonius 2012, Pak 2016, Dawson 2017, Kalin 2020, Rolle 2020, Stanton 2022), and are consistent with the results from investigating interactions between allomorphy and infixation in a sample of 42 languages (Kalin 2022), as well as from a broader view on conditions on exponent choice vs. exponent placement (Kalin & Rolle forthcoming). While these findings may be accommodated in a number of morphological theories, they fit naturally within a Distributed Morphology late-insertion model (e.g., Halle & Marantz 1993, 1994, Embick 2010), with bottom-up exponent choice applying to the structure sent to spell-out, and each instance of exponent choice accompanied by some limited (morpho)phonological operations.

And so when *size matters* in infix allomorphy, we are afforded a unique window into the morphology-phonology interface.

Abbreviations

ANOM	agentive nominalizer	PTCL	particle
CAUS	causative	RP	root prefix
INOM	instrumental nominalizer	RED	reduplicative prefix
ONOM	objective nominalizer		

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Chapter 12

Tamil pronominal alternations are phonology not allomorphy

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It is sometimes difficult to determine whether a surface alternation is best explained by positing allomorphic variation, or the application of regular phonological rules. This paper lays out arguments for an alternative analysis of Tamil pronominal alternations, which are proposed to be allomorphic in Moskal (2015) and Moskal & Smith (2016). It is argued that morphological and phonological evidence supports a regular derivational and representational phonological explanation for the variation seen. The Tamil pattern has been argued to warrant a weakening of locality conditions for allomorphy, which is unnecessary in this language if the relevant pattern can be explained in the phonology-proper. This investigation points out that whether we propose (seemingly small) complications to our phonological or to our morphosyntactic derivations leads to different predictions for the linguistic system globally.

1 Introduction

In keeping with the theme of "the size of things" and just how much it matters I would first like to point out that, although the impact that Susi has had on my work may seem indirect, its size does matter. Susi informed the way I saw, and see, the study and analysis of syntactic structure, and although I might be more of a phonologist, and this paper may appear to be more about phonology than the other papers in this book, the point of this short work is that the syntax and the phonology conspire sometimes to mask questions of locality, and therefore of size. So, sometimes things that appear to be small, are really big in import, and may sometimes have non-obvious impacts on an analysis.

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This paper speaks to the question of adjacency, a topic that Susi has worked on (Bobaljik & Wurmbrand 2005, Wurmbrand 2007, among others) and its relation to domains of allomorphy (as in Bobaljik & Wurmbrand 2013). More specifically, it offers a sketch of an alternate analysis of the alternations seen in the Tamil pronominal system; a case that has been proposed to be problematic for adjacency and locality (Moskal 2015, Moskal & Smith 2016).

The crux of the problem that Tamil poses is that it appears that allomorphy within the pronominal domain is triggered across an intervening overt morpheme, as schematized in (1).

(1) **base-pl-k(ase)**

In (1) the form of base (a pronominal root) is proposed to be determined by the k(ase) morpheme, across an intervening pl (number) head. This is an especially vexing case of non-local allomorphy. Moskal summarizes the issue in the following two quotations:

> Embick has claimed that linear adjacency is an additional restrictor on allomorphy; that is, allomorphy can only happen when the trigger and target are linearly adjacent. This seems to be supported by blocking effects in languages like Khakas and Kayardild, where a suppletive variant is blocked when an overt number morpheme intervenes between trigger and target. However, in the same configuration, Tamil clearly shows that suppletion can occur across an overt number morpheme. (Moskal 2015: 107)

> Tamil shows a suppletion patterns (sic) that cannot be handled in any reasonable way under the adjacency hypothesis, whether phrased in terms of linear or structural relations. (Moskal 2015: 91)

In the pages to follow I will offer suggestive evidence that the Tamil case can be fruitfully analysed as a phonological, rather than as a morphological/allomorphic alternation, and that it therefore can be removed from the list of problematic cases for locality and adjacency in the literature.[1] This is not to call into question here any of the other problematic cases for adjacency in Moskal's work, or in other work on adjacency. It is just a small note on one data set, and its specific

[1] In the final stages of writing this short paper, I found the following note in Smith et al. (2019: 1054): "Andrea Calabrese, in a work in progress, offers an alternative characterisation in which *on-*, and respectively, *en-* are the underlying forms of the pronominal bases and in which no suppletion is involved". I take this as an encouraging sign that multiple people are coming to the same conclusions and look forward to seeing this analysis.

implications for the larger picture will be left to future work. The following section (§2) will lay out the data, adding some notes on overlooked sections of the morphological paradigms in the Tamil pronominal and verbal systems that are pertinent. §3 will discuss some relevant alternations in Tamil phonology and will sketch an analysis of the Tamil pronominal paradigm that does not involve allomorphy. Note here that by "allomorphy" I am not including regular morphophonological alternations but am rather using it to indicate the more restrictive "suppletion/selection of distinct vocabulary items in specific syntactic environments". §5 concludes with a discussion of the open questions raised by this analysis, along with its implications if correct.

2 Root alternations in the Tamil pronominal paradigm

The pronominal roots in the (spoken) Tamil pronominal paradigm display alternations as in Tables 1–3.[2,3] As can be seen, the 1st and 2nd person roots have different forms in the nominative (bolded) than in all other cases, regardless of whether they are separated from the case suffixes by an intervening overt plural morpheme. Remember here that the proposal in the literature is that the K(ase) morphemes (excluding the null [or completely absent] nominative) trigger allomorphy of the pronominal base even when a plural morpheme (italicized) intervenes.

[2]These forms are slightly modified from (Steever 2019: 110). I have ignored the distinction between dental and alveolar nasals (as the latter are part of the peripheral, borrowed phonology of the language according to Steever), and have added further morphological information using dashes. Long vowels and consonants are indicated by doubling.

[3]Note that the pronominal forms display gemination of [n] in the environment of vowel-initial suffixes. The only exception is in the Dative. This exception may be related to a restriction on sequences of geminates, as per a variant of Schnieder's Law, but this requires further study. Note that this gemination is general in the language in the environment of suffixation and is not limited to the pronominal forms, or even to pre-vocalic position. I therefore leave its analysis to future work.

> When morphemes or words combine, certain morphophonemic changes occur. These include the loss of final segment (paattu 'song' plus -aal instrumental case > paatt-aal 'by song', maram 'wood' + viitu 'home' > mara-viitu 'wooden home'); doubling a consonant at the boundary (e.g. kal+aal > kal.l-aal 'by stone', tamiz+paattu > tamizp-paattu 'Tamil song'); assimilation (vil+ttu > virru 'having sold', pal+poti > parpoti 'tooth powder'); and glide insertion, e.g. katti+aal > katti.y-aal 'by knife'. Such processes had broader application in earlier stages of the language, but are now more limited. They are obligatory with a bound morpheme, less frequent between members of a compound and least frequent when the combination does not result in a compound. (Steever 2019: 103)

Table 1: First person forms (Steever 2019)

	Singular	Exclusive Plural	Inclusive Plural
Nominative	**naan**-∅	**naaŋ**-*kaḷ*-∅	naam-∅
Accusative	enn-ai	eŋ-*kaḷ*-ai	namm-ai
Dative	en-akku	eŋ-*kaḷ*-ukku	nam-akku
Sociative	enn-ooṭu	eŋ-*kaḷ*-ooṭu	namm-ooṭu
Genitive	enn-uṭaiya	eŋ-*kaḷ*-uṭaiya	namm-uṭaiya
Instrumental	enn-aal	eŋ-*kaḷ*-aal	namm-aal
Locative	enn-iṭam	eŋ-*kaḷ*-iṭam	namm-iṭam
Ablative	enn-iṭam-iruntu	eŋ-*kaḷ*-iṭam-iruntu	namm-iṭam-iruntu

Table 2: Second person forms (Steever 2019)

	Singular	Plural
Nominative	**nii**-∅	**nii**-*ŋkaḷ*-∅
Accusative	unn-ai	uŋ-*kaḷ*-ai
Dative	un-akku	uŋ-*kaḷ*-ukku
Sociative	unn-ooṭu	uŋ-*kaḷ*-ooṭu
Genitive	unn-uṭaiya	uŋ-*kaḷ*-uṭaiya
Instrumental	unn-aal	uŋ-*kaḷ*-aal
Locative	unn-iṭam	uŋ-*kaḷ*-iṭam
Ablative	unn-iṭam-iruntu	uŋ-*kaḷ*-iṭam-iruntu

Table 3: Third person forms (deictic) (Steever 2019)

	Masc. Singular	Fem. Singular	Human Plural
Nominative	avan	avaḷ	avar
Accusative	avan-ai	avaḷ-ai	avar-ai
Dative	avan-ukku	avaḷ-ukku	avar-ukku
Sociative	avan-ooṭu	avaḷ-ooṭu	avar-ooṭu
Genitive	avan-uṭaiya	avaḷ-uṭaiya	avar-uṭaiya
Instrumental	avan-aal	avaḷ-aal	avar-aal
Locative	avan-iṭam	avaḷ-iṭam	avar-iṭam
Ablative	avan-iṭam-iruntu	avaḷ-iṭam-iruntu	avar-iṭam-iruntu

Note that much work has been done on the cross-linguistic morphosyntactic distinctions between 3RD person and 1ST/2ND person pronouns and that Tamil patterns with the long list of languages in Harley & Ritter (2002) in which 3RD person pronouns have demonstrative bases/origins. They are included above for comparison. The deictic neuter and reflexive paradigms have not been included (see Steever 2019: 110 for the complete paradigms).

Focusing on the 1ST and 2ND person, and leaving aside the 1ST plural inclusive for a moment, we can tease out the following suffixes in the above forms. Phonological alternations that are pertinent will be discussed in §3.

(2) a. (n)kaɭ
'PL'

b. ai/ukku(akku)/ooʈu/uʈaiya/āl/iʈam/(i)runtu
'ACC/DAT/SOC/GEN/INSTR/LOC/ABL'

Once these suffixes have been removed this leaves us with the forms which are deemed allomorphic in Moskal (2015) and Moskal & Smith (2016):

(3) a. naan/en
'1ST person (nominative)/1ST person (elsewhere)'

b. nii/un
'2ND person(nominative)/2ND person (elsewhere)'

This, however, obscures a clearly regular relation between these pronominal BASES and the regular 1ST and 2ND person agreement morphemes in the verbal system of Tamil.[4] Consider the following conjugations.

(4) a. iru-kur-een [irukkreen]
be-located-PRES-1SG

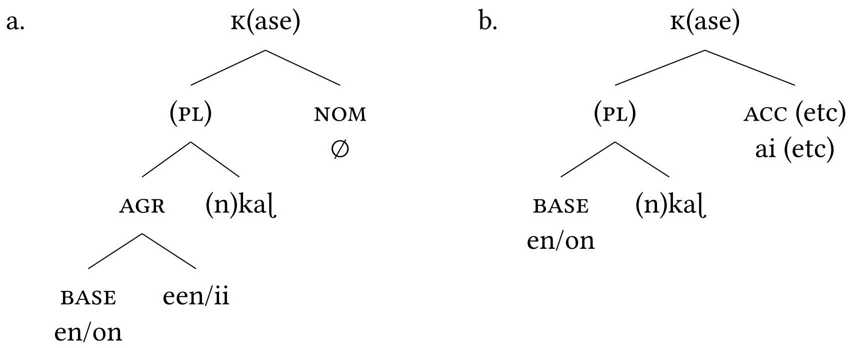
b. poo-ʋ-ii-ngaɭ [pooʋiinga]
go-FUTURE-2SG-PLURAL

In the verbal system the 1ST person suffix is *-een* and the 2ND person suffix is *-ii* in the plural, while in the pronominal system the 1ST person pronoun has

[4] Note that 1PL agreement is *-oom*, clearly related to the inclusive plural marker. The 2ND person marker varies in the literature but is coherently a long vowel. In the plural it is transparently followed by the same plural marker seen in the pronominal paradigms.

the form *naan*, and the second person pronoun has the form *nii*.[5] Let us assume that the suffixes on the verbs are also found on the 1st and 2nd person pronouns and that they may therefore be analysed as *n-aan* and *n-ii*. (I leave aside the alternation in vowel quality in the 1st person suffix). If we do so, we must then note a distinction in the morphological makeup of the nominative (vs. the other cases). The agreement suffixes only appear in the nominative (compare the forms in Tables 1–3). The distinct structures of the nominatives vs. the other cases can be represented as in (5). base in (5) is the pronominal root, following Smith et al. (2019), and the Plural head is optional (or may be a null number head in the singular). Clearly the bases are distinguished with regard to person features, and may even fruitfully be broken down into initial vowels and /n/. I leave open whether the agr head is actually agr or some kind of concord. This will be further discussed in §5.

(5)



In the above structures I also abstract away from the internal structure of case markers (see Caha 2009) and the question of whether the nominative is morphologically present or absent (See McFadden 2018, and some discussion in §5). It is

[5]Note that the Modern Tamil 2sg verbal agr suffix is [*aaj*] in the singular but [*ii*] in the plural and polite forms (Steever 2019: 113). Also, "Some dialects, particularly those centred on Tinnevelly, include a second person honorific pronoun *niir*" (ibid. 109).

(i) piri-nt-aaj
separate-past-2

(ii) piri-nt-iir-kal
separate-past-2-pl

Colloquial Tamil 2nd person forms do not contain [r], as in (4b). Note that all forms contain [*i/j*].

of note however, that it is in accordance with research such as Bittner & Hale's work on case and agreement that the nominative differs from the other cases in just this way, as only nominative arguments (in NOM/ACC systems) raise to/agree in Spec,IP. How exactly this accounts for the appearance of AGR *within* the nominative pronominal structure is not elaborated upon here.

> Nominative arguments, though Case-less and never Case-bound, may also control agreement. This is possible, for example, if a nominative subject raises to (SPEC,IP), since the foot of the resulting chain is governed by I(NFL), and the head, by C(OMP). A nominative subject, therefore, may agree with either of these functional heads. In contrast, structural obliques, with their purely lexical Case-binders, are generally too far away from any functional head to control pronominal agreement. (Bittner & Hale 1996: 5)

The striking outcome of the above for us is that once this morphological segmentation is implemented, the phonological forms of the pronominal roots become much more similar.[6] This phonological similarity will be examined in more detail in §3.

Before turning to the phonology, however, let us consider one more pertinent piece of data from Tables 1–3; the 1ST plural inclusive. The verbal agreement suffix in the 1ST plural is *-oom*. Consider the following example.

(6) piri-nt-oom
separate-PAST-1PL (Steever 2019:113)

As can be seen in Table 1 (page 300), with additional morphological breaks, this allows for a segmentation of this pronoun (*naam*) along the lines in (5), as *n-oom* (again with a vowel-quality alternation that will not be treated herein).

Of interest here is that this form is consistent across the different cases in the paradigm. The alternation between [n] and [en] seen in the other 1ST person columns is absent. Also absent is any overt reflex of the plural morpheme *(n)kaḷ*, which is present in the 1ST plural exclusive paradigm. This pattern is puzzling when one looks at the root alternation seen in the 1ST and 2ND person as allomorphy. Consider the following statement of allomorphy in Moskal & Smith (2016: 306).

[6] Note that there is also consistent diachronic evidence for these morphological forms and the breakdown in (5) (see Subrahmanyam 1967/1968). I do not delve into the details of this here, as the diachrony of these morphemes is not relevant to their synchronic analysis.

(7) [1] ⇔ en/_] K]
[2] ⇔ on/_] K]
[1] ⇔ naan
[2] ⇔ nii

What the first two statements in (7) indicate is that, in any case but the nominative, K will condition allomorphy of the root even across an intervening number head. Otherwise (in the nominative) the final two statements of vocabulary insertion come into effect, and the *naan/nii* forms are inserted. Now, given the extra morphological decomposition just argued for, the 1ST Plural inclusive root is *n-*, just as in the other 1ST and 2ND person paradigms. If the allomorphy of this root is conditioned across number and agreement heads in the singular and the exclusive plural, then it is not clear why this allomorphy is not triggered across the number/agreement morpheme in the inclusive plural. In other words, the statement of allomorphy in (7) correctly predicts *eŋ-kaḷ-ai* in the Accusative Exclusive Plural, but incorrectly predicts *en-amm-ai* in the Accusative Inclusive Plural. Given this expanded pattern, it appears that (non-nominative) case may not be the trigger for the *n/en* and *n/on* alternations. In the following section we will consider a phonological alternative. This alternative analysis will explain why the underlying *en* and *on* emerge with their vowels in, for example *en-ai* → *[ennai]*, but without their vowels in *en-een* → *[naan]*. We will unfortunately not come back to an analysis of why we do not see a similar BASE alternation in the 1PL inclusive; this will have to wait for future work.

3 Phonological alternations: Function words and floating melody

If the alternations seen in the forms of the 1ST and 2ND person pronouns are not due to allomorphy triggered by case, how can we explain them? I suggest that the reader consider a purely phonological alternative.

First, we must consider what type of phonological framework can neatly account for the alternation at hand. An autosegmental account is one that includes the possibility of floating melodic structure. Such an account (represented below in CVCV phonology, Lowenstamm 1996, Scheer 2004, 2009) allows for, for example, the following explanation of French liaison consonants (8) or of Mixtec 2ND person (familiar) regressive nasalization (9).

(8) French liaison consonants (Encrevé 1983)

a. peti**t** garçon
   [pətigaʁsɔ̃]
   'little boy'

b. peti**t** ami
   [pəti**t**ami]
   'little friend/boyfriend'

c. [pəti]
   'little'

```
C   V   C   V
|   |   |   |
p   ə   t   i   t
```

(9) (Piggott 1992: 68)

a. kiʔvi - [+nas]
   [kĩʔvĩ]
   'you will be drunk'

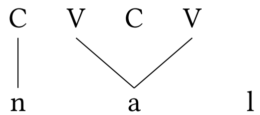
b. kaʔta - [+nas]
   [kaʔtã]
   'you will sing'

In (8) the final /t/ of *petit* is not pronounced unless it can be syllabified in the onset of a following syllable (it does not come pre-attached to syllabic structure (8c)), and in (9) the same can be said for the [+nas] '2nd person (familiar)' morpheme: it is underlyingly floating and is expressed differently depending on its phonological environment (it spreads to the left until its attachment is blocked by a voiceless non-glottal consonant). This type of floating structure is commonly used to account for such alternations, and is especially useful in accounting for the phonology of functional morphemes as in (9), whose phonology is cross-linguistically subject to more variation than lexical morphemes (see also Faust et al. 2018, and Newell 2019 for recent discussions of floating functional phonology, and Selkirk 1996 for an alternate account of the well-attested phonological variation seen in the functional domain). In any case, it is important to note that whether the melodic structure of a morpheme is underlyingly floating or not is a lexicalized property, and must be deduced based on the phonological alternations seen in context.

Now let us consider whether Tamil shows evidence of floating phonological structure. In fact, Tamil shows alternations that are quite reminiscent of the French liaison seen in (8). Final sonorants in Spoken Tamil (as opposed to Literary Tamil) are not pronounced, unless syllabified in the onset of a following vowel (either epenthetic or provided by a following word or morpheme) (10). Final nasal consonants may be realized as nasalization on the vowel (as in *garçon* in (8)), as seen in (11). We will therefore also consider them to be underlyingly floating and represented as in (10b) and (11b).

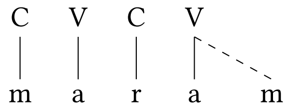
(10) (Schiffman 1999: 6)

a. naal
[naalʉ] or [naa] (in some dialects)
'day'

b. 

(11) (Schiffman 1999: 4)

a. maram
[marõ]
'tree'

b. 

The final /n/ of the pronominal bases in question in the previous section also floats. For example, in isolation *naan* is pronounced [nãã] and *en* is pronounced [jẽ] (Schiffman 1999: 5). The onglide in the latter is predictable for initial mid-vowels.

The morphological breakdown in §2 brought us to the conclusion that the pronominal base alternations are not between *naan/nii* and *en/on*, but rather between *n/en* in the 1st person, and *n/on* in the 2nd person. It is fairly straightforward to conclude that the *n* in each is the same consonant, and therefore has the same underlying representation.[7] From the pronunciation of *en* in isolation (and of the 2nd oblique form in (13b) below) we can also conclude that this *n* is underlyingly floating. It is only pronounced when followed by a vowel. What,

[7] Tom Leu (p.c.) suggests that perhaps it is even the same morpheme, indicating 'participant'.

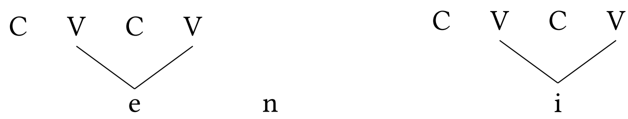
then, can we say about the *e* of *en* and the *o* of *on*? We can suggest that these vowels too, are floating (the conditions for their pronunciation will be discussed further below), and that the underlying lexical entries for the base morpheme in the 1st and 2nd person are as in (12). They contain no lexicalized structure on the CV-tier (compare the underlying structures with lexicalized CV structure in (8c), (10b), and (11b)).

(12) a. en '1sg'
b. on '2sg'

To explain the conditions under which the initial vowels of these base morphemes are pronounced, we can look first to their forms in isolation. The forms in (12) can be the overt manifestations of the oblique forms, whose suffix is null, with the pronunciations in (13a, 13b), and the nominative pronouns can be seen in (13c, 13d).

(13) a.	en-∅	'd.1sg-oblique'	[ʲẽ]	'my'
b.	on-∅	'd.2sg-oblique'	[wõ]	'your'
c.	en-een	'd.1sg-agr'	[nãã]	'I'
d.	on-ii	'd.2sg-agr'	[nii]	'you'

Given that the /n/ of base is pronounced before the agr morphemes, we can assume that these morphemes come with lexicalized CV space, where *een* has the underlying representation in Figure 1a, and *ii* the underlying representation in Figure 1b.



(a) agr in the 1sg (b) agr in the 2sg

Figure 1: Lexicalized underlying forms of the agreement morphemes

Each of the morphemes in Figure 1 will allow for the syllabification of the /n/ of *en* and *on* as an onset. In other words, the syllabification of /n/ in (12a, 12b) will be enabled before the vowel-initial agr morphemes, as in Figure 2. Remember that these agr morphemes do not appear in any pronominal forms except for the nominative. They are absent from all other cases.

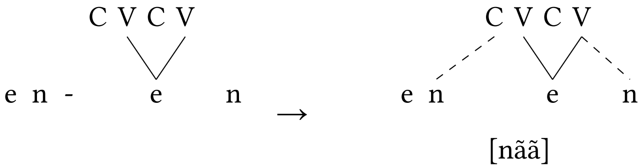


Figure 2: Derivation of the 1sg nominative pronoun

In Figure 2 the initial vowel is not pronounced, as the CV structure within the derivation provides no place for it to link. On the other hand, in all cases but the nominative we must explain why the initial vowels in *en* and *on* are pronounced. We cannot propose that the base morpheme is spelled out with its suffixes in these cases, as sometimes these suffixes also begin with a vowel, and should therefore allow for the same phonological analysis/predictions as in Figure 2. A derivation for, say, the Accusative Singular [ennai] as in Figure 3, along the lines of Figure 2, would erroneously predict the non-pronunciation of the initial vowel of the base.

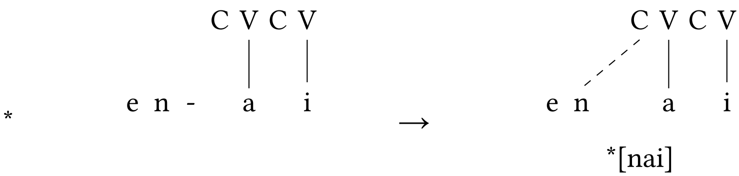


Figure 3: Incorrect derivation of the 1st person accusative pronoun

Note also that the initial vowels and the nasals are pronounced in the Exclusive Plural forms, wherein the base morpheme is followed by a C-initial morpheme. This is also unexplained if the morphemes of the Exclusive Plural are interpreted together. Figure 4 shows this predicted, and ungrammatical, derivation of the Exclusive Plural Accusative. Here the base is unlinked to the CV tier, and therefore remains unpronounced. The variable initial nasal of the plural morpheme is omitted here for ease of exposition.

We are left with but one possible analysis of the pronunciation of base in all of the pronominal forms that do not contain the agr morpheme. In these derivations, the pronominal root must undergo Spell Out in a cycle that does not include any of its suffixes. Before I can explain why this is the correct analysis of these pronominal forms, we must examine one further aspect of Tamil phonology.

First, consider again example (10), where underlying /naal/ ‘day’ may surface as either [naalʉ] or [naa], depending on the dialect. Now consider what must be occurring in the phonology in the derivation of a form like [naalʉ] under the

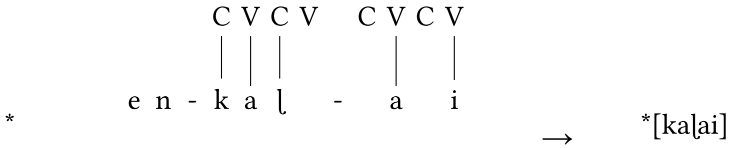


Figure 4: Incorrect derivation of the Exclusive Plural Accusative pronoun

lexico-structural assumptions laid out above. The final sonorant is unpronounced unless "saved" by either the insertion of an epenthetic vowel, or by the syllabification of the final sonorant as the onset of a following word/morpheme, as for [aval] in (14).

(14) a. ava pooraa 'she goes'
b. aval-ukku 'to her'

In Tamil, the motivation for the epenthesis of the final vowel in [naalʉ] appears to be related to word-minimality. Word-minimality is a common cross-linguistic requirement that lexical words be bi-moraic or bi-syllabic.[8] Single-syllable words will undergo this epenthesis, while longer words are more likely to drop the final C. If the final C were not floating, we would expect it to always be pronounced. Since it is variably pronounced, we must assume that the epenthetic vowel affords it an onset position in which it may be syllabified. In CVCV phonology, every V position on the CV-tier comes with a preceding C (CV-sequences are the only units on the skeletal tier). Therefore, the V position in which the epenthetic vowel is pronounced will provide a consonantal position to which the final floating consonant may link.

We can assume here that this epenthetic CV is not inserted except in cases where the underlying form is deemed too small, and that the pronunciation of the vocalic position is the default pronunciation of final empty vocalic positions in Tamil (in other words, the insertion of the epenthetic vowel is effected after the insertion of the CV augment; it is not underlyingly attached to the V position).[9]

[8]For example, consider that English monosyllabic words may end in a long vowel (i), or a vowel-consonant (ii) (heavy, bi-moraic syllables), but monomoraic single-syllable words are disallowed (iii).

(i) bee [bii]

(ii) bit [bɪt]

(iii) * [bɪ]

[9]Note that word minimality requirements appear to be variable across dialects. I assume here that word-minimality repairs may be triggered if the underlying form contains only a single melodic vowel.

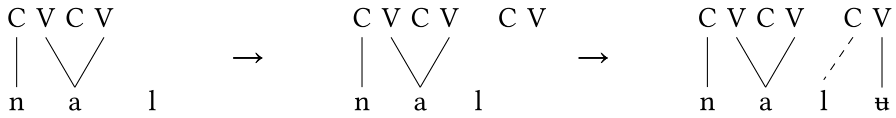


Figure 5: Derivation of ‘day’ with epenthesis

Now consider a derivation where the non-nominative pronouns are interpreted in two phonological cycles; one cycle that includes the BASE, and a second that includes the pronominal suffixes.

If the BASE in the non-nominative pronominal derivations undergoes Spell Out alone in its cycle, and if our analysis of its underlying structure is correct, then word-minimality requirements will impose the insertion of this epenthetic CV space at PF in these derivations.[10] Figures 6 and 7 show the derivation of (13a), the D.1SG-OBLIQUE ‘my’. Here the derivation is effected in 2 steps. Figure 6 represents the output of cyclic phonology, where CV-slots are linked with melody from right to left. Figure 7 represents the output of post-cyclic phonology, where additional floating segments link to the CV tier in Tamil. That these two steps are distinct can be seen in the derivation of forms like *ennai* (Figure 8).

Figure 6: Initial linking of segments to the epenthetic CV in the derivation of ‘my’

Figure 7: Post-cyclic linking of segments to the epenthetic CV in the derivation of ‘my’

Before going on to Figure 8, note that this analysis has the added advantage of offering an account of a discrepancy between the pronunciation of pronouns like

[10] Initial glides are predictable word-initially, and are coherent with the CVCV framework, or any phonological framework that favours the pronunciation of empty onset positions.

en and single syllable lexical items like *naal* 'day'. If lexical items like *naal* have underlying CV structure linked to all melodic elements, save for the final floating consonants (the standard assumption for non-alternating phonological forms), then an epenthetic CV will offer space for the pronunciation of this floating consonant. In the case of *en*, however, the CV cannot provide for the attachment of /n/ to the C position without crossing autosegmental lines. The only option is therefore to link the nasal to the vocalic position. Final Cs in function words and final Cs in lexical words are therefore predicted to behave distinctly in the presence of an epenthetic CV, as is the case.

In the derivation of an overtly morphologically complex form like [ennai] the derivation in Figure 6 will be the output of a first cycle of interpretation. In the second cycle the affixation of *ai* will offer a position for the pronunciation of [n], as in Figure 8. Post-cyclic nasalization of the vowel of the base will not occur, as [n] has linked to a C-position, while post-cyclic ongliding will still occur. Recall that we have put aside the question of how gemination is derived here (see Footnote 3).

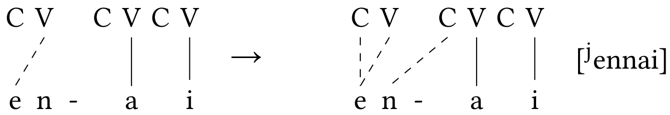
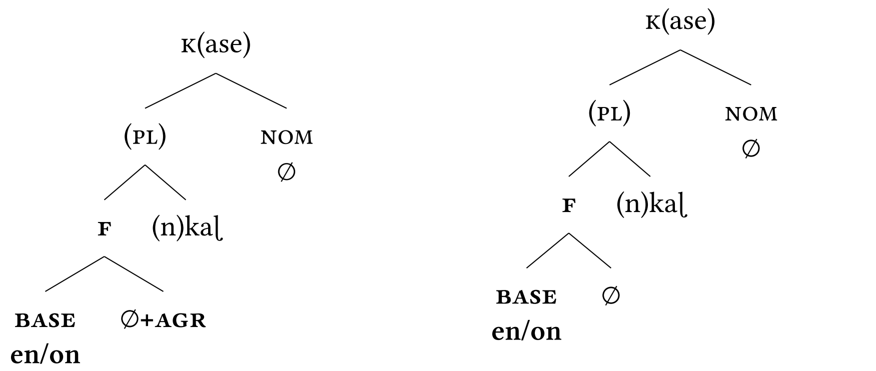


Figure 8: Derivation of the 1sg accusative pronoun

4 Possible syntactic motivations for the bi-cyclic analysis

The analysis above makes specific predictions about the cyclic Spell Out domains in the morphosyntax of the Tamil pronominal system. It is proposed that in all derivations but the nominative, the pronominal base undergoes Vocabulary Insertion in its own cycle, alone. In the following paragraphs I suggest some syntactic paths to follow that would support the proposed phonological analysis in §3.

One option is that there is a cyclic domain that triggers PF interpretation of the root in the derivation of all pronouns (the base is interpreted separately from the pl/k(ase) heads in all derivations) but that there is an operation of agreement that is triggered only when the pronoun is nominative. This domain is labeled **f** in Figure 9.



(a) Structure of the 1PL nominative pronoun

(b) Structure of the 1PL pronoun in non-nominative cases

Figure 9: Option 1: Nominative vs. non-nominative pronominal structures

(15) a. Spell-Out of F in Figure 9a ⟶ (i) VI of BASE : /en/~/on/
(ii) VI of dissociated AGR :/aan/
(iii) Phonological derivation as in Figure 2

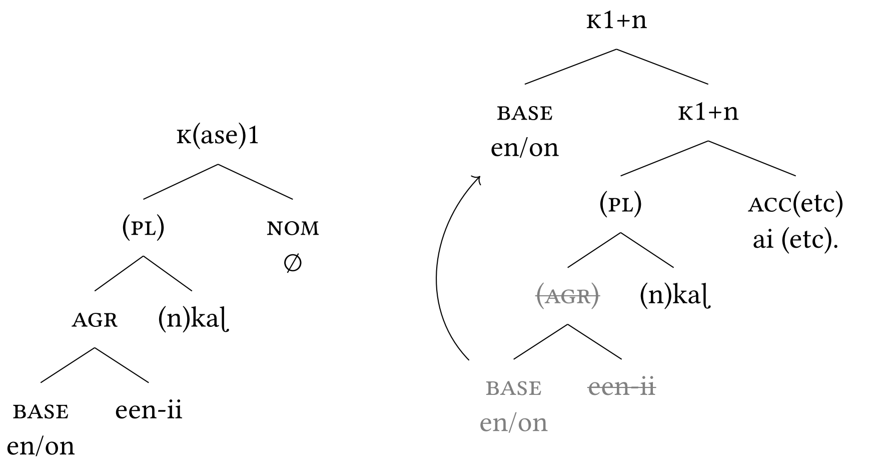
Spell-Out of K in Figure 9a ⟶ (i) VI of K and PL : /(n)kaɭ/
(ii) Linearization of BASE+PL
(iii) Phonological derivation of [naaŋkaɭ]

b. Spell-Out of F in Figure 9b ⟶ (i) VI of BASE : /en/~/on/
Phonological derivation as in Figure 6

Spell-Out of K in Figure 9b ⟶ (i) VI of K and PL : /(n)kaɭ/ + /ai/
(ii) Linearization of BASE+PL+K
(iii) Phonological derivation of [eŋkaɭai]

This analysis clearly assumes that the nominative head is present in the structure before F is spelled out in Figure 9, as F must only trigger the insertion of AGR in the scope of nominative case. In phase theory spell-out of a phase (here F) may be triggered by the merger of a higher phase head (here K, or a higher functional head in the pronominal structure), allowing for agreement of F and **NOM** prior to PF interpretation of F. If the agreement morphemes attached to F are dissociated (à la Embick 1997), then these morphemes will be inserted post-syntactically. In this analysis the AGR head is not present in the narrow syntax, and the derivations diverge at Vocabulary Insertion (VI), as in (15a, 15b).

A second option is that, instead of the difference between the presence of AGR in the nominative, and its absence in all other cases, there is a different distinction that triggers the extraction of BASE to a specifier position in all cases/K(ase)s but the nominative. This type of account would entail that, for example, some feature in K attracts the root to its specifier, and this feature is present only in structures larger than the nominative. For expository purposes, the nominative in Figure 10 is represented as K1, and K1+n refers to all case structures that are larger than the nominative.



(a) Structure of the 1PL nominative pronoun

(b) Structure of the 1PL pronoun in non-nominative cases

Figure 10: Option 2: Nominative vs. non-nominative pronominal structures

(16) a. Spell-Out of (Figure 10a = K1) ⟶
   i. VI, linearization of BASE, K and PL
   ii. Phonological derivation of ex. [naaŋkaḷ] in a single cycle.
  b. Spell-Out of BASE in Figure 10b ⟶
   i. Spell-Out of moved BASE. Derivation is identical to Spell-Out of F in Figure 9b
   Spell-Out of K1+n in Figure 10b ⟶
   i. Derivation is identical to Spell-Out of K in Figure 9b[11]

[11]Laura Kalin, p.c., notes that this second derivation appears to be incompatible with an eventual analysis of the 1PL inclusive along the lines presented herein, where we would want the BASE to spell out with its suffix regardless of Kase.

In the Spell-Out of Figure 10a we have, following Moskal (2015) and Moskal & Smith (2016), a single cycle of interpretation at the K1 node. The form of the BASE falls out of the phonological analysis in §3. In the Spell-Out of Figure 10b, we again have a cycle of Spell-Out triggered at the topmost K1+n node. But, in addition to this, we have a movement operation of the BASE to the Specifier of the K1+n projection. Following Johnson (2004) and other work on the phonological interpretation of specifiers/left-branches, the BASE will be interpreted separately from the structure to which it is copy-merged. In this separate cycle, the phonological analysis in §3 applies to the BASE, and the linearization/spell-out of the heads within K1+n will be determined separately. ~~AGR~~ in Figure 10b is not inserted. It may either be absent, or it may fail to be inserted in any derivation where the BASE raises out of its scope. Note that if McFadden (2018) is correct and there is no nominative case head in the syntax, it becomes easier to distinguish why the BASE is attracted to the specifier only in derivations where there is a K(ase) projection.

Either of the above accounts would allow for the phonological analysis in §3 to explain the alternations between *en/on* and *n* in the Tamil pronominal paradigm without requiring any complication to the analysis of adjacency for suppletion cross-linguistically. Should derivations like in Figures 9 and 10 be clearly impossible accounts for the data, the phonological analysis would then be improbable, and the complications raised for suppletion by the Tamil facts would again stand.

5 Conclusions

In the previous sections I have laid out arguments for an analysis that offers an alternative to the account in Moskal (2015) and Moskal & Smith (2016) of Tamil pronominal alternations. These works have proposed that Tamil is a particular (although not the only) argument against a strict-adjacency (either structural or linear) account of suppletion, as suppletion is triggered across the plural morpheme. If, however, the phonological evidence is to be believed, this example is not a case of suppletion at all, but rather falls out of the regular derivational and representational phonology of the language (admitting that the relevant vowel quality alternations and gemination are still to be accounted for). If this egregious example of anti-locality is removed from the discourse on suppletion, one wonders if the other less fraught examples might also have alternative explanations. It is, of course, not the case that all of the patterns problematic for adjacency have phonological solutions. The problems evoked by the pruning operation (Embick 2003, 2010) discussed by Moskal (2015) and Moskal & Smith (2016) are not (clearly) phonological issues, and accounts of allomorphy that appeal to Domain Suspension (Bobaljik 2012, Bobaljik & Wurmbrand 2013) or spanning (Merchant 2015, Svenonius 2016) clearly include cases where a morphosyntactic analysis must be appealed to (although, see Newell & Noonan 2018 for a teaser of a phonological analysis of the *de le* ⟶ *du* portmanteau problem in French). The analysis in §3 is just one alternative piece of the puzzle that may clear the way for a simpler explanation of locality restrictions in the domain of allomorphy.

Finally, I just want to situate this analysis in the larger setting, where questions of allomorphy and suppletion butt up against questions of phonological alternations. In either case, whether we posit suppletive forms or articulated phonological representations, the speaker must lexcialize something special about a particular vocabulary item. Whether we propose (seemingly small) complications to our phonological or to our morphosyntactic derivations leads to different predictions for the role of lexicalization and its effects on the linguistic system globally.

Abbreviations

1SG	1st person singular	INSTR	instrumental
2SG	2nd person singular	K	case
ABL	ablative	LOC	locative
ACC	accusative	NOM	nominative
AGR	agreement	PL	plural
D	pronominal base	PRES	present
DAT	dative	SOC	sociative
F	feature	VI	vocabulary insertion
GEN	genitive		

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Part III

Size and interpretation

Chapter 13

Partial control and plural predication

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Partial control is known to exhibit constraints on which predicates can be embedded: While it allows for collective predicates like *assemble*, it blocks predicates with the VP-modifier *each*, for instance. This restriction is surprising if the subject of the embedded predicate is a plurality, and existing accounts appeal to syntactic explanations. Based on German data, we argue that the constraint is semantic in nature: Embedded predication in PC cannot ascribe properties to parts of a plurality that do not contain the matrix subject – essentially because, following (a simplified version of) Pearson (2016), PC involves a property attribution de se. We sketch an implementation of this idea using the "plural projection" system (Schmitt 2019, Haslinger & Schmitt 2018, 2019): It lets us "divide" certain predicates – e.g., those involving *each* – into "parts". The aforementioned constraint must hold for each such predicate part, which rules out certain types of predication in PC.

1 Introduction

Some control verbs in English allow for so-called *partial control* (PC): The matrix subject is semantically singular, but the embedded predicate can only consist of semantic pluralities (Wilkinson 1971, Landau 2000, Wurmbrand 2001, 2002, Pearson 2016 a.o.). *Assemble* requires a semantically plural subject, as shown in (1a). Yet, when the relation between such a semantically singular subject and the predicate is "mediated" by the control verb *want*, as in (1b), the result is acceptable. (1c) and (1d) make the same point for *go on vacation together*.

(1) a. The children/#Ada assembled in the hall.
    b. Ada wanted to assemble in the hall. (Pearson 2016: (1a))
    c. The children/#Ada went on vacation together.

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d. Ada expected to go on vacation together. (Pearson 2016: (1b))

It thus seems that the embedded subject can introduce a plurality of individuals which the denotation of the matrix subject is a proper part of. This is schematized in the simplified rendering of (1b) in (2).[1]

(2) $[\![$[Ada wanted [PRO$_1$ to assemble in the hall]]$]\!]^g = 1$ iff **Ada** $< g(1)$ & Ada wanted $g(1)$ to assemble in the hall.

PC is known to be subject to two kinds of restrictions. First, there are constraints w.r.t. the *matrix predicate* (MP): Control verbs like *want*/*expect* license PC, but control verbs like *manage* don't, as shown in (3) (Landau 2000, Pearson 2016 a.o.). We will write "MPs$_{\text{PC}}$" for matrix predicates that license PC.

(3) # Ada managed to go on vacation together. (Pearson 2016: (2b))

We focus on the second restriction, which concerns the *embedded predicate* (EP): While collective predicates like *assemble* can occur in PC, predicates with what Schwarzschild (1996) calls "plurality seekers" – e.g., the distributive VP-modifier *each*, the reciprocal *each other* – can't (Landau 2000 a.o.), as shown by (4a) and (4b).

(4) a. # Ada told her friends that she wanted to each donate at least $100. (adapted from Landau 2000: 48 (61a))

b. # Ada told Bea that she expected to meet each other at 6 today. (adapted from Landau 2000: 59 (61a))

This contrast is unexpected if the embedded subject is taken to introduce a plurality of individuals: Expressions containing plurality seekers cannot combine with semantically singular subjects like *Ada*, but are perfectly fine with semantically plural subjects like *the children*, as shown in (5).

[1]Unless noted otherwise, we draw on some basic notions of plural semantics: We assume a set $A \subseteq D_e$ of atomic individuals, a binary operation $+$ on D_e and a function $f : (\mathcal{P}(A) \setminus \{\varnothing\}) \rightarrow D_e$ such that: 1. $f(\{x\}) = x$ for any $x \in A$ and 2. f is an isomorphism between the structures $(\mathcal{P}(A) \setminus \{\varnothing\}, \cup)$ and $(D_e, +)$. Hence there is a one-to-one correspondence between plural individuals and nonempty sets of atomic individuals. We will use the notation in (i).

(i) For any $x, y \in D_e$, $S \subseteq D_e$:

a. $x \leq y \Leftrightarrow x + y = y$ ("x is a part of y")

b. $x \leq_a y \Leftrightarrow x \leq y \wedge x \in A$ ("x is an atomic part of y")

c. $+S = f(\bigcup\{f^{-1}(x) \mid x \in S\})$ (the sum of all individuals in S)

(5) a. The children/# Ada will meet each other at 6 today.
b. The children/# Ada each donated at least $100.

To our knowledge, it is usually assumed that this restriction has *syntactic* reasons (see in particular Landau 2000). Here, we will argue, based on German data, that it is *semantic* in nature: The EP cannot attribute properties to parts of a plurality that don't contain the matrix subject – as the meaning of the MP requires "self-attribution" of a property. (So, *size matters!* – not in syntactic terms for us, but in terms of the parts of the pluralities that are attributed the EP-properties: They must be "large enough" to contain the matrix subject.) We provide an informal sketch of how this restriction can be implemented compositionally, combining the "plural projection" account of plural predication (Schmitt 2019, Haslinger & Schmitt 2018, 2019) with a simplified version of Pearson (2016) semantics for MPs_{PC}.

Note: Our examples/scenarios will mostly be based on a toy model with children Ada, Bea and Carl, dogs Dean, Eric and Fay, and cats Gene, Hans and Ivo.

2 Semantic constraints on EPs in PC in German

In the following, we describe the situation in German[2] and give a first semantic characterization of the type of EP blocked in PC.

2.1 The EP-restriction in German

German, like English, allows for PC (with some MPs[3]) if the EP is a collective predicate: The examples in (6) are parallel, in this respect, to (1b) and (1d). Further, as in English, the EP cannot contain the overt distributivity operator *jeweils* (≈ *each*), as shown in (7a),[4] or reciprocal *einander*, as illustrated in (7b). (7c) shows that such elements are not excluded per se in control constructions – they are fine with a plural matrix subject.

[2]The judgements reported here are our own and those of 10 speakers we consulted. There was minor variation in this pool of speakers, which we note when discussing the relevant examples. This is not to say there might not be more variation: A reviewer notes that their judgements differ from those reported here, also in terms of the availability of PC with the type of matrix predicates considered here. The root of this variation is unclear to us at this point.

[3]Pitteroff et al. (2017) distinguish between "fake" and "true" PC in German, where the former involves a silent comitative (but see Landau 2016). Our examples would be cases of "true" PC.

[4]The relevant reading is the one where *jeweils* distributes over an individual plurality. Two of our consultants were unsure about their judgments in this case. This might be connected to the fact (discussed by Zimmermann 2002) that *jeweils* also permits distribution over parts of an event plurality. See §5.

(6) CONTEXT: Ada called Bea and Carl. Bea reports:

a. Ada hat vor, sich morgen auf dem Platz zu treffen.
Ada intends REFL tomorrow on the square to meet
'Ada intends to meet in the square tomorrow.'

b. Ada hat vor, gemeinsam in den Urlaub zu fahren.
Ada intends together in the vacation to go
'Ada intends to go on vacation together.'

(7) CONTEXT: Ada called Bea and Carl ahead of the trip to the pet shop:

a. # Ada hat vor, jeweils zwei Tiere zu kaufen.
Ada intends each two dogs to buy
'Ada intends to buy two dogs each.'

b. # Ada hat vor, einander mit Katzenfutter zu bewerfen.
Ada intends each-other with cat-food to throw-at
'Ada intends to throw cat food at each other'

c. Ada und Bea haben vor, jeweils zwei Tiere zu kaufen
Ada and Bea intend each two animals to buy
'Ada and Carl intend to buy two pets each.'

A further restriction in German, which, to our knowledge, has not been noted in the literature, is that the EP cannot be construed as *cumulative*. Cumulative readings – namely, certain weak truth-conditions – can be observed for sentences with two or more semantically plural expressions (see Langendoen 1978 a.o.): The sentence in (8a) is true in scenario (8b), and generalizing over the verifying scenarios, we can paraphrase its truth-conditions as in (8c). Thus, descriptively, the children-plurality and the dog-plurality stand in a cumulative feeding-relation.

(8) a. Die drei Kinder haben die drei Hunde gefüttert.
The three children have the three dogs fed
'The three children fed the three dogs.'

b. SCENARIO: Ada fed Dean. Bea fed Eric. Carl fed Fay.

c. $[\![(8a)]\!] = 1$ iff each A,B,C fed at least one of D, E,F & each of D,E,F was fed by at least one of A,B,C.

In PC, the embedded subject cannot stand in cumulative relation with another plurality inside the EP. The fact that (9b) is false in the *cumulative* scenario (9a) shows that it cannot express that a plurality including Ada (e.g., Ada + Bea + Carl) stands in a cumulative feeding relation with the dog-plurality.[5] The sentence can only express that Ada's intention is that she herself feeds all three dogs.[6]

(9) a. SCENARIO: Ada is assigning jobs at the animal shelter. She assigns herself the job of feeding Dean, Bea that of feeding Eric, Carl that of feeding Fay. She wants everyone to be done by 11 am.

b. Ada hat vor, die drei Hunde am Morgen zu füttern.
Ada intends the three dogs in-the morning to feed
'Ada intends to feed the three dogs in the morning.' false in (9a)

Again, cumulative readings are not ruled out per se in control constructions, as witnessed by the fact that (10b) is true in the *cumulative* scenario (10a).

(10) a. SCENARIO: Ada intends to feed dog Dean, Bea intends to feed dog Eric, Carl intends to feed dog Fay.

b. Ada, Bea und Carl haben vor, die drei Hunde zu füttern.
Ada, Bea and Carl intend the three dogs to feed
'Ada, Bea and Carl intend to feed the three dogs.' true in (10a)

In summary, we can thus state the restriction on the EPs in PC as in (11).

(11) EP-restriction (German): The EP in PC cannot contain overt distributivity operators or reciprocals and prohibits a cumulative reading of an embedded plurality relative to the subject of the embedded clause.

2.2 Collective predicates vs. "part-predicates"

Semantically, the difference between collective predication, on the one hand, and distributive/cumulative predication, on the other, is that the latter, but not the

[5]While all our consultants reject the cumulative reading for this sentence, a reviewer considers this reading possible. As stated above, the reason for this variation is unclear to us.

[6]Likewise, (i.b) is false in the *cumulative* scenario (i.a) – it can only express that Ada intends to drink exactly 30 beers herself.

(i) a. SCENARIO: It's Ada's 12th birthday. She invited Bea and Carl. According to Ada, each of the three is supposed to drink 10 beers.

b. Ada hat vor, genau 30 Bier zu trinken.
Ada intends exactly 30 beers to drink
'Ada intends to drink exactly 30 beers.' % false in (i.a)

former, must access the *part-structure* of its plural argument(s): A collective predicate like *assemble* can attribute a property to a plurality as a whole. This behavior differs from that of the other class of predicates, which we subsume under the name *part predicates*: Predicates modified by *each* (or German *jeweils*) must access the part-structure of the argument plurality in the sense that they ascribe the property denoted by the predicate modified by *each* to each atomic part of the plurality they modify. For instance, following Link (1987) a.o., the EP in (7a) has the denotation in (12a) (we will ignore tense throughout). Cumulative readings of predicates like *feed the three dogs* resemble distributive predication in the sense that they, too, must access the part-structure of the pluralities involved. This is made explicit by the simplified denotation in (12b).[7] As most existing analyses of reciprocals as in (7b) either assume that they involve distributivity (e.g., Heim et al. 1991) or cumulativity (Beck 2001), any analysis that explains why overt distributivity operators and cumulative readings are blocked should extend to reciprocals.

(12) a. $[\![\text{each buy two pets}]\!] = \lambda x_e.\forall y \leq_a x\,(\textbf{buy two pets}(y))$

b. $[\![\text{feed the three dogs}]\!] = \lambda x_e.\forall y \leq_a x\,(\exists z \leq_a [\![\text{the three dogs}]\!]$ $\&\ \textbf{feed}(z)(y))\ \&\ \forall z \leq_a [\![\text{the three dogs}]\!](\exists y \leq_a x \&\ \textbf{feed}(z)(y))$

In light of this distinction, we posit our preliminary hypothesis 1.

(13) H1 (preliminary): EPs in PC cannot access the part-structure of the plurality corresponding to the subject of the EP.

3 A syntactic account of the EP-restriction?

But maybe H1 is on the wrong track – maybe the EP-restriction doesn't resort to semantic properties of the EP but has a syntactic explanation.

Landau (2000) notes that the EP-restriction in English extends to plural morphology that would have to be triggered by the embedded subject. This observation extends to German, as shown in (14) (adapted from English examples in Landau 2000).

(14) SCENARIO: Ada wants herself, Bea and Carl to join the club.
* Ada hat vor, Mitglieder von diesem Verein zu werden.
Ada intends member-PL of this club to become
'Ada intends to become members of the club.'

[7](12b) ignores the potential presence of cumulation operators and makes the simplifying assumption that *feed* primitively consists of pairs of atomic individuals.

Landau (2000) concludes from this that while the subject of the embedded clause doesn't inherit semantic number from the matrix subject (otherwise, PC shouldn't be possible), it inherits its syntactic number (singular), as sketched in (15).[8]

(15) [Ada$_{sg}$ plant [PRO$_{sg}$ Mitglieder von diesem Verein zu werden]]

Landau claims that this explains the EP-restriction, arguing that elements like *each* and reciprocals can only be licensed by syntactically plural expressions. To support his point, he provides examples like (16), which shows that a semantically plural, but syntactically singular expression cannot license the VP-modifier *each*.

(16) * The class each submitted a different paper. (Landau 2000: 49 (66d))

Crucially, this account is insufficient for German: Syntactic plurality is not necessary to license the elements blocked in EPs in PC. (17a) shows that the singular collective DP *das Paar* ('the couple') licenses reciprocals, (17b) shows that it can combine with predicates containing *jeweils*.[9] Moreover, it can partake in cumulative readings, as witnessed by the fact that (17c) is true in scenario (17c).[10]

(17) a. Das Paar sah einander vor Gericht.
The couple saw each-other in-front-of court
'The couple saw each other in court.'

b. Dieses Paar da drüben hat jeweils 10 Bier getrunken!
This couple there over has each 10 beers drunk
'This couple over there drank 10 beers each'

[8]Pearson (2016) makes an analogous claim, but submits that the SG-feature on PRO is deleted.

[9]While German *jeweils* is not identical in its behavior to English binominal *each* (see Stowell 2013 a.o. for binominal *each* and Zimmermann 2002 for the differences), it resembles the latter more closely than English VP-*each*, as only VP-*each* is incompatible with singular collective nouns, as shown by the contrast between (16) and (i).

(i) The couple have drunk five beers each. (Tim Stowell, pc)

[10]Singular generics also seem to license cumulative readings, and also predicates modified by *jeweils*, as in (i) (example due to Magdalena Roszkoswki, pc).

(i) Der Spatz hat jeweils bis zu 150 Zecken auf seinem Federkleid.
The.SG sparrow has *jeweils* up to 150 ticks on his feather-dress
'Sparrows have up to 150 ticks each in their feathers.'

c. SCENARIO: Sue and Zoe are a couple, living in different households. Sue, a banker, earned 1000 Euros today. Zoe, a designer, made 2000 Euros today. Mary is impressed and tells me:
Dieses Paar hat heute (insgesamt) genau 3000 Euro verdient!
This couple has today (in-total) exactly 3000 Euros earned
'The couple earned 3000 Euros (in total) today' true in (17c)

Such semantically plural, syntactically singular elements also license distributive/cumulative EP-predicates in PC, as shown in (18). So while we follow Landau (2000) in assuming that the lack of a plural feature on PRO and on the matrix subject plays a role in the lack of plural morphology shown in (14),[11] we submit that it does not explain the EP-restriction in German: The modifier *jeweils*, reciprocals and cumulative readings don't require a *syntactically* plural subject.

(18) Dieses Paar hat vor, jeweils 10 Bier zu trinken.
this couple intends each 10 beers to drink
'The couple intends to drink 10 beers each'

4 A tentative semantic account of the EP-restriction

Having ruled out a syntactic account, we now link our preliminary H1 to the meaning of MPs_{PC} and sketch a compositional implementation. It will turn out that EPs in PC *can* access the part-structure of their subject – but that MPs_{PC} impose certain restrictions on what these parts can look like.

4.1 Spelling out the underlying intuition, Part I

To get an intuitive grasp of the status of H1 in PC, we first need a broad conception of the semantics of MPs_{PC}. Pearson (2016) argues convincingly that all MPs_{PC} are attitude verbs.[12] Thus, they require us to relativize the parameters of

[11]Syntactic plurality by itself, however, is not sufficient to license plural morphology in the embedded structure in (14). This is witnessed by examples like (i), which were brought to our attention by a reviewer: A semantically singular matrix subject with syntactic plural marking (i.e., the polite plural) cannot license plural morphology on the embedded noun.

(i) * Meine Dame, Sie haben vor Mitglieder von diesem Verein zu werden.
my lady 3RD.PL intend.PL members of this club to become
'My lady, you intend to become members of this club'

[12]But not all attitude verbs license PC, see §5.

evaluation for the embedded structure to the matrix subject. Take *expect*: When evaluating the sentence in (19) at world w, S is evaluated w.r.t. Ada's belief worlds (or their future states) in w – the sentence can be true if no zombies exist in w, but Ada must believe in w that they do. Thus, we evaluate S relative to worlds Ada considers candidates for w (which we will call *world-candidates*).

(19) Ada expects [$_S$ that she will meet a zombie at my house].

Following Chierchia's (1989) treatment of control, Pearson (2016) argues that MPs$_{\text{PC}}$ involve an attitude de se: While (20c) with a finite complement is true in scenario (20a), the analogous control sentence in (20b) is not: In (20b) Ada must attribute the property of becoming rich and famous to an individual she considers a candidate for herself (which we will call *self-candidates*). Informally speaking, MPs$_{\text{PC}}$ thus always involve a relation between the matrix subject x and a self-candidate of x.

(20) a. SCENARIO: Ada is an amnesiac. She reads a linguistics article that she herself wrote, but she has forgotten this fact. Impressed, she remarks, "The author of this paper will become rich and famous, but I won't".
b. Ada expects to become rich and famous. false in (20a)
c. Ada expects that she will become rich and famous. true in (20a)
(cf. Pearson 2016: (9))

Omitting a crucial part of Pearson's account (see §5), she submits that MPs$_{\text{PC}}$ "expand" the self-candidates of the matrix subject in that subject's world-candidates: MPs$_{\text{PC}}$ combine with properties (of worlds and individuals in our simplified rendering, see Chierchia 1989) and these properties are evaluated with respect to pairs $\langle w, x\rangle$, where w is a world-candidate of the matrix subject and x an expansion of the self-candidate of the matrix subject in w (so x will be the self-candidate, or a plurality properly containing that self-candidate).[13]

Take the sentence in (21a) (≙ 6b): *intend* expresses the relation in (21b), where $\mathcal{I}_{x,w}$ is the set of all pairs $\langle w', y\rangle$, s.th. w' is a world-candidate of x in w and y a self candidate of x in w'.[14] Combining this predicate with the denotation of its complement in (21c) and with the subject yields (21d): (21a) is correctly

[13] Pearson (2016) notes that this analysis does not straightforwardly extend to (partial) object control. We here do not discuss how to expand our own analysis to object control: Pearson (2016) does not present a definitive account of the matrix predicates in such cases (although she probes some possibilities), so we would have to make a proposal regarding their semantics, which is beyond the confines of this paper.

[14] This is a simplification: We here equate the INTEND-relation with the BELIEF-relation.

predicted true in scenarios where Ada's intention is that she and other people go on vacation together.[15]

(21) a. Ada intends to go on vacation together

b. $[\![\textit{intend}]\!] = \lambda w_s.\lambda P_{\langle s,\langle e,t\rangle\rangle}.\lambda x_e.\forall\langle w', y\rangle \in \mathcal{I}_{x,w}(\exists\langle w'', z\rangle(w'' = w' \,\&\, y \leq z \,\&\, P(w'')(z)))$

c. $[\![\text{PRO go on vacation together}]\!] = \lambda w_s.\lambda x_e : \exists y(y < x).x$ goes on vacation together in w

d. $[\![\text{(21a)}]\!] = \lambda w_s.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists\langle w'', z\rangle(w'' = w' \,\&\, y \leq z \,\&\, \textbf{go on vacation together}(w'')(z)))$
[simplified: $\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z(y \leq z \,\&\, \textbf{g.o.v. together}(w')(z)))$]

(21c) encodes the intuition that MPs_{PC} always involve a relation between the matrix subject and a self-candidate of this subject: It requires that the property the EP introduces is attributed to an entity containing a self-candidate of the matrix subject, as captured in H2. The intuitive connection to H1 is that part-predicates somehow access parts of the plurality the subject has in mind that don't contain its self-candidate. We will now spell out this intuition more concretely.

(22) H2: In PC, the property introduced by the EP must apply to a plurality containing a SELF-candidate of the matrix subject.

4.2 Spelling out the intuition, Part II

In order to explain the EP-restriction via H2, we must show two things: First, that collective predicates don't cause any problems regarding H2. And second, that part-predicates do. The first point is straightforward: As (21) illustrates, collective predicates can apply to the expansion the subject has in mind *as a whole* – so the self-candidate of the subject will be a part of the plurality that the property (e.g., **go on vacation together**) is ascribed to. The second point – showing why part-predicates do *not* comply with H2 – is more difficult. Above, we established an *intuitive* link: As part-predicates access the part structure of the expansion the subject has in mind, they might access proper parts of this plurality that *don't* include the self-candidate of the subject. Spelling out this vague intuition in a plausible way will in fact require a non-standard take on plural predication.

[15] A reviewer wonders whether it is sufficient to require *some* expansion of the self-candidate in each world candidate. We think Pearson's treatment here is correct: It seems to us that an example like (1d) can be true in a context where Ada expects to go on vacation with Bea or Carl.

4.2.1 The problem

Let us first outline why it is hard to spell out this intuition qua the traditional accounts of part predicates used in §2: (23a) repeats the denotation for a predicate with *jeweils/each*, (23b) that for a cumulative predicate.

(23) a. $[\![\text{each buy two pets}]\!] = \lambda x_e.\forall y \leq_a x\,(\textbf{buy two pets}(y))$

b. $[\![\text{feed the three dogs}]\!] =$
$\lambda x_e.\forall y \leq_a x(\exists z \leq_a [\![\text{the three dogs}]\!]\,\&\,\textbf{feed}(z)(y))\&\,\forall z \leq_a$
$[\![\text{the three dogs}]\!](\exists y \leq_a x\&\,\textbf{feed}(z)(y))$

Both predicates denote properties that can consist of pluralities – just as the collective predicate in (21c). For example, the sentence in (24a) will involve applying the property in (23b) to the plurality A + B + C as a whole and for the sentence in (24b) we apply the property in (23a) to A + B + C as a whole. As opposed to collective predicates, part predicates access the parts of that plurality for their *truth-conditional component*, but this trait is invisible at the level of semantic composition: For purposes of the latter, part predicates and collective predicates "look the same".

(24) a. Die drei Kinder haben die drei Hunde gefüttert.
'The three children fed the three dogs.'

b. Die drei Kinder haben jeweils zwei Tiere gekauft.
'The three children bought two pets each.'

The traditional view thus does not let us explain the EP-restriction via H2: If $[\![\text{intend}]\!] = [\![\text{vorhaben}]\!]$, (25a) (= 9b) will involve applying (23b) to the expansion that Ada has in mind *as a whole* and in (25b) (= 7b) we apply (23a) to that expansion, again *as a whole*.[16] Both predications comply with H2 and we falsely predict that (25b) should be fine and that (25a) should have a cumulative reading.

(25) a. Ada hat vor, die drei Hunde zu füttern
'Ada intends to feed the three dogs.' # cumulative reading

b. # Ada hat vor, jeweils zwei Tiere zu kaufen
'Ada intends to buy two pets each.'

But intuitively, there is another way to conceive of part predicates – one where we divide the predicates themselves into parts. Take first cumulative predication

[16]Note that for purposes of simplicity, and because it has no bearing on our conceptual points, we sometimes use extensional versions of predicates.

as in (24a): Instead of viewing it as involving a cumulated relation between individuals (which is what underlies the denotation in (23a)) we could view it as a cumulative relation between a plurality of individuals and a plurality of predicates with the parts in (26). Requiring that it "consist cumulatively" of A + B + C would then mean that at least one of these properties must consist of A, at least one of them of B and at least one of them of C – and each of the properties must consist of A, B or C. By "dividing up" the predicate in this way, we would end up with different properties that could apply to different parts of the individual plurality.

(26) parts of *die drei Hunde füttern* = { **feed D**, **feed E**, **feed F** }.

Returning to PC in (25a), the expansion Ada has in mind – say, A + B + C – could thus be "divided up" in a way such that each part – A, B, C – could be attributed a different property. This would mean that we should run into a problem according to H2: For instance, in scenario (27) (≙ 9a), the property **feed D** would apply to A, **feed E** to B, **feed F** to C. So for some of these properties, Ada's self-candidate (A) would *not* be part of the plurality that is assigned that property.

(27) SCENARIO: Adas intentions: A feeds D, B feeds E, C feeds F.

For predication with *jeweils*/*each*, as in (24b), the denotation of the predicate could consist of parts like those in (28) – each part essentially corresponds to the buying of two pets. (24b) would then require "mapping" each part of A + B + C to one of the properties in (28) (e.g., A to **buy D + E**, B to **buy F + G**, etc.). In a PC-context like (25b), the "expansion" the subject has in mind would be divided into parts that can be ascribed different properties – which H2 would rule out.

(28) Parts of *jeweils zwei Tiere kaufen* = { **buy D+E**, **buy D+F**, **buy E+F**, **buy F+G**, **buy H+I**, **buy G+I**, **buy G+I**, ... }.

4.2.2 Plural projection: Background

The plural projection system (Schmitt 2019, Haslinger & Schmitt 2018, 2019) is an independently motivated mechanism for plural predication that allows us to encode these intuitions about "dividing up" predicates properly: We first give a very informal overview of the system,[17] and then (again very informally) describe

[17] For reasons of space, we omit the independent motivation for the mechanism, and proper definitions. Both are discussed at length in Schmitt 2019, Haslinger & Schmitt 2018, 2019.

its view of part predicates and collective predicates. For each case, we show that combining these "new" predicate denotations with the semantics of $\mathrm{MPs}_{\mathrm{PC}}$ will give us the correct predictions concerning the EP-restriction if H2 is assumed.

The system is based on two core ideas (we here follow Haslinger & Schmitt 2019): First, all semantic domains contain pluralities – we have pluralities of individuals, but also pluralities of predicates, pluralities of propositions etc. For every type a, pluralities stand in a one-to-one correspondence with non-empty sets of atoms of D_a, e.g., the domain $D_{\langle e,t\rangle}$ would look like (29) ("+" indicates plurality formation):[18]

(29) $\{\lambda x.\mathrm{smoke}(x), \lambda x.\mathrm{drink}(x), \lambda x.\mathrm{smoke}(x) + \lambda x.\mathrm{drink}(x), \ldots\}$

Second, semantic plurality "projects" up in the syntactic tree (in analogy to versions of alternative semantics, e.g., Rooth 1985): Any constituent containing a semantically plural subexpression will itself be semantically plural, unless "projection" is blocked by an intervening operator: e.g., as the VP in (30) contains the semantically plural expression *the three dogs* it will itself be semantically plural.

(30) fed the three dogs

This "projection" behavior is implemented by a special composition rule ("CC" for "cumulative composition"). We start with the idea that if a function combines with an argument plurality, or a function plurality with an argument, we obtain a plurality of values. In the former case, the function applies to each atomic part of the argument and the resulting values are summed up. In the latter case, each atomic part of the function applies to the argument and the resulting values are summed up. (31) shows that the mereological structure introduced by the embedded plural expression is preserved in the denotation of the node dominating it.

(31)
$$\begin{array}{c} f(a) + f(b) \\ \diagup \quad \diagdown \\ f \qquad a + b \end{array} \qquad \begin{array}{c} f(a) + g(a) \\ \diagup \quad \diagdown \\ f + g \qquad a \end{array}$$

We need a slightly more complex system to generalize this idea, since if both the functor and the argument denote pluralities, a single plurality of values will be insufficient: Cumulative truth conditions (see 8) are compatible with various

[18]Note that this means, crucially, that pluralities of predicates of type $\langle a,t\rangle$ are not reducible to predicates of pluralities of type a.

ways of matching up the functor-parts and the argument-parts. Plural expressions are thus assumed to denote sets of pluralities – *plural sets* (indicated here by square brackets) – rather than single pluralities. These plural sets can be targeted by specific compositional rules: They form the input for the CC-rule that yields "projection" and also encodes cumulativity. This rule combines a set of function pluralities and a set of argument pluralities as follows: It returns the set of all value pluralities obtained by applying atomic function parts to atomic argument parts in such a way that all the parts of some plurality in the function set are "covered", and all the parts of some plurality in the argument set are "covered".[19] This is schematized in (32). As in (31), the denotation of the mother node preserves the part structure introduced by the plural expressions it dominates. ((31) is what we obtain if one of the two plural sets is a singleton containing a non-plural denotation.) Crucially, this operation is repeated at any syntactic node that dominates at least one plural expression. So sentences containing plurality-denoting expressions denote plural sets of propositions: They count as true if at least one plurality in the set consists exclusively of true propositions. Accordingly, if (32) were the representation of a full sentence, the top level plural set would be a plural set of propositional pluralities and (32) would be mapped to true if at least one of the elements in the set were such that all of its atoms were true, e.g., if both $f(a)$ and $g(b)$ were true, or if both $f(b)$ and $g(a)$ were true etc.

(32) $[f(a) + g(b), f(b) + g(a), f(a) + g(a) + g(b), f(b) + g(a) + g(b),$
$f(a) + f(b) + g(a), f(a) + f(b) + g(b), f(a) + f(b) + g(a) + g(b)]$

$[f + g] \quad [a + b]$

Based on this rough sketch, we will now consider the denotations of part-predicates and collective-predicates in light of H2.

4.2.3 Cumulative predicates

Haslinger & Schmitt (2018, 2019) assume that plural definites and indefinites denote plural sets containing individuals from the NP-extension: The plural set containing the sum of all such elements, (33a), and the one containing all such pluralities of the "right size", (33b), respectively.

(33) a. ⟦the three dogs⟧ = **[D+E+F]**
b. ⟦two pets⟧ = **[D+E, D+F, E+F, G+H, G+I, H+I, D+G, ...]**

[19] For instance, $\{\langle f, a\rangle, \langle g, b\rangle\}$ would be a cover for the two pluralities $f+g$, $a+b$, but , $\{\langle f, a\rangle, \langle g, a\rangle\}$ wouldn't be a cover, because we are "missing" a part of the $a + b$-plurality.

We now derive the denotation of (30) (cf. 24a) on the basis of (33a), the CC-rule illustrated in (32) (represented by "•") , and the assumption that the denotations of expressions that don't contain plural expressions like (*feed*) can be mapped to singleton plural sets (i.e., **[feed]**). This yields the plural set of predicates in (34): As the only element of [**feed**] is atomic, it applies to each atom of the only element of [**D+E+F**]; we obtain a plural set containing the sum of all the resulting values.

(34) ⟦feed the three dogs⟧ = **[f(eed)]** • [**D+E+F**] = [**f(D) + f(E) + f(F)**]

If we combine this plural set with a plural subject as in (24a), the result will be a plural set of propositions: We consider all the possible "covers" of the plurality in the plural set introduced by the subject and the plurality contained in the plural set in (34); for each such "cover" we sum up the results of applying the functor-part to its respective argument-part; we then collect the results in a plural set. The sentence will be true iff at least one of the pluralities in this set consists only of true atoms, e.g., in a scenario where Ada fed Dean, Bea fed Eric and Carl fed Fay.

(35) ⟦The three children fed the three dogs⟧ = **[A+B+C]** • [**f(D) + f(E) + f(F)**]
= [**f(D)(A) + f(E)(B) + f(F)(C)**, **f(D)(B) + f(E)(A) + f(F)(C)**, **f(D)(C) + f(E)(B) + f(F)(A)**, …]

This is exactly the type of system needed to spell out our intuitions behind H2: Cumulative predication now involves applying parts of the predicate (obtained by "projection" of an embedded plurality) to parts of the subject. Let's see how this plays out in PC, i.e., (25a) with the LF in (36).[20]

(36) [$_{S3}$ Ada [$_{S2}$ hat vor [$_{S1}$ ~~pro~~ drei Hunde zu füttern]]]

We assume that ⟦vorhaben⟧ = ⟦intend⟧ (see (21b)). In order to derive ⟦*S*2⟧, **[intend]** combines with the denotation of the embedded predicate (i.e., (34)) as in (37a) via the CC-rule: **intend** applies to every atomic part of the predicate plurality, which yields another plural set of predicates.[21] For ⟦*S*3⟧, we combine this latter set– again via the CC-rule – with the plural set introduced by the subject, (37b). We obtain a plural set containing a single plurality of propositions. In order for the sentence to be true, each atom of this plurality must be true – and each atom involves one property (e.g, **feed Dean**), which, in all of Ada's world-candidates *w*, must consist of an expansion of Ada's self candidate in *w*.

[20]We don't want to discuss the plural projection version of binding (Haslinger & Schmitt 2020), so we assume that pro is semantically vacuous and semantically inert, i.e., we do not assume here (contra Heim & Kratzer 1998) that it induces abstraction over a variable.

[21]This requires an expansion of the CC-rule to intensions (Schmitt 2020).

(37) a. $[\![\text{S2}]\!] = \textbf{[intend]} \bullet \textbf{[f(D) + f(E) + f(F)]} =$
$[\lambda w.\lambda x.\forall\langle w', y\rangle \in \mathcal{I}_{x,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(D)}(w')(z))) +$
$\lambda w.\lambda x.\forall\langle w', y\rangle \in \mathcal{I}_{x,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(E)}(w')(z))) +$
$\lambda w.\lambda x.\forall\langle w', y\rangle \in \mathcal{I}_{x,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(F)}(w')(z)))]$

b. $[\![\text{S3}]\!] = \textbf{[Ada]} \bullet [\![\text{S2}]\!] =$
$[\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(D)}(w')(z))) +$
$\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(E)}(w')(z))) +$
$\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{f(F)}(w')(z)))\,]$

Note that this analysis doesn't assume that cumulation predication in PC is ruled out *by the grammar*. Rather, if the EP contains a plurality (e.g., *fed the three dogs*), the denotation of the MP and of the EP will conspire: For each of the predicate's atomic parts, the matrix subject's self-candidate must be part of the individual that this property applies to. (21b) is thus correctly predicted false in scenario (27). Now, if we assumed that the atomic properties (like **feed Dean**) can also consist of pluralities collectively (see §4.2.5), then two types of scenarios should make (21b) true: Those where Ada's intension is that she herself feeds each dog, and those where Ada's intension is that for each dog, she and possibly other people feed that dog together. We believe this prediction to be correct.

4.2.4 Distributive predicates with *jeweils/each*

Let's turn to distributive predication with *jeweils/each*, (24b). We first consider the denotation of *zwei Tiere kaufen*. As the object is indefinite, the CC-rule requires the following: We pick a plurality from the set in (33b), **buy** must apply to both of its atomic parts, then we sum up the results. We do this for each plurality of two pets and collect the results in a plural set, (38).

(38) $[\![\text{buy two pets}]\!] = \textbf{[b(uy)]} \bullet \textbf{[D+E, D+F, E+F, G+H, G+I, H+I, D+G, ...]}$
$= \textbf{[b(D)+b(E), ..., b(E)+b(F), b(G)+b(H), ..., b(H)+b(I), b(D)+b(G), ...]}$

This plural set combines with $[\![\text{each}]\!]$ (= $[\![\text{jeweils}]\!]$). Haslinger & Schmitt (2019) argue that such distributive elements are operators that block application of the CC-rule: They directly manipulate plural sets by taking such sets as their arguments, and yield plural sets of their values. $[\![\text{each}]\!]$ takes the plural set of predicates in (38). It returns another plural set of predicates, (39), whose elements each consist of atomic functions mapping an individual to some predicate plurality in the argument set (e.g., one such atom is the function $\lambda x.\mathbf{buy\ D}(x) + \mathbf{buy\ E}(x)$).

(39) $[\![\text{each buy two pets}]\!] = [\lambda x_e.\mathbf{b(D)}(x) + \mathbf{b(E)}(x), (\lambda x_e.\mathbf{b(D)}(x) + \mathbf{b(E)}(x)) + (\lambda x_e.\mathbf{b(E)}(x) + \mathbf{b(F)}(x)), (\lambda x_e.\mathbf{b(D)}(x) + \mathbf{b(G)}(x)) + (\lambda x_e.\mathbf{b(E)}(x) + \mathbf{b(F)}(x)) + (\lambda x_e.\mathbf{b(H)}(x) + \mathbf{b(I)}(x)), \dots]$

(39) is again a plural set of predicate pluralities, so it combines with the denotation of the subject in (24b), **[A+B+C]**, via the CC-rule: For each plurality in (39), we form all the possible "covers" relative to **A+B+C**, and then, for each such cover, we let the functions apply to their respective arguments and sum up the results for this cover. We do this for each cover of each plurality in (39) and **A+B+C**, which yields the plural set of propositions in (40). The sentence will be true iff one of the pluralities in (40) consists only of true atoms, e.g., in a scenario where Ada bought Dean and Gene, Bea bought Eric and Fay, and Carl bought Harry and Ivo.

(40) $[\![(24b)]\!] = (39) \bullet \mathbf{[A{+}B{+}C]} = [\mathbf{b(D)(A) + b(E)(A) + b(D)(B) + b(E)(B) + b(D)(C) + b(E)(C), b(D)(A) + b(E)(A) + b(E)(B) + b(F)(B) + b(E)(C) + b(F)(C), b(D)(A) + b(G)(A) + b(E)(B) + b(F)(B) + b(H)(C) + b(I)(C)}, \dots]$

Again, we have "divided up" a predicate into parts (in our case, each part is a property of buying to particular pets). Let's consider the consequences for PC, i.e. example (25b) with the LF in (41a). The derivation of node $[\![S2']\!]$ involves combining the singleton plural set **[intend]** via the CC-rule with (39) – and combining this with the matrix subject yields the plural set of propositions sketched in (41b).

(41) a. $[_{S3'}$ Ada $[_{S2'}$ hat vor $[_{S1'}$ ~~PRO~~ jeweils zwei Tiere zu kaufen]]].

b. $[\![\text{S3'}]\!] = [\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(D)}(w')(z) + \mathbf{b(E)}(w')(z))),$
$\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(D)}(w')(z) + \mathbf{b(E)}(w')(z)))$
$+\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(E)}(w')(z) + \mathbf{b(F)}(w')(z))),$
$\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(D)}(w')(z) + \mathbf{b(G)}(w')(z)))$
$+\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(E)}(w')(z) + \mathbf{b(F)}(w')(z)))$
$+\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{b(H)}(w')(z) + \mathbf{b(I)}(w')(z))), \dots]$

Look at the propositional pluralities: Each part of the subject is mapped to the buying of *two* pets (e.g., **D** and **E**) – and each such part must be an expansion of Ada's self-candidate. Now, crucially, if the properties can only consist of atomic individuals (which would mean, essentially, that the variable z above is restricted to atomic individuals),[22] then Ada's intention will be that she herself buys two (or more) pets. The sentence is thus interpretable in our system, so why is it

[22] Schwarzschild (1996) notes that VP-*each* can sometimes distribute to non-atomic elements. We leave this issue to future research.

unacceptable? Our account makes (25b) parallel to (42b) – so whatever explains the unacceptability of (42b) (which can't be syntactic, see §3) should carry over to (25b).

(42) a. SCENARIO: Ada bought two pets. That's all she did.

b. # Ada hat jeweils zwei Tiere gekauft.
Ada has each two animals bought.
'Ada bought two animals each.'

4.2.5 Collective predicates

The current version of the plural projection system omits collective predicates, so we add the assumption that predicate denotations specify whether they apply to atomic individuals, proper pluralities of individuals, or both. This specification can be a property of lexical predicates, as in (43), but modifiers like *together* can manipulate the specification of complex predicates (e.g., restrict them to proper pluralities).[23] To implement this, we loosen the restrictions on the "covers" via which we match functor-parts with argument-parts. So far, we matched atomic functor-parts with atomic argument-parts: For a functor plurality $f + g$ and an argument plurality $a + b$, we would for instance get the cover $\{\langle f, a\rangle, \langle g, b\rangle\}$, but not the cover $\{\langle f, a + b\rangle, \langle g, a\rangle\}$. Such atomic covers are suitable for predicates like *smoke*, but in order to include collective predicates like *meet*, we must allow covers matching functor parts with *non-atomic* argument-parts, as in (44).[24]

(43) a. $[\![\text{smoke}]\!] = \lambda x : \forall y \leq x(y = x).\, \mathbf{smoke}(x)$

b. $[\![\text{meet}]\!] = \lambda x : \exists y(y < x).\, \mathbf{meet}(x)$

(44)

$$[\mathit{meet}(a + b)]$$
$$[\mathit{meet}] \quad [a + b]$$

$$[\mathit{meet}(a + b), \mathit{meet}(a + c), \mathit{meet}(b + c), \mathit{meet}(a + b + c)]$$
$$[\mathit{meet}] \quad [a + b + c]$$

[23] We leave a compositional treatment of such complex expressions (see e.g., Lasersohn 1990) and the question of how to combine it with the plural projection mechanism to future research. We furthermore omit a more thorough discussion of the semantics of collective predication (see, e.g., Landman 2000).

[24] This is a simplification: We should always allow every possible cover. So for predicates with a domain restriction, not all of the covers are suitable – which raises the general question of how to deal with cases where some members of a plural set will involve a presupposition failure.

Accordingly, a sentence like (6a) above, with the LF in (45a) comes out as in (45b): We obtain a plural set of propositions, the only element of which is an atomic proposition. Accordingly, the sentence is true, for instance, in a scenario where Ada's intentions are that she, Bea and Carl meet in the park.

(45) a. $[_{S3'}$ Ada $[_{S2'}$ hat vor $[_{S1'}$ ~~PRO~~ sich auf dem Platz zu treffen]]]

b. $[\![\text{S3'}]\!] = [\lambda w.\forall\langle w', y\rangle \in \mathcal{I}_{A,w}(\exists z\,(y \leq z\,\&\,\mathbf{meet}(w')(z)))]$

As *meet in the square* doesn't contain any semantically plural expressions or a distributivity operator, it doesn't denote a predicate plurality – so as opposed to our part-predicates, it doesn't have different parts that could apply different parts of its argument plurality. But this property is independent of it being a collective predicate: If *meet* first combines with a semantically plural expression, like *in den zwei Parks* in (46b), the result will be a predicate with a part structure (i.e., **[meet in park 1 + meet in park 2]**). The only effect of collectivity is that each of the parts of this predicate plurality can only consist of proper pluralities. We thus correctly predict the sentence in (46b) to be true in the scenario in (46a), where each predicate part consists of a different sub-plurality of the argument (see e.g. Schwarzschild 1996 for related discussion). So this is where we should observe an effect for PC: Each part of the predicate should be required to consist of a plurality containing a self-candidate of the matrix subject. This seems to be the case: The sentence in (46d) is false in scenario (46c) where this constraint is violated. (On the other hand, we would predict the sentence to be true in a scenario where Ada's intentions are: Ada and Bea meet in park 1, Ada and Carl meet in park 2. It seems to us that these predictions are correct.)

(46) a. SCENARIO D, E F meet in park 1, G, H, I in park 2.

b. Die Tiere treffen sich morgen in den zwei Parks.
The animals meet REFL tomorrow in the two parks.
'The animals will meet in the two parks tomorrow.' **true** in (46a)

c. Ada's intentions: A, B meet in park 1. B,C meet in park 2.

d. Ada hat vor, sich morgen in den zwei Parks zu treffen.
Ada intends REFL tomorrow in the two parks to meet.
'Ada intends to meet in the two parks tomorrow.' **false** in (46c)

4.3 Interim summary

In sum, our story for the EP-restriction boils down to the following: Predicates that themselves embed semantically plural expressions or involve overt distributivity operators are "divided up" into different parts. The semantics of MPs_{PC}, in turn, require its property argument (the denotation of the embedded clause) to consist of individuals that a self-candidate of the matrix subject is a part of. Accordingly, if a predicate is divided up into parts, all these parts must meet this requirement. The effect of this is that cumulative readings become "invisible" and that the use of overt distributivity operators is odd because we are attributing properties to a semantically singular self-candidate of the subject. Collective predicates are fine as long as all their parts (in those cases where they exhibit a part-structure) apply to pluralities that contain a self candidate of the subject.[25]

5 Discussion and outlook

We gave a semantic description of the EP-restriction in German PC and argued that it follows from two assumptions: (i) MPs$_{\mathrm{PC}}$ involve an attitude de se (Pearson 2016), so the property denoted by the EP must consist of pluralities that include a self-candidate of the matrix subject. (ii) Predicates can denote (sets of) pluralities of properties, and the parts of these pluralities can apply to different parts of their semantically plural arguments (Haslinger & Schmitt 2018, 2019).

This sketch leaves much room for further research (apart from the technical issues mentioned above). On the one hand, we took an overly simple view of collective predicates, treating them as a homogenous class. Yet, they are known to exhibit a divergent behavior in various respects (e.g. Dowty 1987, Landman 2000) and it is unclear, both empirically and analytically, how this is reflected in PC (and whether the behavior of collective predicts PC can inform us about semantic differences between them). On the other hand, we used a very simplified semantics of MPs$_{\mathrm{PC}}$. We omitted a crucial feature of the proposal by Pearson (2016): She actually argues *two* properties are correlated in MPs$_{\mathrm{PC}}$: An expansion of the attitude subject's self-candidate, and an expansion of her "now-candidates" in her world-candidates. Pearson's lexical entry for a MP$_{\mathrm{PC}}$ C thus looks like (47) (where **C** is the set of triples of C-accessible worlds, times and individuals):

(47) $[\![\mathrm{C}]\!] = \lambda P_{\langle s,\langle e,\langle i,t\rangle\rangle\rangle}.\lambda x_e.\lambda t_i.\lambda w_s.\forall\langle w',t',y\rangle \in \mathbf{C}_{x,w,t} \rightarrow (\exists\langle w'',t'',z\rangle(w'' = w \,\&\, y \leq z \&(t''$ precedes t' or t' precedes $t'')\&P(w'')(z)(t'')))]$

In light of our approach, this raises the question whether the EP-restriction expands to predicates that access the part-structure of the temporal intervals expanding the subject's "now-candidates". At first sight, this doesn't seem to be

[25] Event-based analyses of plural predication (e.g. Kratzer 2003) would blur the distinction between predicates with and those without a part-structure: We would always relate an individual plurality to an event with a part-structure. (Thanks to Nina Haslinger (pc) for this point.)

the case: (48), where *jeweils* distributes over events, is fine. We leave this matter to future work – just as the more general question whether different MPs_{PC} vary with respect to the EP-restriction and, if so, to what extent this variation correlates with independently attested semantic differences between them.

(48) a. CONTEXT: Ada wants to go to three different pet stores.
b. Ada hat vor, jeweils genau zwei Tiere zu kaufen.
Ada intends each exactly two pets to buy
'Ada intends to buy exactly two pets at each pet store visit.'

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Chapter 14

If size ever matters, let's compare

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Originally intended as a manifest allusion to the title of this book, I selected comparatives in the context of negative polarity items (NPIs) as the guiding theme of this paper. It is well understood why weak NPIs are compatible with the comparison standard, but two other facts have escaped linguists' attention. Firstly, the items in question always receive an interpretation that is characteristic for universals (even *ever* in English, generally taken to be a genuine existential NPI); and strong NPIs are totally unacceptable. Trying to establish an analysis of weak NPIs in terms of a Hamblin-style semantics (not unprecedented in the literature), opens an interesting path and seems feasible, although many details need to be worked out further. The second issue, infelicitous strong NPIs in comparatives, can well be aligned to the fact that negation itself must not occur in such a context, since the meaning of the comparative would be undefined then. Finally, contemplating sub-trigging cases of weak NPIs in terms of Hamblin-sets opens up further space for such a trait, and presumably offers a better explanation of what actually goes wrong when weak NPIs are not licensed properly.

1 Introduction

Initially, it seemed a bit tricky to find anything that would justify the participation in a book project dedicated to the notion of size in linguistic theory, when having basically focused on polarity items (PI) in linguistic work. But then, the idea occurred to me that I could refer to size as a dimension in the object language, steering the discussion towards comparatives, which are quite an interesting environment in the context of negative polarity items (NPI).

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Still, I searched for more to say rather than replicating my not all too seminal analysis of weak NPIs with universal force in the standard of comparison. This in itself is puzzling and provides us good insights about the nature of NPIs. Fortunately, I stumbled over the long-known fact that comparatives, while being provident licensors for weak NPIs, seem to be in conflict with negation, on a par with strong NPIs. But, no rule without exception – and these exceptions bear some analogy to sub-trigging cases where weak NPIs apparently live well without overt or covert licensors, the only thing that has to obtain is contingency. Only within a greater context of phenomena it becomes really worthwhile to search for better answers to long-pending questions.

However, the issue at the core of all this is actually the size of the set of potential referents. That size is at stake was formulated in Kadmon & Landman (1993) who reported the effect of widening induced by weak NPIs (plus strengthening). Both terms were re-engineered on various occasions by Chierchia (2004, 2013). Alternatively, Krifka (1995) follows a different trait. On his account, weak NPIs such as *any* in English denote the entirety of entities that comply with the properties defined by the noun (phrase). Super-size – without limits! This particular property can be made responsible for the particular behavior of so-called weak NPIs. Size matters, indeed.

2 Some remarks on NPIs

To my knowledge, the term NPI was coined by Klima (1964) and referred to the weak NPI *any* that was related to its alleged positive polarity item (PPI) counterpart *some* by a set of transformational rules. That this relation was not at all warranted has been shown by Lakoff (1969): Questions are a grammatical context that licenses both items equally well (e.g. "who wants {any/some} beans?"). The only difference that can be detected is that the PPI *some* triggers an existential presupposition, whereas the NPI *any* definitely does not. It can be interpreted neutrally (in the well known sense that it renders total indifference towards which beans) or with a negative bias when focussed, expressing the expectation of a negative answer. It is important to note that this bias is not obligatory. Regarding the PPI *some*, I still contend that it is an indefinite carrying along a presupposition of existence (see Neubarth 2006), hence its resistance to be in the scope of negation, unless negation is cancelled out. Definitely, it is not a counterpart to NPI *any* in any way.

The story is well known, but I need to rehearse a few details that are crucial to the analysis I want to establish later. Ladusaw (1979) was the first to note that entailment properties of the semantic context play a crucial role, while a few years later Linebarger (1987) claimed that (syntactic) negation plus pragmatic factors akin to the bias mentioned before are responsible for licensing NPIs. What she overlooked is that NPIs do not form a uniform class. While previous analyses considered weak NPIs such as *any*, they did not differentiate them from strong NPIs, such as *a single* N or *budge an inch*. From an empirical perspective it is clear that strong NPIs create a bias in many cases, while weak NPIs may well have a neutral interpretation in environments that do not involve negation. It was Heim (1984) who noticed this difference for the first time, and Zwarts (1993, 1998) came up with an analysis in terms of downward-entailing (DE) vs. anti-additive environments. His work was also responsible for establishing the distinction between strong and weak NPIs, now generally used in the literature. Taking into consideration the over three decades' worth of existing investigation, ideas, and disputes, I will try to lay out what I believe to be the relevant properties of these two types of NPIs.

2.1 Strong NPIs

NPIs of this class always have a quantified NP that can be interpreted as a minimal quantity (e.g., *so much as a single* N), and most often they are equipped with (at least) one focus-attracting particle (*even a single* N). A few of them are indeed idiomatic predicates (e.g., *budge an inch*). Consider the example from Heim (1984: 104):

(1) Every restaurant that charges so much as a dime for iceberg lettuce {ought to be closed down/$^{??}$actually has four stars in the handbook}.

The restriction of universals is clearly a DE environment. By virtue of that, all propositions with members on a scale consisting of alternatives to the minimal quantity expressed by *a dime* will be entailed by the sentence given. These may be higher numbers than just one, or more valuable monetary units. In other words, the proposition with the minimal quantity yields the strongest assertion. If the context for the NPI were not DE, the assertion would be the weakest possible, and – frame it as you wish – it is clear that such a sentence would be unacceptable. Thus, having established the need for a DE context (as proposed by Ladusaw 1979 and others), the question is still pending why the two examples (merged into one) are different. The second version, where the universal subject DP (or rather QP) is in a non-modal, indicative environment is clearly unacceptable.

The rationale behind this is that it is not a minimal quantity, but actually interpreted as a minimizer. It cannot be a real quantity (albeit it has the linguistic form of one).[1] The only way to achieve this effect is to exclude a situation where the extension of the DP in the evaluation world is not the empty set. Negation provides the right context, weak DE quantifiers such as *few* clearly do not, in fact they explicitly assert that the extension has "a few" members. When dealing with the restriction of universal quantifiers or antecedents of conditionals it is not clear whether there is an extension in the real world. As Heim already noticed, adding an appropriate modal to the sentence already does the job – prohibiting an inference to the real world.

While the acceptable version of (1) could be paraphrased as some kind of threat, the following example clearly cannot, indicating that it is just the mere ban on extension in the evaluation world induced by the minimizer, rather than some pragmatic devices, as suggested by Linebarger (1987). Consider the following example in German:

(2) Wenn du auch nur ein einziges Stück von dieser Torte kostest,
if you even a single piece of this tart try,
{wirst / würdest} du sehen, dass sie irgendwie doch gut
{will-IND / will-COND} you see, that it somehow nevertheless good
schmeckt.
tastes.
'If you tried even a single piece of this tart, you would see that nevertheless it tastes somehow good.'

To be on the safe side I used the hypothetical conditional for the English translation. In German, the use of the subjunctive is not obligatory. But notice that the conditional in both languages is not counter-factual. What is more interesting is first that we have an NPI with a focus-attracting particle, and second that in German what is expressed by *even* in English actually involves two particles: additive *auch* ('also') and exclusive *nur* ('only').[2] In English, the role of the particle *even* is marginal (otherwise we would not find strong NPIs without it). Basically, it fosters the scalar reading by presupposing a scale of likelyhood, where the element in focus is at the bottom of that scale (see Lee & Horn 1994). This likelyhood scale matches the scale of entailments in DE environments, a crucial circumstance. The German (or Italian) case is striking, though, since neither of the particles is scalar in nature.

[1] Manfred Krifka (p.c.) once pointed out to me that this property could well be compared to the epsilon in infinitesimal calculus: an arbitrarily small positive quantity. His definition (in Krifka 1995) involves exhaustivity.

[2] The same is true for Italian (see Guerzoni 2003).

Starting with the "inner" particle *nur* ('only'), its semantics is that it presupposes the truth of the proposition applied to the element in focus and asserts that for all alternatives (ordered or not) the proposition will be false (Krifka 1998, Wagner 2005). When in the scope of negation, the implicit universal operator (over alternatives) is negated and the interpretation of exclusiveness is explicitly denied. In our case, as part of an NPI, *nur* presupposes the truth of the minimal element and asserts the falsity of all other elements. This is definitely not what we want for *nur* as part of an NPI. Remember, that the scalar reading is induced by virtue of the minimal element being interpreted as a minimizer alone, and the particles just reinforce that interpretation.

The second, additive particle has almost contrary properties: *auch* "expresses that the predication holds for at least one alternative of the expression in focus" (Krifka 1998: 111). So, in fact it is the additive particle that reinforces the scalar interpretation. But what are the alternatives? Following an idea proposed by Manfred Krifka (p.c., at SemNet 2007 in Berlin), the alternatives are expressions of the form "*nur* X" where X stands for the complex of a (numerical) quantifier Q and its restrictor, the NP part, whereas Q can have any value different from one (the minimal value). Due to the mandatory DE-context, all these alternatives are entailed by the minimizer, as before, whereas likelyhood coincides with entailment.

The interplay of the two particles is structured as follows: the higher particle *auch* enforces presupposed alternatives (that need to be true), but it shields the expression headed by the lower particle from the effect of negation, which would target the universal over its alternatives.[3] Rather, the lower particle *nur* establishes a scheme that defines the alternatives of the higher particle, i.e. "*nur* X", where alternatives vary over X (or better, the quantifier contained in it). Intuitively, it is clear what happens: the meaning of *nur* only applies within its domain, the focus or one of the alternatives of *auch*. Outside, on a higher structural level of semantic interpretation, neither the presupposition, nor the universal over alternatives are visible. Rather, a higher scoping negation would target the indefinite within. I admit, this is a mere sketch, more work would be needed to specify out the details in a cleaner manner.

Krifka's (1995) proposal for strong NPIs involves an emphatic assertion operator. These sketchy ideas are not only well compatible with his approach, they actually derive from it. The scalar nature of strong NPIs is sometimes triggered by lexical aspects (e.g., *a dime*), in other cases by focus attracting particles, where

[3] I am not sure if this could be regarded as a case of intervention as observed with quantifying expressions.

focus makes (quantificational) alternatives “visible”. Krifka is very cautious about identifying the causality of the particular behavior of strong NPIs. Clearly, they convey an “extreme” meaning w.r.t. their position in the induced scale. He also notes that Zwarts’s (1993) notion of anti-additiveness is too strict, given that examples with “extreme” items can license strong NPIs without fulfilling the requirement of being anti-additive in a strict sense (e.g., *Hardly* ***anyone*** *lifted a* ***finger*** *to help me.*, Krifka 1995). Such examples challenge the universal claim for a ban on extensional instantiation.[4]

Another issue with licensing of strong NPIs in the standard of comparatives is, again, the status of its context. These contexts are at least Strawson anti-additive, which would render them licensed, under standard assumptions. Since they are not licensed, we need to turn our attention more to the semantic properties of particular items rather than searching for the right definitions of the contexts that would license a particular item.[5]

To sum up, strong NPIs require two things: first, a DE context, and second, that they have empty extension, given their interpretation as minimizers. This formulation is similar to Zwarts’s (1998) characterization that strong NPIs demand an anti-additive context, but it also accounts for the observations in Heim (1984). This will be essential for an explanation why strong NPIs are not licensed in the context of comparatives.

2.2 Weak NPIs

This type of NPI differs from strong NPIs, as can be illustrated by the mere fact that NPI-*any* is often discerned from a free-choice item (FCI) *any*. Horn (2000) undertakes a comprehensive survey about which authors have lent themselves to a univocal existentialist or universalist approach, and which have adopted lexical ambiguity. While I would object to the last option on conceptual grounds, the data indeed oscillates between a quasi-existential and a quasi-universal interpretation. In Neubarth (2017) I have expressed my unhappiness about this alleged bifurcation of interpretations and shown that in the context of comparatives the

[4]As one reviewer pointed out, this situation seems close to what Giannakidou (2007) identified as the property of an antiveridical operator – to prevent extension in a world of evaluation. It is not fully clear to me whether her notion of antiveridicality does the job. Furthermore it is doubtful whether we need to categorize the context in such a way, rather than focusing on the semantic properties and the interpretation of the items in question.

[5]Gajewski (2010) remarks that Strawson entailment relations are not at issue with licensing NPIs. However, he discusses only superlatives, leaving open the question whether his findings can be transferred to comparatives as well.

NPI *ever*, generally taken for existential, also receives a quasi-universal interpretation. My conclusion then was that the distinction between existential and universal should not be applied at all to weak NPIs.

Quoting from there, the most sensible meaning of weak NPIs is "that they actually denote the set of all possible referents that fulfil the properties denoted by the noun phrase (including cardinally modified pluralities, such as *any two X*), or, in case of *ever*, the set of all relevant (accessible) situations/times." This is reminiscent of a Hamblin-style semantics (Hamblin 1973) and would explain why we never get effects of existential closure, or in the sense of Reinhart (1997) the application of a choice function that would determine the reference of an (indefinite) nominal expression.

What I still take to be essential from there is that under the view that lexical items have just one meaning (save polysemy, rarely found with grammatical lexemes) it cannot be a "special" property of these items to denote either existiential, quasi-universal or free-choice meanings, but rather the other way round. Elaborating a bit further, these items just block what normally happens when we encounter a non-definite nominal. Therefore its interpretation can simulate both, a universal or an existential interpretation. Conditionals are a classic example are – in the case at hand with two different continuations:[6]

(3) If she can solve any of these three problems
  a. she must be a genius.
  b. she has good chances to pass the test.

The partitive is on purpose here, it excludes an interpretation where widening takes place, problematic for Kadmon & Landman (1993), but presumably amenable. In (3a) we get a quasi-universal interpretation, however, mediated through the FCI *any* (in the sense of 'no matter which'), whereas in (3b) there is a quasi-existential interpretation at stake, still affected by the 'no matter which' premise, but it seems sufficient to solve one problem in order to fulfill the antecedent of the conditional. Under a closer look, we see that the two uses of *any* are tied to different scales of expectation, targeting likelihood. In the first variant, the full set is the domain of reference and the continuation enforces a low

[6] One reviewer comments that this example is ambiguous between a free-choice and an existential reading due to the modal *can*. This is correct, and exactly the case: the modal enables both readings. However, what the example really shows is that the interpretation switches between an existential or a free choice interpretation, sensitive to the context which determines direction of a scale of likelihood (or expectation). I would argue that the meaning of *any* does not change, but its interpretation does, according to context.

expectation to solve all three problems. The reverse is true for the second variant, for which there is indifference about the choice, but any choice fulfills the requirements, cf. Dayal (2004). Under closer scrutiny, we see that it is barely the responsibility of the weak NPI to trigger those two interpretations. Rather, the context determines whether one is sufficient, or *any of these three problems* is interpreted as covering the entire set.

Setting those things aside for a bit, let us move on to investigate the perennial question what makes weak NPIs infelicitous in non-negative, declarative contexts? Krifka (1995), in my opinion, has provided the most intuitive definition of weak NPIs: an expression of the form *any X* denotes an entity out of the set of all entities that fulfill the property X, but deliberately in the most unspecific way. This definition implies that context is intentionally not revealed or provided. Logically, a proposition p containing such an expression is weaker than any other proposition containing a more specific, alternative expression. Krifka proposes a pragmatic principle of scalar assertion, where *scalar* refers to ordered strength. His argument is that for every potential alternative proposition p' being stronger than p, this proposition must not be true (a line of reasoning that Chierchia 2004 continues).

In the case that stronger propositions can be true, there is no direct contradiction, but the assertion becomes undefined. In a DE context, where the direction of entailment is reversed and the most general expressions yield the strongest propositions, all propositions containing alternatives become weaker than p. Following Krifka, we can safely deduce that DE contexts provide an environment for weak NPIs where they can contribute to interpretable (=defined) assertions. When a weak NPI such as *any* has focus, the alternatives become explicitly visible and propositions p' containing them need to be false by pragmatic principles. Even more so, a felicitous interpretation depends on scale reversal, in order to provide a stronger (or the strongest) statement while widening the domain of reference to its maximum. In this regard, the present analysis is compatible with that of Kadmon & Landman (1993), who also stress the effect of widening the domain of reference, even though they do not refer to DE as a condition for *any* or provide an independent explanation for the infelicity of certain contexts.

Dayal (1998) goes as far as to propose a universal operator that leads to a presupposition failure when occurring in non-subtrigged epistemic contexts. In order to remedy quasi-existential interpretations, but also to ensure that FCI *any* is licensed by a possibility operator, and not by necessity operators (without further modification). This requirement of indeterminacy, "as a grammatical constraint against the extension of the relevant property (the intersection of the nominal and the verbal properties) being the same in every accessible world" (Dayal 2009:

237) was refurbished as "fluctuation" (Dayal 2013). There she formulates a "viability constraint on alternatives", aligning her analysis to Chierchia's (2011) account of NPIs. It provides a more independent grounding within a semantics dealing with alternatives. The connective idea behind this is that FCI *any*, while being an indefinite, hooks up to a universal operator. In her most recent account based on "viability", this universal operator arises as a (FCI) implicature that is enforced by negating all exhaustified sub-domain alternatives.

The discussion revolves about the question how to achieve the Janus-faced interpretation and in the case of a quasi-existential interpretation how to ensure the property of indeterminacy. Other accounts on NPIs make more direct use of a semantics based on the work of Hamblin (1973) (see Ramchand 1997, Kratzer & Shimoyama 2002, Kratzer 2005, Novel & Romero 2009 among others, especially substantial elaborations on the nature of free-choice effects in Fox 2007, Chierchia 2013). The meaning of an indefinite is not quantificational per se, but actually the set of alternatives (contextually available referents). This set percolates up, potentially to the propositional level, but may also be closed off by an appropriate operator, actually the first one occurring during the compositional procedure. This still does not explain our apparent ambiguity, but at least it explains why NPIs keep licensed in cases where a higher operator might reverse the scale again (e.g., double negation).

While a formal elaboration is not yet complete, I have outlined that:

i. indefinite expressions are analyzed as Hamblin-sets,

ii. weak NPIs (also in their guise as free-choice items) generally resist whatever means of "existential closure" – that sets them apart from common indefinite expressions,

iii. the quasi-existential interpretation comes about when existential closure is "imported" from somewhere else, while keeping truth conditions on the whole set intact,

iv. the quasi-universal reading receives a natural explanation since it reflects entire access to the members of a Hamblin-set.[7]

[7] One could object that Hamblin sets are generally disjunctively combined, resulting in existential meanings. (Thanks to a reviewer to point out this issue). Nevertheless, I consider this not at the core of a (quasi-)Hamblin semantics. Whether an indefinite receives an existential meaning depends on the context (and most often the context provides existential closure). In that respect, free-choice is particularly intersting, since free-choice is neither genuinely universal, nor existential in the common sense, but either quasi-existential ("the one that you choose") or (modalized) quasi-universal ("of the whole set, feel free to choose (any) one").

A bit more needs to be said about items ii.–iii.: definitely, *any*+NP expressions, and their kin, are different from plain indefinite expressions, and while they might share a few intersections with those for example in generically interpreted contexts (cf. Kadmon & Landman 1993), they cannot be subject to existential closure, or binding by a choice-function. Whatever you take, the Hamblin-set prevails. Unfortunately, this remains a mere stipulation, not deduced by other criteria. Regarding the quasi-existential interpretation, I reckon that it comes about either when we have negation involved, but this is a bit of an illusion: de facto the interpretation is non-existential. Or with downward entailing quantifiers (e.g., *Few voters of the president have read any book.*), where the quantifier *few* provides a context where the availability of the whole set is not violating pragmatic principles of assertion in the sense of Krifka (1995). Nevertheless, it is interesting to observe that in German the correspondent to the given example involves the same construction that has been discussed with strong NPIs:

(4) Wenige Wähler haben auch nur irgendein Buch gelesen.
few voters have any book read.
'Few voters have read any book.'

Recall that the *nur* particle confines the reference to the item in scope, by its presupposition, while negating the truth of the alternatives. On the other hand, the higher additive particle *auch* reinforces alternatives and shields the lower particle from percolating its presupposition (which needs to be treated in a more dynamic way), but also shields the assertion from reversing its truth value under negation. My tentative formulation was that this encapsulation takes place by enacting a higher order treatment on alternatives, where the *nur* ('only') DP expression serves as a scheme that is not evaluated outside the scope of the higher particle. As Kratzer & Shimoyama (2002) and Kratzer (2005) point out, the contribution of *irgendein* is to make the alternatives being kept available in a way. What is striking is that before, when dealing with quantificational minimizers, which yield strong NPIs, there was no way to escape the ban on manifest extensions, while here it seems as if we have found a (partial) correspondent of English *any*, well suited for a quasi-existential interpretation.

This is the point where we have to perform some sort of looping. When the expression *irgendein Buch* is introduced, it refers to a potentially infinite set of books. In German, the particle *nur* selects one, most unspecific – and that is the loop – by virtue of being most unspecific. Then we are with Krifka (1995) and his reasoning. DE is mandatory, of course, but it is warranted. But why not a ban on non-empty extensions? I would contend that this is exactly because there is no quantitative entailment. Any individual assignment of 'few voters' to books they might have read does not contradict the whole. In other words, the Hamblin-set gets evaluated at the level of interpretation of the quantifier 'few' that itself is exclusive towards an unspecified majority. Once this evaluation has taken place, the Hamblin-set will not be accessible at the level of proposition. Again, this would need a formal elaboration, but what I aim at here is just to push the conceptual idea of utilizing Hamblin-sets in a more general way, admittedly in a more or less naive manner. Let us move on to the main topic or this paper, NPIs in the standard of comparatives.

3 NPIs in the standard of comparatives

While comparatives are complex in general, their grammaticality is simple in NPIs. Weak NPIs are absolutely natural in the standard of comparison (and not licensed outside, of course), whereas strong NPIs are strictly ungrammatical.

3.1 Weak NPIs and comparatives

Let us leave out the latter for a moment and start with weak NPIs. Actually, as of what has been said before, it is not a miracle that they live so well there: the standard of comparison is a DE environment. What is puzzling is that the interpretation weak NPIs receive is a (quasi-)universal one, as noted by Schwarzschild & Wilkinson (2002). When representing the denotation of indefinites as Hamblin-sets that resist existential closure, they just live up to where the standard of comparison is evaluated. I want to discuss this effect with a classical account on comparatives, notwithstanding that there is much more to be said on comparatives per se.

Weak NPIs always have a universal interpretation in the comparison standard. Even *ever* that is normally taken to be confined to (quasi-)existential interpretations receives such an interpretation. Building on those findings, in Neubarth (2017), I defend a position where the distinction between existential and universal interpretations should be abandoned for these kinds of NPIs. For ease of demonstration, I will refer to von Stechow's (1984) analysis of comparatives.[8] That weak NPIs receive a universal interpretation in that context has already been noted in Stechow's paper, and also later in Schwarzschild & Wilkinson (2002), albeit just

[8]This approach has some well-known difficulties, particularly in connection with universal quantifiers. Various authors have tackled this problem, coming up with solutions that are closer or more distant from von Stechow's original proposal. See for example Schwarzschild & Wilkinson (2002), Heim (2006), Beck (2010), Fleisher (2016).

in a footnote, but rarely else. Von Stechow's assumes that the standard of comparison (the *than*-complement) determines a property of degrees one can abstract over, rendering the whole a nominal with scope, thus enabling but also reinforcing raising. One of the most appealing features of von Stechow's analysis is that it treats semantics and syntax on a par. The meaning of the comparative complement can be represented as "the(Max(P))" (von Stechow 1984: 55), where "the" stands for the Russellian definite description operator, and "Max(P)" is maximization over degrees that is defined in such a way that it is the property being true of any degree d in a world w, given that there is no other degree $d' > d$ that would be true in this world as well.

Various analyses are possible regarding weak NPIs. Pushing the Hamblin-set idea, it appears quite plausible that the maximization function of the comparative would be satisfied to evaluate over an indefinite that offers a (non-closed) Hamblin-set. This would yield a nice explanation for the quasi-universal interpretation: maximization evaluates the whole set indiscriminately, so its character as a set prevails. Later accounts on comparatives, i.e. von Stechow (1996) and Heim (2000), also build on the core insight that there is a function that goes over all alternative degrees. This extends to the equative as well, since its meaning also rests on maximization.

Notice that it might not be the DE property of comparatives that "licenses" weak NPIs of the *any X* type. If this were indeed the case, the hybrid NPI in German with a focus-attracting particle but no quantifier should equally be licensed (as in other DE contexts). However, the sentence is considerably odd:

(5) ?? Gustav ist größer als auch nur irgendeiner von seinen Kollegen.
Gustav is taller than even anyone of his colleagues
'Gustav is taller than *any* of his colleagues.'

Although the context is DE, it seems that the scalar nature of the NPI in question gets in conflict with maximization that expects an unordered, fully accessible set of alternatives to apply upon. As they represent Hamblin sets, weak NPIs provide ideal conditions for maximization.

3.2 Strong NPIs, negation and comparatives

The fact that negative expressions are not possible in the standard of comparison is well known at least since Lees (1961), among others, Ross (1980) and von Stechow (1984) commented on it, but I will mainly refer to Lechner (2002), who observed a substantial exception to the pattern that has been labeled inner island violation II (see example (7) below).

Returning to von Stechow's analysis for a moment, the incompatibility of negation and comparatives yields a straightforward explanation. Alongside Russell he remarks that it is impossible to apply the definite description operator onto an empty set, since the definite description simply does not denote then. It is crucial to bear in mind that it is not the maximization function that causes the problem here. Also, von Stechow does not classify such sentences as ungrammatical, but rather as "extremely odd". So why is the comparison standard also adverse towards DE quantifiers? Consider the following examples:

(6) a. ?? Gustav is taller than few of his colleagues.
  b. Gustav is smaller than many of his colleagues.
  c. Few of his colleagues are smaller than Gustav.

We are dealing with a linear scale of size here. All three sentences would mean that the size of Gustav is in the lower range of all sizes abstracted over his colleagues and him. This can be stated explicitly as in (6b), or implicitly as in (6c), which asserts that the number of colleagues with a size smaller than that of Gustav is small. Applying a proportional reading on *few* gives us the correct result. But (6a) is odd. The best available explanation is that a quantifier such as *few* lends itself to a scalar implicature comprising the empty set (*few if not none*).

Interestingly, Lechner (2002: 12) comes up with a case where negation can occur with a comparative. This is what he calls "parallel comparatives":

(7) Mary read more books than she didn't read.

He further notes that this effect is only possible with count nouns, not with predicative, attributive comparatives, and not with mass terms, stating that "it seems as if a bi-partition can be established only if the comparison relation operates on degrees that keep track of cardinality (as in *d-many books*)". This is already an explanation: only when the set of entities yielding degrees to abstract over is a contingent complement to another set of a larger set of entities (i.e. *books she didn't read* vs. *books she read*) is it possible to fulfil the requirement that the maximized set of degrees can denote.

Now, with strong NPIs we might wonder why they are impossible in a context that can be shown to be DE. Actually, comparatives are a good test-case to discern strong from weak NPIs, which are fine in comparatives. But it is not the mere lack of an anti-additive operator, as Zwarts would have stated, but the fact that comparatives and strong NPIs bear contradicting conditions. While comparatives need to make sure that the set of extensions w.r.t. entities with a property that yields degrees must not be empty, strong NPIs demand the opposite, otherwise their own meaning leads to a contradiction.

4 A note on contingency: Sub-trigging

The previous example (7) might also be relevant for one of the most interesting puzzles concerning weak-NPIs: sub-trigging. Providing a set with a defined cardinality by partioning the set of books in a given context shares some similarity to extending a set of entities into a set of situations (in a given context). Both cases would not work without some sort of contingency. As already noticed in LeGrand (1975), weak NPIs may show up in simple declarative sentences given that their restriction is confined in an appropriate way (see Dayal 1998 for an extensive discussion and analysis).[9] In fact, it is in this paper where she defines the essential condition on sub-trigging: the quantified expression must be restricted essentially and propositionaly in such a way that it provides its own situation variable that, however, must be able to extend into the situation variable of the whole sentence. Consider the contrast in the following pair (Dayal 1998):

(8) a. Bill offered Mary everything/*anything he had cooked for dinner.
    b. Those days Bill offered Mary everything/anything he cooked.

While (8b) fulfills the conditions of contingency, (8a) does not, since there was only one cooking event/situation that would not be contingent on each individual offering of the products of Bill's kitchen. What remains to be answered is why non-contingently restricted simple declarative statements are unacceptable, and why contingent restriction provides remedy.

Recall that Krifka's explanation rested on the assumption that weak NPIs are scalar in terms of specificity. Scalar assertion in non-DE contexts is not possible on pragmatic grounds, since by scalar implicature every stronger proposition (applying the scheme to more specific alternatives) needs to be false, but by virtue of the weak NPI comprising the whole set of entities with a given property (e.g., being a "thing") this is contradicted in non-DE contexts. Q.E.D., but does it, or how does it carry over to sub-trigging?

Weak NPIs denote Hamblin-sets that cannot be turned into a referential expression by existential closure (or, under an alternative account by applying a choice-function). However, these Hamblin-sets have to be "tamed" in some way or other. If not, the only interpretation available would be as a minimally specific expression yielding the weakest possible statement in non-DE contexts. Hence, Krifka's reasoning must apply. When sub-trigging obtains, each member of the Hamblin-set is individually bound to an event/situation that matches up

[9] I use the term "weak NPI" for *any* in a generalized way, assuming that there is no lexical ambiguity involved. Other authors, including Dayal (1998), systematically discern between (weak) NPIs and free-choice items, with varying implications.

the event/situation set of the main clause, hence externally defined. Notice that while the set still remains the same and projects, it is strictly confined (and also defined) by the set of event/situation of the given main clause. In such a case, but perhaps also in other cases, the scalar reasoning cannot be applied anymore, and the weak NPI receives a sensible interpretation (the assertion is meaningful).

5 Conclusion

While following my long standing desire to support the hypothesis that there is no lexical ambiguity between existential and free-choice (weak) NPIs, I have focussed – not only to match the title of this book – on NPIs in the context of comparatives. I try to show that an analysis in terms of Hamblin-sets would not only work well within standard semantic analysis of comparatives (using von Stechow (1984) as a point of reference), but also give a natural explanation to the fact that the interpretation of weak NPIs, including /em ever, is always (quasi-)universal within the standard of comparatives. On the other side, strong NPIs are not felicitous there, at all. The reason behind this is that comparatives and strong NPIs have contradictory conditions regarding the set of entities one can abstract the relevant degrees from. While the former require it not to be empty, strong NPIs demand it to be the empty set. Finally, I speculated about subtrigging cases which by definition require contingency between the restriction of the weak NPI and the event/situation frame of the main clause. I propose to make contingency responsible for the blocking of a scalar reading of the NPI, just as in comparatives.

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Abbreviations

DE	downward entailing	NPI	negative polarity item
DP	determiner phrase	PI	polarity item
FCI	free-choice item	QP	quantifier phrase
NP	noun phrase		

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Chapter 15

Domain size matters: An exceptive that forms strong NPIs

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The study of exceptives provides important insights into the nature of negative polarity items (NPIs). Specifically, the NPI nature of exceptive phrases in English can be transparently related to the compositional operation of shrinking the domain of a quantifier. But we show that exceptive phrases in Japanese form strong NPIs while English exceptives form weak NPIs. We account for the difference between Japanese and English by suggesting that exceptives in the two languages select different exhaustification operators. Our result may provide a new avenue towards understanding the difference between strong and weak NPIs.

1 Introduction

A frequent route of inquiry in linguistics and other fields of science is to understand complex properties of a structure by first decomposing the structure into its pieces and to then analyze how the different pieces give rise to the complex properties. The understanding of the complex behavior of negative polarity items (NPIs) has been greatly advanced by a series of papers on exceptives by von Fintel (1993), Gajewski (2008), and Hirsch (2016) that follows this route. Specifically, the underlying assumption of this line of work has been that the NPI nature of some English exceptives derives from their compositional structure and its interaction with the environment it occurs in. The idea is that the function of an exceptive can only make sense in an environment that licenses NPIs, i.e. an *antitone* envi-

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ronment.[1] We introduce this idea by means of example (1) here, and then in more general terms in §3.

Polarity phenomena relate closely to quantification in language. Quantificational meaning depends on the size of the domain of a quantifier. An exceptive phrase in a quantificational statement provides a way to restrict the domain of the quantifier. Consider for example the English sentence (1).

(1) No player but Susi has access to the ocean.

The exceptive phrase *but Susi* in (1) has a number of semantic effects. The primary one is to reduce the size of a domain as illustrated below: If s representing Susi was an element of the domain of players, the exceptive *but Susi* forms a smaller domain where s is no longer an element.

$$\begin{aligned} \text{player:} &\quad \{s, j, u, k\} \\ \text{player but Susi:} &\quad \{j, u, k\} \end{aligned}$$

The immediate effect of the exceptive is then that (1) expresses a generalization over a domain that Susi is no longer part of: (1) requires that players j, u, and k have no access to the ocean, but exempts Susi.

In fact, (1) provides more information about Susi than merely exempting her. We infer from (1) that Susi does have access to the ocean. This inference can be derived as an implicature of the domain size reduction by the exceptive: Roughly speaking, we assume that the speaker's reason for exempting Susi must be that (1) would be false without the exceptive. That means that the speaker must believe that the property *has access to the ocean* must be false of each player in $\{j, u, k\}$, but true of at least one player from $\{s, j, u, k\}$, which entails that it must be true of s. In other words, Susi must have access to the ocean.

The implicature provides an insightful approach to the NPI distribution of exceptives in English. Briefly compare the ungrammatical (2) with (1).

(2) * Some player but Susi has access to the ocean.

The line of explanation we adopt is based on the fact that the implicature predicted for (2) stands in contradiction to the primary meaning of (2): Namely, the primary meaning asserts that one player from $\{j, u, k\}$ has access to the ocean.

[1] We use the traditional order-theoretic terms *isotone* and *antitone* (Birkhoff 1940) because they are more concise and widely accepted than their synonyms. Specifically the terms *upward entailing* or *upward monotone* and *downward entailing* or *downward monotone* are synonyms of *isotone* and *antitone*, respectively, that are used widely in linguistics.

But the implicature requires that no player from the set $\{s, j, u, k\}$ has access to the ocean. Both cannot be true at the same time. The ungrammaticality of (2) follows from the contradiction we just observed if we make two further assumptions: 1) implicatures of the type we observe here with exceptives are obligatory inferences and 2) contradictions of the type we observe here can lead to the perception of ungrammaticality. Both assumptions, surprising as they may initially seem, have been supported by a number of interesting further predictions they make (Chierchia 2013, and others). We therefore adopt the approach just outlined, which we discuss in more detail in §3 below.

Our main concern in this paper is Japanese data with *sika* such as (3). *Sika*-phrases have been analyzed as exceptives by Alonso-Ovalle & Hirotani (2004), Yoshimura (2007), Kawahara (2008), and Shimoyama (2011).[2] But these works have assumed that *sika* is construed with a silent universal quantifier, while we argue that a silent existential quantifier makes better predictions.

(3) Pureeyaa-wa Susi-sika umi-ni akusesu-ga nai.
player-TOP Susi-SIKA ocean-to access-NOM NEG
'No player but Susi has access to the ocean.'

Sika-phrases share the basic NPI distribution of English exceptives. Note that the Japanese example does not contain a negative quantifier corresponding to *nobody*, but instead contains *sika* and the sentential negation *nai* ('not'). The distribution of *sika* is restricted, as shown by the ungrammatical (4), where the sentential negation of (3) is left out.

(4) * Pureeyaa-wa Susi-sika umi-ni akusesu-ga aru.
player-TOP Susi-SIKA ocean-to access-NOM exist

The contrast between (3) and (4) in Japanese closely resembles the one between (1) and (2) in English. But we show below that, overall, the distribution of *sika*-phrases is actually more restrictive than that of *but*-exceptives in English. In §2.3, we discuss the relation of *sika*-phrases in Japanese and one frequent way of expressing negative quantifiers in Japanese, an indeterminate phrase like *nani* ('what') with the particle *mo* ('all', 'also'), and the sentential negation. In §2, we propose that the difference in distribution between *but*-exceptives and *sika*-phrases is parallel to that between weak and strong NPIs. We then present

[2]Other authors like Hasegawa (2010) argue against an exceptive analysis of *sika*. Items similar to *sika* seem to also exist at least in Korean (*pukkey*, Sells 2001 and others) and French (*ne … que*, von Fintel & Iatridou 2007 and others), and have also been analyzed as exceptives at least in the works cited here.

in §3 a semantic proposal based on the work of Gajewski (2011) to account for the strong NPI distribution of *sika*-phrases, and also account for the difference between *sika*-phrases and negative concord. We conclude with a summary of the stipulations required for our analysis.

2 The distribution of *sika*-exceptives

In this section, we argue that Japanese *sika*-phrases have the distribution of strong NPIs while English *but*-exceptives have the distribution of weak NPIs. As we saw in the introduction, exceptives, like other NPIs, are licensed only in the immediate scope of operators that are antitone in a sense to be specified. In this section, we compare the distribution of *sika*-phrases with that of *but*-exceptives, that of other weak NPIs like *ever*, and that of strong NPIs like *in weeks* in English. In the following two subsections, we first consider environments that license both strong and weak NPIs, and then environments that only license weak NPIs. The generalization we substantiate is that *sika*-phrases share the distribution of English strong NPIs rather than that of *but*-exceptives. In the final subsection, we show that *sika*-phrases are licensed in many environments where also negative concord items are licensed in Japanese, but that there are also differences between the two.

2.1 Strong NPI licensing environments

Environments that license strong NPIs like *in weeks* in English are the immediate scope of negation, the scope of *without*, and the scope of negative universal quantifiers like *nobody*. Furthermore, the quantifier *few* is in some cases capable of licensing strong NPIs, but the matter is a bit complex (see the discussion by Chierchia 2013) and since there is no lexical item corresponding to *few* in Japanese, we will not discuss *few* in this paper. As far as we know, any environment that licenses strong NPIs also licenses weak NPIs.[3] English *but*-exceptives are licensed in the scope of negation, as (5) illustrates.

(5) Susi didn't choose any number but 11.

The parallel example (6) shows that a *sika*-phrase associated with the object noun *player-o* is licensed by clausal negation as well.

(6) Susi-wa suuzi-wa 11-sika eraba-na-katta
Susi-TOP number-TOP 11-SIKA choose-NEG-PAST
'Susi didn't choose any number but 11.'

[3] In Slavic, there may be exceptions.

Moreover, example (7) shows that a bare *sika*-phrase is also licensed in the same structural configuration. In other words, the Japanese *sika*-phrase does not need an associated NP that defines its domain of alternatives.

(7) Susi-wa 11-sika eraba-na-katta
Susi-top 11-sika choose-neg-past
'Susi chose only 11.'

One difference between English and Japanese arises with subjects: While a clause-mate negation does not license an NPI in subject position in English (with some exceptions, see Uribe-Etxebarria 1995), NPIs in subject position are generally licensed by clausal negation in Japanese. We think such differences relate to cross-linguistic differences in the position of the subject of the type Wurmbrand (2006) discusses. Thus, the fact that in examples like (9) *sika* is licensed is expected and should not be attributed to differences between English *but* and Japanese *sika*, but to different structural properties of the two languages.[4]

(8) * Anybody but Susi didn't eat sushi.

(9) Susi-sika sushi-o tabe-na-katta.
Susi-sika sushi-acc eat-neg-past
'Nobody but Susi ate Sushi.'

The requirement to be in the immediate scope of the licensor is an important property of polarity licensing, but one that does not distinguish between strong and weak licensing. Therefore, we do not explore this issue in detail here, but note that negation in restructuring environments (Wurmbrand 2001) can license a *sika*-phrase associated with the embedded object position (Muraki 1978).

(10) Susi-ga [Kazuko-ga kanozyo-to-sika kaado-o kookan-suru yooni
Susi-nom Kazuko-nom she-with-sika card-acc trade-do comp
nozoma-naka-tta.]
hope-neg-past
'Susi didn't hope for Kazuko to trade cards with anyone but her.'

[4] Also, negative concord items are licensed in the subject position of a negated verb in Japanese:

(i) Dare-mo sushi-o tabe-na-katta.
ind-mo sushi-acc eat-neg-past
'Nobody ate sushi.'

The argument of *without* is another environment where NPIs are licensed in English. There is no general counterpart in Japanese for the English expression *without* across all its possible uses. But in some cases, the suffix *nasi*, as in *hituzi-nasi* ('without sheep'), can be used. A *sika*-phrase is licensed within this structure, as shown below.

(11) Susi-wa 11-sika-nasi-de ka-tta.
Susi-WA 11-SIKA-without-at win-PAST
'Susi won without anything but 11.'

Licensors such as *without* are relevant for the classification of polarity sensitive words. We return to this topic below.

In English, *but*-exceptives are licensed in the scope of a negative quantifier, as the following example shows.

(12) Nobody chose any resources but sheep.

The Japanese counterpart in (13), however, is not acceptable (Kawamori & Ikeya 2001). This is curious given that there is a sentential negation that could license *sika*.

(13) * Dare-mo sigen-wa hituzi-sika tora-na-katta.
who-MO resource-TOP sheep-SIKA take-NEG-PAST
Intended: 'Nobody took any resources but sheep.'

When the subject is changed to a universal quantifier as in (14), however, the sentence becomes grammatical, suggesting that it is the existence of both a negative quantifier and the *sika*-phrase, both of which require a sentential negation, that affects the grammaticality.

(14) Dare-mo-ga sigen-wa hituzi-sika tora-na-katta.
who-MO-NOM resource-TOP sheep-SIKA take-NEG-PAST
'Everybody took no resources but sheep.' (lit: 'Everybody didn't take any resources but sheep')

2.2 Weak NPI licensing environments

Now consider environments that license only weak NPIs, but not strong ones (Zwarts 1998, Gajewski 2011). Relevant environments in English are the restrictor of universal determiner quantifiers such as *every*, the restrictor of negative universal quantifiers such as *no*, the restrictor of free choice *any*, and conditional clauses. As can be seen below, the strong NPI *in weeks*, for instance, is not licensed in any of these environments, as the following examples illustrate (Hoeksema 2005).

(15) a. * Every player who won in weeks celebrated.
   b. * No player who won in weeks celebrated.
   c. * Susi can beat any player who won in weeks.
   d. * If Susi has won in weeks, she is happy.

As we consider exceptives in these four environments in turn, we will see that *but*-exceptives are licensed in all of them while *sika*-phrases are licensed in none of them.

2.2.1 Restrictor of a positive universal

The following two examples show that *but*-exceptives are licensed when it is in the restrictor of a positive universal, as illustrated by (16), or in a relative clause, if the restrictor of *every* is formed by a relative clause, as illustrated by (17).

(16) Every player *but Susi* has access to the ocean.

(17) Every number that anybody *but Susi* likes was rolled.

Before we consider universal quantifiers in Japanese, let us clarify the general structure of the expressions we focus on. First, there are a number of quantificational expressions with positive universal force in Japanese, just like in English. In this paper, we primarily focus on quantificational expressions formed with *indeterminate pronouns* (Nishigauchi 1990, Shimoyama 2006, Yatsushiro 2009, among others), but the generalizations we develop hold, as far as we know, for other quantificational expressions as well.

Second, the Japanese quantifiers that we focus on are created by combining an indeterminate pronoun and a dedicated suffix, as illustrated in the Table 1. The most well-known use of the indeterminate pronoun is as a *wh*-phrase. In Table 1, we list other uses that are relevant for the following discussion.

Let us now consider whether *sika*-phrases are licensed in the same environment as *but*-exceptives. The sentence (18) is the Japanese literal translation of (16). The example is ungrammatical because of the presence of the *sika*-phrase. This may be because the environment the *sika*-phrase occurs in cannot license it, though it may also be attributed to an impossibility to attach the *sika*-phrase to a quantified noun phrase.

Table 1: Relevant ways in Japanese to combine three selecated Wh (or indeterminate) pronouns with a quantificational particle to form a universal, negative polarity or free choice item.

	Wh	Universal: *mo*	Negative: *mo*	Free choice: *demo*
who	dare	dare-mo-CASE	dare-mo	dare-demo
what	nani	nani-mo-CASE	nani-mo	nan-demo
which	dono	dono-NOUN-mo	dono-NOUN-mo	dono-NOUN-demo

(18) * Dono pureeyaa-mo Susi-sika umi-ni akusesu-ga aru
which player-MO Susi-SIKA ocean-to access-NOM exists.
Intended: 'Every player *but Susi* has access to the ocean.

We do observe, however, that the same contrast between English and Japanese obtains also for the literal translation of (17) in (19), where the *sika*-phrase occurs inside of a relative clause. Since, in this case, the *sika*-phrase does not occur with an associated nominal phrase, only the lack of a licensing environment can explain the ungrammaticality of (19).

(19) * Susi-sika suki-na dono-kazu-mo de-ta.
Susi-SIKA like-cop which-number-MO turn.out-PAST

This contrasts with example (20) in which a negation is added to the relative clause internal verb.

(20) Susi-sika suki-ja-nai dono-kazu-mo de-ta.
Susi-SIKA like-cop-neg which-number-MO turn.out-PAST
'Every number that nobody but Susi likes was rolled.'

2.2.2 The restrictor of negative universals

In English, the negative determiner *no* licenses a *but*-exceptive in its restrictor, as the following example illustrates (recall also (1)).

(21) No family members but Susi took a development card.

The Japanese counterpart (22), however, is ungrammatical.

(22) * Dono-kazoku-no itiin-mo Susi-sika kaado-o tora-na-katta
which-family-GEN member-MO Susi-SIKA card-ACC take-NEG-PAST

Recall that the grammatical example (3) in the introduction involved a bare noun and a sentential negation, whereas the natural English translation involved a negative quantifier. The contrast of (22) to its English counterpart on the one hand, and to (3) on the other, both point to the impossibility of licensing a *sika*-phrase in the restrictor of a negative universal quantifier. To further strengthen this point, consider also some slightly different structures. Example (23) shows that a *sika* phrase is also ungrammatical in the restrictor of the Japanese equivalent of *nobody*.[5]

(23) * Dare-mo Susi-sika 11-ni mati-ga na-katta.
who-MO Susi-SIKA 11-to town-NOM NEG-PAST
Intended: 'Nobody but Susi had a town on 11.'

Example (24) shows that a *sika*-phrase is also not licensed in a relative clause that is part of the restrictor of *dare-mo + na* ('nobody') in Japanese. In sum, we conclude that *sika*-phrases are never licensed within the restrictor of a negative universal in Japanese.

(24) * Susi-to-sika kaado-o kookan-si-ta dono-pureeyaa-mo
Susi-with-SIKA card-ACC trade-do-PAST which-player-MO
kata-na-katta.
win-NEG-PAST
Intended: 'No player who traded with anyone but Susi won.'

As was the case with universal quantifiers, adding a negation to the relative clause internal position licenses the *sika*-phrase.

(25) Susi-to-sika kaado-o kookan-si-naka-tta dono-pureeyaa-mo
Susi-with-SIKA card-ACC trade-do-not-PAST which-player-MO
kata-na-katta.
win-NEG-PAST
'No player who didn't trade with anyone but Susi won.'

2.2.3 Scope of free choice items

Free choice *any/anyone* licenses *but*-exceptives, whether they are in the subject position, as in (26), or the rest of the clause, as in (27).

[5]The negative quantifier in (23) can be distinguished from a universal quantifier by the absence of a case marker and the prosody of the quantifier. See the further discussion in §2.3.

(26) Anyone but Susi would take the resource with 6 over 11.

(27) Susi would trade a card for two cards with anyone but Uli.

Example (28) exemplifies free choice in Japanese. The counter part of free choice *any* can be created by combining an indeterminate pronoun with the suffix *demo*.

(28) Susi-wa dare-to-demo iti-mai-no kaado-o ni-mai-no kaado-to
Susi-TOP who-with-DEMO 1-CL-GEN card-ACC 2-CL-GEN card-with
kookan-suru.
exchange-do
'Susi trades a card with two cards with anyone.'

But free choice does not license *sika*-phrases. Specifically, when we add a *sika*-phrase to (28), the sentence becomes ungrammatical:

(29) * Susi-wa dare-to-demo Uli-to-sika iti-mai-no kaado-o ni-mai-no
Susi-TOP who-with-DEMO Uli-with-SIKA 1-cl-GEN card-ACC 2-cl-GEN
kaado-to kookan-suru.
card-with exchange-do
Intended: 'Susi trades one card for two cards with anyone but Uli.'

Since (29) may be ungrammatical for independent reasons, consider also (30), where the *sika*-phrase occurs in a relative clause inside the restrictor of free-choice *demo*. Since (30) is also ungrammatical, we conclude that *sika*-phrases are never licensed in the restrictor of free choice items.

(30) * Susi-wa [hituzi-sika motteiru] dare-to-demo kaado-o kookan-suru.
Susi-TOP sheep-SIKA have who-with-DEMO card-ACC exchange-do
Intended: 'Susi would trade with anyone who has any card but sheep.'

The grammaticality improves with a relative clause-internal negation, as shown below.

(31) Susi-wa [hituzi-sika motte-inai] dare-to-demo kaado-o
Susi-TOP sheep-SIKA have-NEG who-with-DEMO card-ACC
kookan-suru.
exchange-do
Intended: 'Susi would trade with anyone who has any card but sheep.'

2.2.4 Conditionals

Conditional clauses are another environment where a *but*-exceptive is licensed like other weak NPIs.

(32) If any number but 7 is rolled, Susi will win.

But the Japanese counterpart of (32) in (33) is ungrammatical. Again the *sika*-phrase patterns with strong NPIs rather than weak NPIs.

(33) * Suuzi-wa 7-sika de-tara, Susi-ga katu.
number-TOP 7-SIKA come.out-COND Susi-NOM wins
Intended: 'If any number but 7 is rolled, Susi wins.'

2.2.5 Questions

Questions are another environment where weak NPIs can be licensed, but strong NPIs never are.[6] In questions, too, *but*-exceptives can be licensed, as shown in (34).

(34) Does Jonathan need any other cards but sheep?

The ungrammaticality of (35), which is the Japanese counterpart of (34), shows that questions do not license a *sika*-phrase.

(35) * Jonathan-wa hituzi-no kaado-sika iri-masu-ka?
Jonathan-TOP sheep-GEN card-SIKA need-polite-Q
Intended: 'Does Jonathan need any other cards but sheep?'

2.3 Negative quantifiers

Aoyagi & Ishii (1994), Kawahara (2008), Tanaka (1997), Yoshimura (2007), among others, draw parallels between the distribution of *sika* and negative concord in Japanese. Moreover, the data we have reviewed so far have shown a number of similarities between the two phenomena: both *sika*-phrases and negative concord items are licensed in the immediate scope of a clausal negation ((36) and (37) can be licensed when they occur in subject position (38)).

[6] The licensing of NPIs in questions presents several theoretical complications. See Nicolae (2015) for an account in terms of monotonicity.

(36) Susi-wa dare-to-mo kaado-o kookan-si-na-katta.
Susi-TOP who-with-MO card-ACC exchange-do-NEG-PAST
'Susi didn't exchange cards with anyone.'

(37) * Susi-wa dare-to-mo kaado-o kookan-si-ta.
Susi-TOP who-with-MO card-ACC exchange-do-PAST

(38) Dare-mo Uli-to kaado-o kookan-si-na-katta.
who-MO Uli-with card-ACC exchange-do-NEG-PAST
'Nobody exchanged cards with Uli.'

Additionally, both types of items cannot be licensed by weak NPI licensing environments. Furthermore, the class of expressions that license *sika* and negative concord items exhibit further overlap. Namely, the expressions *nasi* ('without'), *iya* ('hate'), and *dame* ('not good') license both *sika* and negative concord items.

Example (11) above showed that *nasi* ('without') can license *sika*-phrases. *Nasi* can also license negative concord items in Japanese:

(39) Kyoo-no geemu-wa hituji-igai [nani-mo nasi] datta.
today-GEN game-TOP sheep-other.than what-MO without was
'Today's game was without anything other than sheep'

Hasegawa (2010) observes also that *iya* ('dislike/hate') licenses *sika*-phrase:

(40) Rokku-sika iya.
rokku-SIKA hate
'I only like rock.'

We add to this the observation that *dame* ('not good') also licenses a *sika*-phrase, as shown in (41).[7] *Dame* ('not good') also licenses negative concord items:

[7]Other predicates like *kirai* ('dislike') and *warui* ('bad') do not license a *sika*-phrase even though they have similar meanings to *iya* and *dame*, respectively. Their inability to licence *sika* is shown by the following two examples:

(i) * Otya-sika kirai.
green.tea-SIKA hate
Intended: 'I only like green tea.' (from Hasegawa 2010)

(ii) * Hituzi-sika warui-desu.
sheep-SIKA bad-copular
Intended: 'Nothing but sheep is good.'

(41) Nani-mo iya / dame-desu
what-MO hate / not.good-COP

Nevertheless, we think an account of *sika*-phrases as a negative concord item is not viable because there are also differences in the distributions of the two types of items. The parallels we just observed, we attribute to the presense of a silent negative marker licensing negative concord in the above. The main difference between *sika*-phrases and negative concord lies in how many *sika*-phrases and negative concord items can be licensed by a single negation. Namely, a single negation can license multiple negative concord items. But we show in the following that, if a negation licenses one *sika*-phrase, it cannot license any other *sika*-phrases. Example (42) illustrates that a single negation can license multiple negative concord items.

(42) Dare-mo nani-mo tabe-na-katta.
who-MO what-MO eat-NEG-PAST
'Nobody ate anything.' (literally: 'Nobody didn't eat nothing.')

A single sentential negation, however, cannot license two *sika*-phrases, as Aoyagi & Ishii (1994), Kawahara (2008), Miyagawa et al. (2016) and others observe. For example, (43) is unacceptable.[8]

(43) * Susi-sika 11-sika eraba-na-katta.
Susi-SIKA 11-SIKA choose-NEG-PAST
'Intended: Nobody but Susi chose nothing but 11.'

When either one of the occurrences of *sika* is replaced by another particle that means *only*, such as *dake* ('only'), the sentence becomes grammatical again.[9]

[8] Miyagawa et al. (2016: (28b)) claim that two occurrences of *sika* can be licensed in a syntactic adjunct configuration. But the translation they offer reveals that the structure must be bi-clausal. If multiple licensing of *sika* was possible in (i), it should be understood similar to 'I have been to Karaoke with Shiori alone only once'.

(i) Karaoke-e-wa itido-sika Shiori-to-sika it-ta koto-ga nai.
karaoke-to-TOP one.time-SIKA Shiori-with-SIKA go-PAST experience-NOM NEG
'I have been to karaoke only once, only with Shiori.'

[9] Furthermore, *dake* can be suffixed to both subject and object.

(i) Susi-dake-ga 11-dake-o eran-da.
Susi-DAKE-NOM 11-DAKE-ACC choose-PAST
'Only Susi chose only 11.'

(44) Susi-sika 11-dake-o eraba-na-katta.
Susi-SIKA 11-DAKE-ACC choose-NEG-PAST
'Nobody but Susi chose only 11.'

(45) Susi-dake-ga 11-sika eraba-na-katta.
Susi-DAKE-NOM 11-SIKA choose-NEG-PAST
'Only Susi didn't choose anything but 11.'

These data show, then, that the reason the sentence in (43) is ungrammatical is because the sentential negation fails to license two *sika*-phrases. Furthermore, example (13) shows that a single negation cannot license both a negative concord item and a *sika*-phrase.

As we have seen above, the licensing environment of *but*-exceptives and *sika*-phrases are different: *sika*-phrases are licensed only in contexts that license strong NPIs, while *but*-exceptives can occur in both strong and weak NPI-licensing environments. In the next section, we propose a theoretical analysis of this generalization.

3 Analysis

In this section, we propose an account of the distribution of *sika* on the basis of an exceptive semantics. We first summarize a version of the analysis of *but*-exceptives in English that accounts for their weak NPI status. We then present a modification of that analysis to account for the strong NPI distribution of *sika*-exceptives. In a nutshell, we propose that, while both exceptives require obligatory exhaustification, they select for different exhaustification operators.

We adopt the analysis of Hirsch (2016) for *but*-exceptives, which integrates the insights of von Fintel (1993) and Gajewski (2008). The concept for *but* Hirsch proposes is the following:[10]

(46) $\mathsf{but} = \lambda x^e \lambda y^e$. x and y do not overlap.

In what follows, primarily one special case is relevant. Namely, if exceptive *but* applies to two atomic individuals, x and y, it requires that the two individuals be non-identical. Consider again the example (16) repeated in (47).

[10]We adapted the analysis of Hirsch (2016) to the meaning first approach (Sauerland & Alexiadou 2020), and assume that a concept but exists that is (at least frequently) realized by 'but' in English (i.e. *but* $\longrightarrow$ 'but'). This corresponds to the statement '⟦but⟧ = but' in an interpretive approach such as that of Heim & Kratzer (1998).

(47) Every player but Susi has access to the ocean.

According to (46), which atomic individuals satisfy the scope of the quantifier *every*? The intersection of the two *et*-predicates expressed by *player* and *but Susi* results in the predicate λx . player$(x) \wedge x \neq$ Susi. Concretely, if the set of players is $\{j, u, k, \text{Susi}\}$, *player but Susi* is true only of j, u, and k. For the sentence (47), we therefore derive the inference that j, u, and k each have access to the ocean. But this inference captures only part of the meaning of (47). The full meaning contribution of the exceptive amounts at least to the following three inferences:

(48)
1. Every player other than Susi has access to the ocean.
2. Susi is a player.
3. Susi does not have access to the ocean.

The lexical meaning of *but* and the other sentence parts only predict inference 1 of this list. To capture inferences 2 and 3, Hirsch (2016) adopts the exhaustification operator **exh** (Chierchia 2013, Fox 2007). At this time, several different versions of **exh** are being discussed in the literature, including operators with different acronyms but a similar core semantics. We focus on the version in (49). For our purposes in this paper, **exh** takes a set of alternatives A and a proposition p, and asserts p while it negates all excludable alternatives to p.

(49) $\mathbf{exh}(A)(p) \Leftrightarrow p \wedge \forall q \in \text{excludable}(p, A)\ \neg q$

The set of alternatives is, we assume, determined as in focus semantics since the set of focus alternatives and scalar alternatives are closely related to each other (Gotzner 2019 and others). The concept *excludable* is one of the major points of contention in the theory of exhaustification, and some aspects of the controversy are relevant to the understanding of polarity licensing. Specifically, Chierchia (2013) proposes that NPIs are ungrammatical outside of antitone environments because the application of **exh** gives rise to obligatory logical contradictions (cf. Crnič 2014). But **exh** can only give rise to logical contradictions if the notion of excludability is sufficiently lax. For concreteness, we adopt the idea that all non-weaker alternatives are excludable:

(50) $\text{excludable}(p, A) = \{q \in A \mid p \nrightarrow q\}$

Consider now how the addition of **exh** completes the account of (47) on the basis of the following representation:

(51) $\mathbf{exh}(A)$ [every player but Susi$_F$ has access to the ocean]

Assume still that the set of players is $\{s, j, k, u\}$ and that these also determine the alternatives under consideration. j, k and u all lead to excludable alternatives, and therefore the following truth/falsity requirements arise:

(52) true: $\forall x$: [player $(x) \land x \neq s$] $\rightarrow$ ocean-access(x)
false: $\forall x$: [player $(x) \land x \neq j$] $\rightarrow$ ocean-access(x)
false: $\forall x$: [player $(x) \land x \neq k$] $\rightarrow$ ocean-access(x)
false: $\forall x$: [player $(x) \land x \neq u$] $\rightarrow$ ocean-access(x)

If we compare the requirements in (52) to the three inferences in (48), the first line accounts directly for the inference 1 of (48) while inferences 2 and 3 follow from (52) in a less direct fashion. For inference 2, consider that the inference 1 would entail that all players have access to the ocean if Susi was not a player. But then none of the falsity-requirements in (52) could be false. Therefore, Susi must be a player. By the same line of reasoning, we can also infer from (52) that Susi must not have access to the ocean, i.e. inference 3 of (48).

In this way, the addition of **exh** completes the account of the meaning of (47). But **exh** also provides an account of the restricted distribution of *but*-exceptives. Consider for example the following:

(53) * Some player but Susi has access to the ocean.

The truth and falsity conditions derived in the same scenario as above have existential quantifiers in the place of the universals of (52):

(54) true: $\exists x$: [player $(x) \land x \neq s$] $\land$ ocean-access(x)
false: $\exists x$: [player $(x) \land x \neq j$] $\land$ ocean-access(x)
false: $\exists x$: [player $(x) \land x \neq k$] $\land$ ocean-access(x)
false: $\exists x$: [player $(x) \land x \neq u$] $\land$ ocean-access(x)

It is easy to see that the four requirements cannot be simultaneously satisfied, i.e. they are logically contradictory.

Consider how the account extends to an example with an existential quantifier like *any*, as in (55), on the basis of representation (56). Though the exceptive is also attached to an existentially quantified nominal, namely *any player*, **exh** can take scope above the negation and therefore a contradiction does not arise.

(55) Susi didn't trade with any player but Jonathan.

(56) **exh**(A) [Susi didn't trade with any player but Jonathan$_F$]

To see that (56) is not contradictory, assume the same set of players as above with j representing Jonathan and that *Susi-trade-with* is the predicate λx . Susi traded with x. Then (56) amounts to the following truth and falsity requirements, which are structurally parallel to (54), but because of the negation the opposite truth values are required in each of the four lines. Therefore, the requirements (57) are logically consistent, and require that Susi traded with Jonathan and did not trade with any of the other players.

(57) false: $\exists x$: [player $(x) \land x \neq j$] $\land$ Susi-traded-with(x)
true: $\exists x$: [player $(x) \land x \neq s$] $\land$ Susi-traded-with(x)
true: $\exists x$: [player $(x) \land x \neq k$] $\land$ Susi-traded-with(x)
true: $\exists x$: [player $(x) \land x \neq u$] $\land$ Susi-traded-with(x)

Let us now turn to *sika*. As we saw in §2, *sika*-phrases can occur both with an associated noun or without any associated noun, but they cannot occur with a quantified noun phrase. This suggests that *sika*-phrases have a quantificational force as part of their lexical meaning, unlike *but*. Alonso-Ovalle & Hirotani (2004), Kawahara (2008) and Yoshimura (2007) suggest that *sika* has universal quantificational force. But we instead will assume *sika* has existential force, i.e. along the lines of English (5) just as e.g. Wurmbrand (2008) reconsidered the logical force of *nor*. The lexical entry in (58) provides an argument position for the associated noun phrase R, which we assume is filled by a null general noun when there is no overt associate.[11]

(58) sika = $\lambda x \in D_e\ \lambda R \in D_{et}\ \lambda S \in D_{et}\ \exists y \in D_e\ .\ x \neq y \land R(y) \land S(y)$

Consider how (58) accounts for the interpretation of (3), repeated in (59).

(59) Pureeyaa-wa Susi-sika umi-ni akusesu-ga nai.
player-wa Susi-SIKA ocean-to access-NOM NEG
'No player but Susi has access to the ocean.'

To be non-contradictory, the negation must take scope above *sika* as sketched in (60) where we abstract away from aspects of (59) that are not relevant for our purposes such as tense, topic marking and the internal structure of the verbal complex. Note that our interpretation of the constituent *player-wa Susi-sika* is identical to the English *any player but Susi*. We assume, following the work on

[11]Specifically, we assume that there is a concept general-noun = $lx \in D_e\ .\ x$ which is realized by a null phoneme. If the content of the R-argument of sika is unpronounced, general-noun must occupy that position.

but-exceptives, that *sika* must be associated with an occurrence of **exh** and that the noun that *-sika* attaches to must receive focus, which **exh** must obligatorily associate with.

(60) **exh**(A) [-sika (Susi$_F$) (player) λx [x umi-ni akusesu-deki]] nai

The interpretation of (60) is parallel to that of (56) in the aspects relevant to the acceptability of *sika*. The truth and falsity requirements of (60) are shown in (61). The expressions in (61) are consistent; namely, a scenario where Susi has access to the ocean, and none of the other players does, satisfies all four requirements.

(61) false: $\exists x$: [player (x) $\wedge$ $x \neq s$] & ocean-access(x)
true: $\exists x$: [player (x) $\wedge$ $x \neq j$] & ocean-acces(x)
true: $\exists x$: [player (x) $\wedge$ $x \neq k$] & ocean-acces(x)
true: $\exists x$: [player (x) $\wedge$ $x \neq u$] & ocean-acces(x)

The existential lexical entry for *sika* directly predicts that the version of (3) without negation in (4) is ungrammatical by virtue of being an obligatory contradiction. In contrast, a lexical entry for *sika* with universal force (Alonso-Ovalle & Hirotani 2004, Kawahara 2008, Yoshimura 2006) would lead us to expect that a *sika*-phrase should be acceptable even when there is no negation in the sentence since the restrictor of a universal can license *but*-exceptives.[12]

The analysis up to now predicts the same distributional restriction for *but*-exceptives and *sika*-phrases. But the environments where *but*-exceptives and *sika*-phrases can occur are not exactly the same, as we discussed in §2. Specifically, we showed that *sika*-phrases are restricted to strong NPI licensing environments. For example, while a *but*-exceptive can occur in the restrictor of a universal quantifier (see (62)), a *sika*-phrase cannot.

(62) Every player who rolled anything but seven built a city.

Why do English and Japanese differ with respect to examples like (62)? We think the answer to this question lies in work on the distinction between weak and strong NPIs by Gajewski (2011) and Chierchia (2013). In the following, we present an application of their ideas to exceptives.

The central insight of Gajewski (2011) is that the distinction between the presupposition and the assertion component of meaning plays a role in the distinction between weak and strong NPIs (see also Homer 2008). We use the *fraction* notation in the following to designate a proposition, following Harbour (2014): the

[12] Shimoyama (2011) also associates *sika* with universal force, but stipulates that it is a negative concord universal. Sells (2001) and von Fintel & Iatridou (2007) assume existential force for the Korean and French exceptives *pakkey* and *que*, respectively.

fraction a/p with numerator a and denominator p denotes the trivalent proposition with presupposition p and truth condition a.[13] Using this notation, the lexical entry for English *every* in (63) captures that the universal quantifier carries an existential presupposition.

(63) $\text{every} = \lambda R\, \lambda S\, \dfrac{\forall x[R(x) \to S(x)]}{\exists x\, R(x)}$

We furthermore adopt from Chierchia (2013) the proposal that two different exhaustification operators predict the distribution of strong and weak NPIs. We recast this implementation by replacing excludability as defined in (50) with the following two notions for $\mathbf{exh}_S$ and $\mathbf{exh}_W$, respectively. The two are distinct only with respect to the concept of excludability, which we define as excludable_S and excludable_W respectively:[14]

$$\begin{aligned} \text{excludable}_S\left(\frac{a}{p}, A\right) &= \left\{\frac{a'}{p'} \in A \,\middle|\, p \nrightarrow p'\right\} \\ \text{excludable}_W\left(\frac{a}{p}, A\right) &= \left\{\frac{a'}{p'} \in A \,\middle|\, a \wedge p \wedge p' \nrightarrow a' \wedge p \wedge p'\right\} \end{aligned}$$

The two operators $\mathbf{exh}_S$ and $\mathbf{exh}_W$ replacing $\mathbf{exh}$ from (49) above are defined on the basis of these notions, but both specify the presuppositional and assertive component separately. The strong notion applies exclusion only in the presuppositional component.

$$\mathbf{exh}_S(A)\left(\frac{a}{p}\right) \Leftrightarrow \frac{a}{p \wedge \forall \frac{a'}{p'} \in \text{excludable}_S\left(\frac{a}{p}, A\right) \neg p'}$$

[13]The role of numerator and denominator is the inverse of the notation one of us used in earlier work (Sauerland 2005). As Harbour notes, the inversal leads to the mnemonic corolarries that $a/1 = a$ and that $a/0$ is undefined.

[14]In this definition, the strong notion doesn't always denote a superset of the weak one (i.e. $\text{excludable}_S(a/p, A) \supset \text{excludable}_W(a/p, A)$); also, no superset relationship obtains in the opposite direction, but that is desirable). For example, if $p = p' = x \vee y$, $a = x$, and $a' = y$ for two logically independent propositions x and y with a'/p' in the alternative set A of a/p, then $a'/p' \notin \text{excludable}_S(a/p, A)$, but $a'/p' \in \text{excludable}_W(a/p, A)$. Because only a superset relationship would make a contradiction more likely to arise, Chierchia (2013) doesn't predict that strong NPIs necessarily occur in a proper subset of the environments that license weak NPIs. We leave the question whether such environments can be constructed to be explored in future work.

The weak notion, on the other hand, applies exclusion in the assertive component only.

$$\mathbf{exh}_W(A)\left(\frac{a}{p}\right) \Leftrightarrow \frac{a \wedge \forall \frac{a'}{p'} \in \text{excludable}_W\left(\frac{a}{p}, A\right) \neg a'}{p}$$

To understand the distribution of NPIs, we need to understand under what conditions $\mathbf{exh}_S$ and $\mathbf{exh}_W$ give rise to a contradiction and more specifically, how this contradiction can be resolved. Before we look at the concrete case, some general considerations: We only need to consider an item that is blocked in an isotone environment – i.e. gives rise to a contradiction. The exclusion of a single alternative must be consistent with assertion or presupppposition of the uttered sentence by the definitions of excludability. Therefore, the contradiction must derive from multiple alternatives. Furthermore the contradictory alternatives cannot stand in a logical entailment relation to each other since otherwise one would be sufficient to trigger a contradiction.

Concretely, consider (62) now. From (63), the sentence meaning prior to exhaustification (64) follows, where we indicate a and p corresponding to the preceeding discussion.

(64) $$\frac{a}{p} = \frac{\forall x\ [\ \exists n \neq 7\ \text{roll}(n)(x) \rightarrow \text{build(city)}(x)\ ]}{\exists x\ \exists n \neq 7\ \text{roll}(n)(x)}$$

The relevant alternatives for the exhaustification of (64) are of the form (65), corresponding to a' and p' as indicated for an $m \in \{2, \ldots, 12\}$ with $n \neq 7$.

(65) $$\frac{a'(m)}{p'(m)} = \frac{\forall x\ [\ \exists n \neq m\ \text{roll}(n)(x) \rightarrow \text{build(city)}(x)\ ]}{\exists x\ \exists n \neq m\ \text{roll}(n)(x)}$$

For example with $m = 11$, the negation of the presupposition of (65), $\neg p'(11)$ can be paragraphed as 'Nobody rolled anything but 11.' It is possible to see that the conjunction of all $\neg p'(m)$ with $m \neq 7$ contradicts the presupposition p of (64). At the same time, the negated assertion $\neg a'(11)$ is paraphraseable as 'Somebody rolled a number other than 11 and didn't built a city.' The conjunction of all $\neg a'(m)$ with $m \neq 7$ is consistent with a of (64), as can be seen from a scenario where somebody rolled a 7 and didn't build a city.

In sum, we have shown that exceptives are expected to be licensed in an environment when they associate with $\mathbf{exh}_W$, but not when they associate with $\mathbf{exh}_S$. We showed this only for the specific case of the restriction of a presuppositional universal quantifier, but this suffices for our purposes here. We showed that despite the same lexical meaning, different distributions are predicted for exceptives if they select different **exh** operators. In other words, the difference between English *but*-exceptives and Japanese *sika*-phrases relates to the still unexplained differences in the **exh**-operator selection properties of strong and weak NPIs. We can hope therefore that the different exceptives may help us to understand this difference even better in the future.

We think our proposal can also shed light on the one difference between negative concord items in Japanese and *sika*-phrases. Specifically, we noted that a single negation cannot license multiple *sika* phrases in the following Japanese example (repeated from 43 above):

(66) * Susi-sika 11-sika eraba-na-katta.
Susi-SIKA 11-SIKA choose-NEG-PAST
Intended: 'Nobody but Susi chose nothing but 11.'

The ungrammaticality of (66) follows from our proposal if the *sika*-phrase itself intervenes for the licensing of strong NPIs, i.e. if the semantics of *sika* imposes a presupposition on their scope. A presuppositional semantics is indeed what von Fintel & Iatridou (2007: 461–462) for independent reasons propose for the French exceptive *que*. We propose the following revised lexical entry for *sika* to replace (58):[15]

(67) $$\textsf{sika} = \lambda x \in D_e\ \lambda R \in D_{et}\ \lambda S \in D_{et}\ \frac{\exists y \in D_e\ .\ x \neq y \wedge R(y) \wedge S(y)}{\exists y \in D_e\ S(y)}$$

Adding the presupposition predicts that in the configuration sketched below the lower *sika*-phrase is not licensed.

(68) $\mathbf{exh}_S$ [¬ [Susi-sika [11-sika …]]]

In sum, our account of *sika* as an exceptive with existential force predicts the strong-NPI distribution of *sika*-phrases and also the difference between negative concord items and *sika*-phrases.

[15] von Fintel & Iatridou (2007) discuss two different proposals and we follow the second suggestion here for reasons of concreteness. Their other proposal would adopt the presupposition $S(x) = 1$, as outlined in (67). Neither the evidence they present nor ours provides decisive evidence to distinguish between the proposals.

4 Conclusion

In this paper, we argued that *sika*-phrases in Japanese should be analyzed as exceptives associated with existential force. While this proposal is new for Japanese *sika*, similar proposals have been made for *pukkey* in Korean (Sells 2001) and for *que* in French (von Fintel & Iatridou 2007). Furthermore, our focus has been to derive the distribution of *sika*-phrases from this proposal. We have shown that *sika*-phrases have the distribution of strong NPIs in contrast to *but*-exceptives in English, which have the distribution of weak NPIs. We also showed that the distribution of *sika*-phrases is different from that of negative concord items in Japanese. To derive the basic properties of *sika*-phrases and their distribution within the theory of NPI licensing of Gajewski (2011) and Chierchia (2013), we introduced the following four stipulations:

- the restrictor of *sika*-phrases can remain silent,
- the quantificational force associated with *sika*-phrases must remain silent and is always existential,
- *sika* must be related to strong exhaustification operator $\mathbf{exh}_S$, and
- *sika* introduces an existential presupposition on scope.

At least the first three, and possibly all four stipulations do not apply to English *but*-exceptives, while at least three of the stipulations apply also to Korean *pukkey* and French *que*.

In future work, we hope to understand whether the four stipulations above can be derived from fewer assumptions. We think the contrast between the *but*- and *sika*-exceptives is a novel case of a pair of strong and weak NPIs that seem to have the same core meaning, perhaps even more so than English NPI pairs such as the strong *in weeks* and the weak *ever*. The case discussed in this paper may be of further theoretical interest since exceptives give rise to their polarity property in a more transparent fashion than other NPIs.

Abbreviations

ACC	Accusative	GEN	genitive	NOM	nominative
CL	classifier	IND	indeterminate pronoun	NPI	negative polarity item
COMP	complementizer				
COP	copular	NEG	negation	TOP	topicalization

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Name index

The size of things II

This book focuses on the role size plays in grammar. Under the umbrella term *size* fall the size of syntactic projections, the size of feature content, and the size of reference sets. This Volume II discusses size effects in movement, agreement, and interpretation while the contributions in Volume I focus on size and structure building.

Part I of Volume II investigates how size interacts with head movement and various phrasal movement including left branch extraction, object shift, tough movement, and multiple wh movement. Part II of this volume discusses the role size plays in agreement and morphology-related matters like allomorphy. Contributions in Part III focus on semantic-oriented issues, in particular the size of reference domains and NPI licensing.

The languages covered in this volume include American Sign Language, Bosnian-Croatian-Serbian and various other Slavic languages, German, Icelandic, dialects of Italian, Japanese, Nancowry, Panoan languages, and Tamil.