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Dependent case theory is still superior

Further evidence from Standard Arabic

Ziad Khalid

In view of the central role that Case has played in modern syntactic theory, Case assignment in Standard Arabic has been extensively investigated over the last few decades. By and large, the majority of the analyses presented to account for the facts of Case assignment in this variety draw on the notion of agreement between functional heads and nominal arguments. Upon closer examination, however, it turns out that these agreement-based accounts are under-determined by empirical data. To remediate this problem, this paper argues that dependent Case theory provides a more satisfactory alternative to tackle this issue.

1. Introduction

Despite the controversial relationship between agreement and Case assignment in modern syntactic theories (Bobaljik 2008; Preminger 2014; Bárány 2017), many current accounts of Case assignment facts in Standard Arabic (henceforth, SA) endorse the view that (morphological) agreement plays a significant role in assigning structural Case to nominals within this language. This theoretical position is strongly adopted in the analyses which are couched in Chomsky's (2000, 2001) view that considers Case assignment as a result of an agreement relation (*Agree*) between a functional head and its argument(s) (Ouhalla 2005; Soltan 2007; Musabhien 2009) as well as within the proposal based on the hybrid approach of Baker & Vinokurova (2010) and Baker (2015) whereby both the structural configuration of nominal DPs and agreement with a functional head are relevant to assigning Case (Amer 2016). Notwithstanding the significant contribution of these proposed analyses to account for the facts of Case assignment in SA, in the present paper I argue (following Al-Balushi 2011, 2018), that SA agreement facts are recalcitrant to the treatment of structural Case as a reflex of *Agree* between a functional head H^0 and a nominal DP. This empirical observation poses a potential challenge to the *Agree*-based analyses (head-driven and hybrid alike), given that they both rely on agreement completely or partially. Consider example (1) below.[1]

[1] Unless a source is cited, the SA examples are all original and supplied by the author.

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(1) a. ʔakal-at/*na aṭ-ṭalibaat-u al-ʕinab-a.[2]
eat.PST-3.F.SG/*3.F.PL the-students.F.PL-NOM the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

b. ʔakal-at aṭ-ṭalibat-u al-kaʕk-a.
eat.PST-3.F.SG the-student.F.SG-NOM the-cakes.M.PL-ACC
'The student ate the cakes.' (SA)

According to the above-mentioned proposals, the assignment of NOM Case to the subject *aṭ-ṭalibaat-u* 'students' in (1a) and *aṭ-ṭalibat-u* 'student' in (1b) is mediated by the valuation of φfeatures on T^0. On the face of it, this seems perfectly plausible; however, this step is taken in defiance of Chomsky's (2001:6) stipulation that a probing head H^0 must be φ-complete to induce Case assignment. The deficiency of T^0 in SA is clearly apparent in (1a) and (1b) as the number feature is not marked on the verb contrary to the person and gender features. The same observation carries over to the head *v** whose φ-incompleteness can be easily determined in example (1). A common way to circumvent the conundrum of T^0 deficiency within these *Agree*-based analyses is to resort to the available reverse order (viz., SVO) in which full agreement ([Person], [Gender], [Number]) between the preverbal DP and the verb holds; hence, T becomes φ-complete. This is illustrated in example (2).

(2) aṭ-ṭalibaat-u ʔakal-na al-ʕinab-a.
the-students.F.PL-NOM eat.PST-3.F.PL the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

The logic behind this reasoning is that the whole set of φ-features is present in both word orders but [Number] is disactivated when the verb precedes the subject, due to some morphological process (Benmamoun 2000).[3] As for the deficiency of v^{*0}, the proponents of this theoretical stance seem to overlook this fact and take for granted that agreement with this probe is what renders the DP object accusative. Although the latter hypothesis about the activity of *v** in assigning the ACC Case to the object can be easily discounted, especially from a configurational perspective (Amer 2016), the explanation provided regarding the φ-(in)completeness of T^0 in SA seems rather compelling; however, its inadequacy will be dealt with in the section about the problems of the previous analyses (Section 4). What emerges from this review thus far is that the dependence of SA Case assignment on featural properties seems untenable, at least from the hitherto discussed framework. Thus, elaborating on a new analysis that accounts for SA Case assignment facts in a more straightforward way is necessary.

As a matter of fact, the disassociation between agreement and Case assignment has been attested cross-linguistically. Carstens (2005), for example, reports that NOM Case-checking in Kilega (a Bantu language) is not dependent on agreement. Example (3) below illustrates this fact (Carstens 2005:265).

(3) Ku-Lúgushwá kú-kili ku-á-twag-a nzogu maswá.
17-Lugushwa **17**SA-be.still **17**SA-A-stampede-FV **10**elephant 6farm
'At Lugushwa, elephants are still stampeding over (the) farms.' (Kilega)

[2] Long vowels are indicated by doubling the vowel.

[3] A morphological merger that requires subject and verb adjacency.

Carstens argues that the subject *nzogu* 'elephants' checks its NOM Case despite T's agreement with another nominal *Ku-Lúgushwá* 'at Lugushwa'. Following this account, McFadden & Sundaresan (2011) present data which questions the widely held connection between NOM Case assignment and agreement. They suggest that the link between the nominative subject DP and the finite T is not as strong as previously claimed to be. The absence of this dependency is highlighted in example (4) from Tamil.

(4) a. **vasu** poori porikk-a raman maavu vaangi-n-aan.
vasu.**NOM** poori.ACC fry-INF raman.NOM flour.ACC buy-PST-M.3.SG
'Raman bought flour for Vasu to fry pooris.'
b. **naan** poori porikk-a raman maavu vaangi-n-aan.
I.**NOM** poori.ACC fry-INF raman.NOM flour.ACC buy-PST-M.3.SG
'Raman bought flour for me to fry pooris.'
(Tamil; McFadden & Sundaresan 2011:5)

In both (4a) and (4b) above, the embedded clauses are not marked for finiteness, yet overt NOM subjects are allowed as indicated by the DPs in boldface. Thus, the availability of NOM on the embedded subjects cannot be legitimately tied to clausal finiteness. In fact, this pattern is further corroborated in data from Estonian where non-finite clauses do have NOM subjects as evidenced in example (5) below.

(5) a. Mari **olla** väga jutukas.
Mari.NOM be.INF very talkative.NOM.SG
'Mari (is said) to be very talkative.'
b. Tõnis **tahtvat** uut laevakaupa teha.
Tõnis.NOM want.INF new.PART.SG ship-deal.PART.SG do.INF
'Tõnis (is said) to want to make a new ship deal.' (Estonian; Kaiser et al. 2020:308)

This cross-linguistic evidence points to a clear mismatch between the assignment of NOM to subjects and the stipulated agreement with a functional head, which thereby casts doubt on the suitability of such *Agree*-based approach to account for Case assignment in the clausal and nominal domains, especially when considered from a broader typological perspective.

In response to these inconsistencies within the prevailing view that NOM Case assignment is strongly contingent on agreement, the present paper entertains the hypothesis that a purely configurational account can capture the facts of Case assignment within the SA clausal domain without recourse to *Agree*. This hypothesis is based on Levin & Preminger's (2015) (henceforth L&P) proposal which assumes that the correlation between subject Case and subject agreement does by no means amount to a causal relationship. Originally, L&P's proposal was meant to rectify Baker & Vinokurova's (2010) (henceforth B&V) account of structural Case in Sakha, which appeals to both configurational rules and agreement with a functional head. In order to derive the Case facts of this language more straightforwardly, L&P adopt an entirely configurational approach that is reminiscent of Marantz' (1991) dependent Case theory. In this new conceptualization, the co-occurrence of a specific Case type with a certain type of agreement is recognized but is taken to play no significant role in Case calculus. Rather, it is the other way round since the authors believe that it is agreement which 'inspects the landscape of already case-marked nominals, in search of an appropriate target' (L&P 2015:236). This paradigm shift seems highly compatible with SA agreement and Case systems; therefore, it may

well lead to a more homogeneous approach of Case assignment in which Case facts of SA core arguments can be handled more systematically.

The paper is organized as follows. In Section 2, a brief overview of SA Case inflections is provided. This is followed by outlining the main recent theories put forward to account for SA Case assignment in Section 3. The central aim behind this review is to highlight the theoretical advances on SA Case system and, equally importantly, to situate the discussion of the controversial aspects of the existing analyses. The latter problematic issues are dealt with in Section 4. Assuming that the identified problem areas can be overcome along the lines of L&P's analysis of Sakha data, the current proposal is elaborated upon in Section 5 where it will be mainly argued that this account — which is based solely on configurational grounds, can be extended to SA Case assignment within the clausal domain. Finally, in Section 6 a conclusion is drawn with an eye on extending this analysis to the nominal domain in SA.

2. SA Case marking

SA is characterized by overt Case inflections. Table 1 presents the main vowel suffixes that case-mark SA nominal DPs.

M-case	**Rafʕ**	**Nasʿb**	**Jarr**
Case	Nominative	Accusative	Genitive
Ending	—**u**(n)	—**a**(n)	—**i**(n)[4]

Table 1. Case markers for singular DPs in SA

The above paradigm seems straightforward because it refers to singular nominals (masculine and feminine). The situation, however, gets a little more complex when accommodating their dual and plural counterparts which can inflect for gender, too. A more inclusive view of these facts reveals the existence of instances of syncretism as can be observed in Table 2.

Musaafir Passenger M	**Fem. SG**	**Fem. Sound PL**	**Mas. Sound PL**	**Mas. Dual**
NOM	Musaafir-at-**u**(n)	Musaafir-aat-**u**(n)	Musaafir-**uu**(na)	Musaafir-**aa**(ni)
ACC	Musaafir-at-**a**(n)	Musaafir-aat-**i**(n)	Musaafir-**ii**(na)	Musaafir-**ay**(ni)
GEN	Musaafir-at-**i**(n)			

Table 2. Case markers for singular, plural and dual nominals in SA

Two interesting observations can be made from the table above. First, vowel lengthening is the mechanism that operates in the formation of both masculine and feminine sound plurals. Second, whereas Case marking for singular nouns is triptotic (as manifest in the three distinct suffixes), it is diptotic in plural and dual nouns wherein the accusative and genitive forms are merged. To understand how these morphological patterns are regulated at a deeper syntactic

[4] The n enclosed between parentheses, dubbed nunnation, is the mark of indefiniteness.

level, it is necessary to review the main theories that have been postulated in pursuit of a unified account of this morpho-syntactic phenomenon.

3. Theories of Case assignment in SA

Because of its central position within SA grammar, Case assignment has been examined from a variety of theoretical perspectives during the last couple of decades. In the present paper, however, only two main approaches are brought into focus: Case assignment under functional heads and dependent Case theory.

3.1 Case assignment under functional heads

The account for Case assignment in relation to specific functional categories is widely considered as the standard analysis within the minimalist framework (Chomsky 2000; 2001). This analysis departs essentially from stipulating a principle to the effect that all overt nominals need to be assigned Case (conventionally termed abstract Case) for their licensing. Operating within a restricted structural configuration (c-command), this requirement can be satisfied only in so far that the candidate nominals from a numeration are assigned Case as a reflection of an *Agree* operation in which they enter with the designated Case checking heads (T, *v**) to valuate a specific set of φ-features (Zeijlstra 2008).

Interestingly, this head-driven approach has been claimed to account for many SA Case assignment facts not only in its current form but also in its earlier versions; namely, under specifier-head agreement and government (Fassi Fehri 1993; Aoun et al. 1994) as well as within the initial minimalist model which posits that both Case assigners and assignees match their pre-existing Case features during the syntactic derivation (Ouhalla 2005). Due to the limited scope of the present paper, however, only the latest view in which Case assignment occurs by dint of φ-features valuation is examined.

A well-argued-for analysis within the latter recent theoretical stance is Soltan (2007) who maintains that Case in SA is not a primitive feature on probing heads but instead 'a by-product of φ-agreement, i.e., Agree with T results in nominative case assigned to the Goal [Subject], whereas Agree with *v** results in accusative case assigned to the Goal [Object]' (Soltan 2007: 17). To ensure that this general description is empirically exhaustive, he convincingly shows, through a couple of tests, that the available two word orders in SA (SV and VS) are both syntactically and semantically distinct (Soltan 2007:50–60); in stark contrast to the common view which holds that the marked order VS is derived from SV order by movement (Mohammad 2000). The structural representations below are provided in this regard.

(6) a. VS: [$_{TP}$ T+[*v**+V][$_{v*p}$ DP t_{v*} [$_{VP}$ t_{v} YP]]]
b. SV: [$_{TP}$ DP T+[v*+V] [$_{v*P}$ *pro* t_{v*} [$_{VP}$ t_{v} YP]]] (SA; Soltan 2007:63)

Given that downward *Agree* is the configuration endorsed in Soltan's analysis, the status of the preverbal and postverbal DPs in the above structures carries crucial implications not only for verbal agreement but also for Case assignment. While the postverbal DP in VS order is taken to be the subject, the preverbal DP in SV order is considered as a Left-Dislocated element that is base-generated in its surface position, making *pro* the real subject in these constructions. As

such, in VS structures T engages in *Agree* with the postverbal DP which accordingly gets assigned NOM Case whereas in SV structures it agrees with *pro*, resulting in its NOM Case and a full specification of φ-features on the verb. Unlike *pro*, however, the preverbal DP, which is located in a peripheral position, surfaces with a default Case in the absence of any other structural or lexical Case assigner. Remarkably, this default Case happens to be exposed with the nominative inflection. The derivation of these VS and SV structures (alternatively, *V DP* and *DP V* strings) is illustrated in the following syntactic representations.

(7) a. SV: [CP C [TP DP T EPP/φ/CLASS [*v**P *pro v** [VP V …]]]] (SA; Soltan 2007:70, (49))

Agree

b. VS: [CP C [TP T DEFAULT/CLASS [*v**P DP *v** [VP read the book]]]]

Agree (SA; Soltan 2007:71, (50))

One striking difference between the above two structures is the asymmetrical nature of agreement. T values all its uninterpretable features after agreeing with *pro*, but it does so only partially (only CLASS 'gender' feature) when targeting a lexical DP in its domain. Although the latter anomalous agreement constitutes an untrivial problem for Case assignment within this approach as will be argued in Section 4, NOM Case on the pronominal and the postverbal subjects is assumed to be an upshot of *Agree* according to this analysis. As for the preverbal DP in SV structures, it receives — as previously stated — unmarked Case in virtue of being in a position higher than T which probes downwards. Crucially, internal arguments of transitive verbs need Case for their licencing too. On Soltan's account, SA objects are structurally case-marked by *v**. More specifically, they bear the ACC Case as a direct outcome of their agreement with this probing head. This derivational process is supposedly what satisfies the legibility requirements in the examples below, ensuring that each argument surfaces with the right type of Case.

(8) a. qaraʔ-a al-ʔawlaad-u al-dars-a.
read.PST-3.SG the-boys.PL-**NOM** the-lesson.SG-ACC
'The boys read the lesson.'

b. al-ʔawlaad-u qaraʔ-uu al-dars-a.
the-boys.PL-**NOM** read.PST-3.PL the-lesson.SG-ACC
'The boys read the lesson.'

c. qaraʔ-uu *pro* al-dars-a.
read.PST-3.PL *pro* the-lesson.SG-**ACC**
'They read the lesson.' (SA; Soltan 2007:13–17)

Viewed from this perspective, agreement — albeit partial — turns out to be the process that determines the type and the order in which arguments are assigned Case. Note incidentally that *pro* is assumed to receive NOM Case under this analysis.

In a similar fashion, Musabhien (2009) advocates an *Agree*-based account of Case assignment in SA. Adopting Chomsky's (2008) feature inheritance model in which the CP and *v**P phases transfer their features to T and *v** respectively, he posits the existence of distinct types of C that head CPs to capture Case variability on nominal DPs as exemplified throughout (9) below.

(9) a. zaar-a as-suyaah-**u** al-madiinat-a.
visit-PST.3SG the-tourist-PL-**NOM** the-city-ACC
'The tourists visited the city.'
b. as-syaah-**u** zaar-uu al-madiinat-a.
the-tourist-PL-**NOM** visit-PST.3PL the-city-ACC
'The tourists visited the city.'
c. ʔinna as-suyaah-**a** zaar-uu al-madiinat-a.
COMP the-tourist-PL-**ACC** visit-PST.3PL the-city-ACC
'Indeed, the tourists visited the city.' (SA; Musabhien 2009:125)

As opposed to the postverbal nominals in VSO order (7a), which uniformly receive NOM Case, preverbal nominals in SVO order can be marked NOM (7b) or non-NOM (7c). For Musabhien (2009), these facts are suggestive of some underlying difference between the Cs heading these CPs. To guide his analysis, he follows Fassi Fehri (1993) in assuming that C can be *covert* as in (7a) and (7b) or *overt* as in (7c). Crucially, the covert C which heads CP in VSO sentences transfers its φ-features to T whereby it triggers agreement with the closest goal nominal (postverbal Subject), resulting in the latter's NOM Case assignment — a structural Case *par excellence*. With preverbal nominals, however, Case assignment takes a different path in the sense that it is disassociated from the *Agree* operation that obtains between T and the pronominal subject (**-uu**) which is left as a copy of the raised NP. More specifically, in these NP-initial sentences, C is endowed with an idiosyncratic lexical feature which is not handed over to T along the bundle of transferred features. As such, the covert C in (7b) above, which bears this feature, is responsible for assigning a lexical NOM Case to the preverbal nominal *as-syyaah-**u*** 'the tourists' by establishing a local agreement relation with this NP. By the same token, the overt C *ʔinna* 'surely/indeed' in (7c), which assigns an ACC Case to its adjacent nominal, determines this Case on the preverbal NP *as-suyyaah-**a*** 'the tourists'.

Although the *Agree*-based accounts sketched above seem conceptually attractive at first blush, they are not empirically flawless, not only for the SA Case-marking system (See Section 4 below) but also cross-linguistically as Baker (2015) states in defence of the dependent Case theory which is the topic of the next subsection.

3.2 Dependent case theory

In its current manifestation, dependent Case theory is developed in Baker & Vinokurova (2010) and Baker (2015), partly in response to the empirical holes left by the application of head-driven accounts to Case assignment at a cross-linguistic level. At its core, this theory strongly holds that the prime modality of assigning Case in natural languages is the configurational relationship between two NPs. To instantiate this new vision in the context of an accusative system, B&V (2010:595) propose the following configurational rules.

(10) If there are two distinct argumental NPs in the same VP-phase such that NP1 c-commands NP2, then value the case feature of NP1 as dative unless NP2 has already been marked for case.

(11) If there are two distinct NPs in the same spell out domain such that NP1 c-commands NP2, then value the case feature of NP2 as accusative unless NP1 has already been marked for case.

So, under this approach, accusative is a dependent-down Case which is licensed to the lower of two NPs (case competitors) that are governed by the c-command structural relationship within the same local domain. In the absence of such interaction between these NPs (as in the case of intransitive verbs for example) the dependent Case analysis becomes inapplicable, and the single nominal is assigned an unmarked Case. According to Baker, these predictions are borne out by data from diverse languages (2015:60).

Whether the Case system of SA matches well in this respect is evaluated by Amer (2016) whose implementation of this approach suggests that it is superior to the existing generative accounts which purportedly left many SA Case facts unexplained. Within this '*Bakeran*' framework then, Amer (2016:132) enunciates that SA Case assignment follows this hierarchy.

(12) lexical Case < dependent Case < Agree-based Case < unmarked/default Case

To provide some guidance for his proposal, he expounds on each of the above-mentioned Case types. Lexical Case is determined by two lexical items, namely, the complementizer *ʔinna* 'surely' as well as its variant *ʔanna* 'that', and the copular verb *kaana* 'to be'. As for dependent Case, it is assigned to a lower NP which is c-commanded by a higher NP in the same spell-out domain. This applies consistently to the internal argument(s) of transitive verbs (Object). Agree-based Case, on the other hand, is assigned as a result of an agreement relation between the functional head T and the external argument (Subject). When none of the latter is applicable, then unmarked/default Case appears as a last resort.

In view of the hierarchy proposed above, it becomes clear that Amer subscribes to B&V's hybrid approach which they advanced to account for the Case facts of Sakha. Recall that core argumental NPs, from this perspective, undergo Case assignment via dependent Case under some structural conditions as well as via agreement with a functional head. Note also that although both the latter Case types are characteristically structural, dependent Case takes precedence over *Agree*-based Case assignment. The implementation of this conceptualization can be illustrated in the following examples.

(13) [$_{CP}$ C [$_{TP}$ katab-a [$_{vP}$ Zayd-**un**$_{[NP1]}$ [$_{VP}$ <kataba> risaalat-**an**$_{[NP2]}$]]]]
wrote-3SG Zayd-NOM letter-ACC
'Zayd wrote a letter.' (SA; Amer 2016:150, (5))

On Amer's assumption that *v* is a soft phase in SA (i.e., readily accessible to higher phases), the object *risaalat* 'letter' in the sentence above receives the ACC Case via dependent Case assignment because this internal argument is c-commanded by a competitive NP (Zayd) in a higher domain (CP). This high NP, in turn, is bound to bear NOM Case as a reflex of *Agree* with T. In the environment of verbal predicates with a single NP then, no such competition is expected; hence, dependent Case assignment is not applicable. This scenario is naturally envisioned in intransitive constructions as exemplified in the sentence below.

(14) [$_{CP}$ C [$_{TP}$ sakat-at [$_{vP}$ zaynab-**u**$_{[NP1]}$ [VP… <v>]]]]
stopped.talking-3SG Zaynab-NOM
'Zaynab stopped talking.' (SA; Amer 2016:151, (7))

The NOM Case on the single NP, which stands as the external argument, ensues again from its agreement with the functional head T as predicted from the hierarchy above.

In addition to transitive sentences, double-object constructions are considered by Amer as another piece of evidence that confirms the suitability of his analysis to account for SA Case assignment. This type of constructions is exemplified in the following sentence:

(15) [$_{CP}$ C [$_{TP}$ ʔaʕṭ-at [$_{vP}$ zaynab-**u**$_{[NP1]}$ [$_{VP}$ zayd-**an** $_{[NP2]}$ risaalat-**an**$_{[NP3]}$]]]]
gave-3SG.F Zaynab-NOM Zayd-ACC letter-ACC
'Zaynab gave Zayd a letter.' (SA; Amer 2016:154, (11))

Based on their Case alternation in object-to-subject raising, Amer argues that the internal arguments selected by the verb *ʔaʕṭa* 'give' are both assigned dependent ACC Case which can be calculated as follows: NP2 c-commands NP3 in the same spell-out domain (VP), therefore NP3 receives dependent ACC Case. Given that *v* is presumably a soft phase in SA, the as-of-yet-caseless NP2 moves out of the VP-shell to be accordingly c-commanded by NP1 which is located in CP. This second structural configuration results in the assignment of dependent ACC Case to NP2. Finally, the external argument NP1 gets the structural NOM Case through agreement with T.

Because the present paper attempts to cast aside the involvement of functional heads in SA Case assignment, it concurs with Amer's proposal only in its configurational dimension. The *Agree*-based modality of Case assignment is thus not empirically grounded in light of the potential counterexamples from SA data, which appear to falsify its standard claim. The details of this observation make the substance of the next section.

4. Problematic aspects of the previous analyses

Given that the above *Agree*-based and hybrid analyses share the view that it is agreement with T which triggers the NOM Case on the subject, it seems appropriate to begin by addressing this issue. It is worth reiterating that those who adopt this view frame their arguments mainly with reference to feature valuation. More specifically, they claim that the NOM Case assigned to a subject NP (which is on standard accounts required for its licensing) is a direct reflection of the valuation operation of T's set of uninterpretable features {[Person], [Gender], [Number]} against this NP's set of interpretable counterparts. In effect, there is a portion of data from SA that ostensibly lends support to this claim. A case in point in this regard is the previously cited example (2), repeated here as (16) for convenience.

(16) aṭ-ṭalibaat-u ʔakal-na al-ʕinab-a.
the-students.F.PL-NOM eat.PST-3.F.**PL** the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

A major drawback with this rationale, however, is that it is not strong enough to capture all the facts about SA structural Case assignment in the same explicit way. This state of affairs is

manifest in the agreement asymmetry exhibited in the available non-marked word order as shown in example (17) below.

(17) ʔakal-at/*na aṭ-ṭalibaat-u al-ʕinab-a.
eat.PST-3.F.**SG**/*3F.PL the-students.F.**PL**-NOM the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

An analysis which depends on featural grounds to explain Case has to tackle the problem of why the feature sets, which underpin the alternating SVO and VSO syntactic structures, do not comprise the same number of elements. [Number] is unmistakably not marked on T in verb-initial structures as evident in (17). This mismatch in feature specification is suggestive that an *Agree*-based account of Case assignment is not entirely accurate, therefore; it does not seem to be a viable candidate to systematically handle the data.

In addition to this empirical shortcoming, this rationale fails to provide a principled explanation for some of the problems that ensue from its assumptions. One perennial problem that is associated with the latter objection is the position of the subject within the clause, which — on this outlined view — can occupy two slots: preverbal or postverbal. In fact, this assumption turns out to be problematic in two ways: not only can it be regarded as ontologically unwarranted, in light of the evidence adduced by Soltan (2007) and Al-Balushi (2011), but it also conflicts with the stipulated syntax-internal occurrence of structural Case since feature valuation takes place in narrow syntax (Chomsky 2008; Legate 2008; Baker 2015). This second flaw can be illustrated in the pair of examples below.

(18) a. aṭ-ṭaalib-**u** katab-a al-dars-a.
the-student.M.SG-NOM write.PST-3.M.SG the-lesson-ACC
'The student wrote the lesson.' (SA)
b. ʔinna aṭ-ṭaalib-**a** katab-a al-dars-a.
COMP the-student.M.SG-**ACC** write.PST-3.M.SG the-lesson-ACC
'Surely, the student wrote the lesson.' (SA)

For the sake of argument, let us accept that in (18a) structural NOM Case is assigned to the subject DP *aṭ-ṭaalib* 'the student' following its agreement with T. The problem with this analysis, however, arises when the assumed subject DP is preceded by the emphatic complementizer *ʔinna* 'indeed/surely' which licenses a lexical ACC Case to its adjacent nominals as shown in the contrasting sentence (18b). The point at which the latter nonstructural Case is licensed, the nominal DP at issue becomes inactive for any further formal relations (Chomsky 2001), which makes re-assigning it structural NOM Case as a consequence of *Agree* spurious. Even if one assumes, contra standard accounts, that structural NOM Case takes place prior in the derivation to the assignment of lexical Case with the additional proviso that the latter overrides the former, the adoption of this *Agree*-based Case mechanism does not seem optimum enough to yield a plausible explanation.

In fact, this lack of parsimony seems to characterize the account for ACC Case assignment within the *Agree*-based analyses too, which likewise hinges on an agreement relation between *v** and the DP object. However, while *Agree* in the TP domain is instantiated in terms of φfeatures, ACC Case agreement is established with reference to a stipulated formal entity between the agreement controller *v** and the target DP object. Although one could argue that it is *u*F/F matching that matters most, the discrepancy between the features that mediate the *Agree* relations in the two domains needs to be accounted for. Ideally, the latter analysis would fall

perfectly in place within Pesetsky & Torrego's (2001, 2004) system where structural Case (both NOM and ACC) is assumed to be a *u*T on D. But such a desired unification comes clearly at a cost: Case assignment is no longer within the purview of φ-features which are indispensable within an *Agree*-based analysis. The only plausible alternative left is therefore to tackle the clear disparity in the featural ingredients of the TP and *v*P syntactic domains by postulating a φ-based analysis that applies with equal force across-the-board in view of the crosslinguistic evidence that attests the existence of verbs that carry object φ-features (Richardson 2007; Baker 2008). Such a basic proposition, nonetheless, does not salvage the situation since it is short on empirical evidence from SA data. The examples below clearly show that the φ-features carried by the verb are exclusively linked to the external argument (subject), not the object. Notice that the gender features on the objects and the verb are completely reversed.

(19) a. ar-riʒaal-u daxxan-**uu** siʒaarat-an.
the-men.**M.PL**-NOM smoke.PST-3.M.PL a.cigarette.**F.SG**-ACC
'The men smoked a cigarette.' (SA)

b. rasama-**t** al-banaat-u ʕalam-an.
draw.PST-3.**F**.SG the-girls.F.PL-NOM a.flag.**M**.SG-ACC
'The girls drew a flag.' (SA)

With this obvious disparity in the overall featural makeup that purportedly plays a central role in SA structural Case assignment, the development of a 'neat' approach in the spirit of a minimalist framework seems out of reach. As has been shown, the closer scrutiny of the data has revealed several theoretical and empirical flaws which render SA Case assignment based on agreement grounds unnecessarily complicated. I propose that the way out of this intractable problem lies in a completely configurational account of structural Case assignment in SA.

5. The current proposal

The crucial insight that the present proposal aims to offer is that agreement plays a subsidiary role in SA Case assignment. Grounded by empirical facts, this alternative viewpoint draws largely on L&P's proposal which robustly defends an entirely configurational approach to Case assignment in Sakha against the analysis that combines both configurational rules and functional heads (B&V). To get an approximation of where the two analyses get at odds with each other, let us zoom in on some data from Sakha as presented in B&V.[5]

(20) a. Min ülel-ii-bin.
I.NOM work-AOR-1sS
'I work.'

b. Erel kinige-ni atyylas-ta.
Erel.NOM book-ACC buy-PST.3sS
'Erel bought the book.'

[5] I adhere to B&V's conventions of specifying agreement morphology in these examples. 1, 2 and 3 refer to the person of the agreed with element. The lower case letters 's' and 'p' indicate the argument's number (singular/plural) while the upper case letters 'S' and 'P' refer to the function of the agreed with element, S for subject and P for possessor.

c. Masha aqa-ty-gar surug-u yyt-ta.
Masha.NOM father-3SP-DAT letter-ACC send-PST.3SS
'Masha sent her father a letter.' (Sakha; B&V:599)

(21) a. En aaq-a-**qyn**.
you read-AOR-2SS
'You read.' (Sakha; B&V:630)
b. terilte-ni salaj-yy-(*ta)
company-ACC manage-EV.NMLZ-(*3SP)
'the management of the company'
c. Masha terilte-ni salaj-yy-**ta**
Masha.GEN company-ACC manage-EV.NMLZ-3SP
'Masha's managing the company' (Sakha; B&V:634)

The first set of constructions (20a, b, and c) are cited as clear evidence that demonstrates the inner workings of Case calculus as stipulated in B&V's aforementioned configurational rules (cf. (10) and (11) above). The Case value that an argumental NP gets is shown to be affected by the presence (or absence) of a Case competitor as well as the locality conditions to which these nominals are subject. The second set of examples, on the other hand, are provided to vindicate that in certain other linguistic environments nominals are case-assigned through agreement with functional heads. In sentence (21a), for instance, the NOM Case on the subject *En* 'you' is parasitic on *Agree* between T^0 and this NP as manifest in the agreement suffixes borne by the participial verb form *aaq-a-**qyn*** 'read'. Similarly, the genitive Case on the argumental NP *Masha* 'Masha' in (21c) is supposedly linked to φ-agreement between D^0 and the former NP possessor. Again, this is morphologically represented in the agreement suffix attached to the head noun *salaj-yy-**ta*** 'management'. So, were this *Agree*-based modality of Case assignment *inoperative* in Sakha, the latter's Case facts would not be captured solely by way of configurational rules.

The above-drawn conclusion is, then, the area of contention as L&P argue that the Sakha data do not necessarily justify a recourse to Case assignment via functional categories. The main basis for L&P's counterclaim — as discussed earlier, is that the relationship between agreement and Case assignment seems correlative at best given the fact that the designated functional heads are not causally involved in determining the Case value of the nominals within their domains. From this perspective, they maintain that a more optimal solution to account for the Sakha Case facts is to approach Case assignment along the lines of the following Revised Moravcsik Hierarchy (L&P:237).

(22) unmarked case ≫ dependent case ≫ lexical/ oblique case
accessible for φ-agreement

The core idea of this formulation is that agreement tracks Case assignment, not the reverse. To capture the facts, this algorithm should be parameterized in a way that ensures that accessibility for φ-agreement is restricted to unmarked Case-marking. The latter is contingent — on the present view — on the syntactic domain: it is spelled out as NOM in T and genitive in D. Conceived in this way, the agreement inflection ***qyn*** is realized on the participial (aaq) in (21a) simply because the probing T finds a properly case-assigned argument in its domain (viz. the subject *En* 'you'). By the same token, the presence of the agreement marker (**ta**) on the event nominalizer *salaj-yy* 'management' in (21c) is a direct corollary of there being an aptly case-

marked nominal (Masha assigned genitive Case, which is considered unmarked Case on the current proposal) in the search domain of D. The prediction that the latter agreement marker will disappear in the absence of a nominal with the relevant assigned Case is borne out in example (21b).

Modelling SA NOM and ACC Case along these lines also provides solutions to some of the aforementioned challenges. First, the stipulated φ-completeness of T is no longer a crucial issue given that this probing head will value its specified uninterpretable features upon locating a qualified nominal for agreement (This nominal is then assigned unmarked Case and becomes available within its search domain). Let us flesh out this point with a previously cited example.

(23) a. ʔakal-at/*na aṭ-ṭalibaat-u al-ʕinab-a.
eat.PST-3.F.**SG**/*3F.PL the-students.F.PL-NOM the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

b. ʔakal-at aṭ-ṭalibat-u al-kaʕk-a.
eat.PST-3.F.SG the-student.F.SG-NOM the-cakes.M.PL-ACC
'The student ate the cakes.' (SA)

By evaluating Case assignment through the above disjunctive hierarchy, Case calculus proceeds as follows: due to the non-existence of any lexical Case assigner in (23a), the second type of assignment (dependent Case) is invoked. Here, there are two NPs in the clause, which enter in competition for ACC Case assignment. The NP *al-ʕinab* 'the grapes' wins this competition in virtue of being lower than and c-commanded by the distinct NP *aṭ-ṭalibaat* 'the students'. The latter NP, then, receives unmarked Case (NOM as standardly assumed). At this juncture, the probing T can value its unvalued features given that its target nominal (as relativized in the hierarchy) is readily available within its search domain. Now, a question arises concerning the differences between the proposed analysis and the *Agree*-based account. The key distinction lies in the fact that the present analysis does not appeal to φ-agreement as a causal factor to determine Case form, which has shown to be problematic. In stark contrast to this, it defends the more plausible scenario that agreement simply tracks Case assignment. Because T in SA is deficient, only [Person] and [Gender] get valued. This fact becomes more transparent upon contrasting (24a) and (24b).

Another testing ground for this advanced proposal is the alternative SA word order in which a nominal DP precedes the verb. To illustrate this, let us simply reverse the order of the postverbal DP and the verb in the previous example. This yields the following pair of sentences.

(24) a. aṭ-ṭalibaat-u ʔakal-na/*at al-ʕinab-a.
the-students.F.**PL**-NOM eat.PST-3.F.**PL**/*3.F.SG the-grapes.M.SG-ACC
'The students ate the grapes.' (SA)

b. aṭ-ṭalibat-u ʔakal-at al-kaʕk-a.
the-student.**F.SG**-NOM eat.PST-3.**F.SG** the-cakes.M.PL-ACC
'The student ate the cakes.' (SA)

Before tackling Case computation in this pair, it is important to consider the pattern of agreement realized on the verb in both sentences. Recall that SA displays a peculiar agreement asymmetry within its alternating word orders. When a DP precedes the verb, full agreement (i.e. all φ-features) shows up. Given this concomitant occurrence of NOM Case and full agreement on the verb, the advanced analysis may look dubious. Upon closer scrutiny, however, this turns out to be only illusory for Case assignment facts can be derived in accordance with

the predictions of the set hypothesis. The process proceeds in this way: lexical Case assignment is not applicable because there is no head within the two sentences (lexical or otherwise) that induce this idiosyncratic type. As such, dependent Case assignment comes into play. The NPs involved in Case competition are prima facie the internal argument al-ʕinab 'the grapes' and the preverbal NP *aṯ-ṭalibaat* 'the students' in (18a), as well as *al-kaʕk* 'the cake' and *aṯ-ṭalibat* 'the student' in (18b). This observation, however, fails to recognize the status of *pro* as a Case competitor inasmuch as my analysis (following Soltan 2007 and Al-Balushi 2011) assumes that *pro* in SA receives Case despite its phonologically-covert nature. In light of this view, a redefinition of Case-competing NPs is in order. Instead of involving the aforementioned pairs as the evident Case competitors, the competition this time is between the internal arguments (*al-ʕinab* 'the grapes' and *al-kaʕk* 'the cake') on the one hand, and *pro* on the other. Given this new configuration, the designated internal arguments get assigned ACC dependent Case while *pro* receives unmarked Case, thereby triggering full specification of φ-features on the verb. This leaves us with the DPs that occur preverbally, namely: *aṯ-ṭalibaat* 'the students' and *aṯ-ṭalibat* 'the female student'. Here, I assume along Fassi Fehri (1993), Soltan (2007) and Al-Balushi (2011) that these preverbal DPs are simply left-dislocated elements that surface, again, with the unmarked Case. Although this type of Case has been assigned to *pro* in these sentences, it is not unconceivable that assigning it can apply again. Alternatively, one can motivate positing a 'default type' as is the case in Marantz' (1991) original proposal. But this has been proven to be redundant in view of the fact that default Case is, ontologically, another type of unmarked Case (Preminger 2021). Relatedly, one can still glean a piece of evidence in favour of the validity of *pro*'s status as a Case competitor in relevant constructions from the following sentences.

(25) a. ʔakal-**na** al-ʕinab-a.
eat.PST-3.F.PL the-grapes.M.SG-ACC
'They ate the grapes.' (SA)

b. ʔakal-**at** al-kaʕk-a.
eat.PST-3.F.SG the-cakes.M.PL-ACC
'She ate the cakes.' (SA)

Notice that (18) is only (19) above being stripped of the preverbal DPs (viz., the left-dislocated elements). Despite this pruning, so to speak, the pair in (19) is perfectly grammatical and the internal arguments receive ACC dependent Case in competition with *pro*. Perhaps, it may be argued, following this reasoning, that the dropped NPs themselves form a *pro* as a reflection of the rich inflection encoded on the verb (Koeneman & Zeijlstra 2019); therefore, the sentences at issue end up with two *pros*. I contend, however, that this intuitive generalization does not have a significant bearing on my analysis given that these dropped DPs are taken to be A-bar elements in the first place.

6. Conclusion and outlook

Departing from the crosslinguistically-attested disassociation between agreement and Case assignment, the present paper has attempted to defend an alternative view of SA structural Case assignment, which abstracts away from the standard 'causal' invocation of φ-feature agreement to this effect. Although the substance of this analysis is by no means novel in the literature, this research paper has adopted a relatively recent proposal advanced by Levin & Preminger (2015)

in which Case assignment in Sakha is recast to involve only configurational rules, contra Baker & Vinokurova's (2010) treatment that couples these rules with Case assignment via functional heads. Procedurally, this remodelling is implemented by following the proposed, independently motivated, disjunctive hierarchy in which agreement tracks Case assignment.

When put under the test, the suggested model has been shown to square nicely with Case assignment facts of core arguments in SA. In addition to this empirical coverage, it has resulted in two significant theoretic simplifications, which are both desirable from a minimalist standpoint. First, the computation of Case is now reduced to a single operating mechanism that yields the observable Case marking on the verb's main arguments. Second, the long-standing problem of agreement asymmetry in SA is no longer a complicating factor that obscures the account for Case assignment facts. Based on these favourable outcomes within the verbal domain, the next logical step is to extend this analysis to the nominal domain to assess its merits therein.

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Abbreviations

3	third person	NOM	nominative
F	feminine	ACC	accusative
M	masculine	GEN	genitive
SG	singular	PART	partitive
PL	plural	FV	final vowel of Bantu verbs
INF	infinitive	A	the Kilega vowel a
AOR	aorist	EV. NMLZ	event nominalizer
PST	past	SA	subject agreement
COMP	complementizer		

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The delimitative prefix *po-*, durative adverbials, and Slavic aspectual composition

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The paper examines perfective verbs with the delimitative prefix *po-* (*po*$_{\text{del}}$) combining with durative adverbials (DurAds) in Slavic, primarily based on examples from Serbian. Since DurAds are standardly assumed to diagnose atelicity, such examples constitute the main argument for separating Slavic perfectivity from telicity (e.g. Borik 2006), and pose the major obstacle for the view that perfectives in Slavic are telic (e.g. Łazorczyk 2010). I propose that DurAds are generated in the QP (a telicity projection), while *po*$_{\text{del}}$ combines with the QP, specifiying a telic predicate for singularity. Consequently, all prefixed perfective verbs in Slavic are necessarily telic.

1. Introduction

Verbs in Slavic languages are traditionally analyzed as falling into two aspectual categories: imperfective verbs (IVs) and perfective verbs (PVs). According to one of the most standard tests, if a verb can be used as a complement of a phasal verb, it is imperfective; otherwise, it is perfective, as in (1) from Serbian (see Borik 2006; Łazorczyk 2010; Zinova 2021 for discussion of this and other common tests).[1, 2]

(1) Jovan je počeo da peva^{I} / *od-peva^{P} pesmu.
Jovan.NOM AUX begin.PTCP COMP sing.3SG from-sing.3SG song.ACC
'Jovan began to sing a song.'

A typical way in which aspect morphology is expressed in Serbian is illustrated in (2). A simple verb consists of just a root, a theme vowel and an inflectional ending, as in (2a). Simple verbs are usually imperfective and can be perfectivized by prefixation, as in (2b). The prefixed verb can be imperfectivized by a secondary imperfectivizing suffix, as in (2c). Finally, an imperfective verb derived in this way can be made perfective again by prefixation, as illustrated in (2d). The same holds, *mutatis mutandis*, for other Slavic languages.

[1] Throughout the paper, the superscripts ^{I} and ^{P} are used for imperfective and perfective verbs, respectively.
[2] Unless explicitly indicated otherwise, all the examples in the paper are from Serbian.

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(2) a. vrš-i-ti^{I}
perform-TV-INF
'to perform'

b. iz-vrš-i-ti^{P}
out-perform-TV-INF
'to perform, execute'

c. iz-vrš-ava-ti^{I}
out-perform-SI-INF
'to perform, execute'

d. po-iz-vrš-ava-ti^{P}
over-out-perform-SI-INF
'to perform, execute all'

The exact nature of PVs and IVs is, however, largely debated. It is a common view that they are grammaticalized forms of grammatical (viewpoint) aspect in Slavic (PVs standing for the perfective and IVs for the imperfective aspect) (see e.g. Smith 1997; Borik 2006; Pereltstvaig 2005; Rothstein 2016; Minor et al. 2022). According to a wide-spread definition, imperfective viewpoint arises when the Reference Time interval is included in the Event Time interval (hence, we look at the event 'from the inside'), whereas perfective viewpoint stands for the Event Time interval being contained within the Reference Time interval (hence the event is seen 'from the outside') (cf. Reichenbach 1947; Klein 1994; Bhatt & Pancheva 2005; Łazorczyk 2010; for a recent overview, see Arche 2014a, b). The problem with such a view of IVs and PVs is that the grammatical aspect is established at the clausal level, given that the relation between the Event Time and the Reference Time crucially depends on finiteness (cf. Klein 1994, 1995; Tatevosov 2018), while the traditional PVs vs. IVs distinction is encoded already in the verbal stem, hence within the lexical (vP/VP) domain. Moreover, in some Slavic languges (Bulgarian, Old Church Slavonic, Serbian), there are specialized grammatical forms for the grammatical aspect (e.g. aorist vs. imperfectum) that cut across PVs and IVs (see Łazorczyk 2010). This is why some authors argue for divorcing the grammatical aspect from the verb and its morphology (e.g. Klein 1995; Łazorczyk 2010; Tatevosov 2011, 2015, 2018; Filip 2017; Arsenijević 2022; Milosavljević 2022).

Another prominent analytic option is to analyze PVs as telic/bounded/non-homogeneous, whereas IVs are atelic/unbounded/homogeneous (e.g. Bohnemeyer & Swift 2004; Borer 2005; Nossalik 2007; MacDonald 2008; Kwapiszewski 2020) and/or unspecified for telicity (Arsenijević 2022; Milosavljević 2022, in prep.). The temporal modification test (TMT) is one of the most standard diagnostics for (a)telicity, according to which durative adverbials (DurAds), often referred to as *for*-adverbials, modify atelic predicates, whereas time-span adverbials (TSAds), widely known as *in*-adverbials, modify telic predicates — but not vice versa, as in (3) from English. The TMT is probably the most widely used test for telicity since it is employed regardless of the exact way telicity is approached — in terms of the event-argument homomorphism (e.g. Dowty 1991; Krifka 1992, 1998), the result state component (e.g. Pustejovsky 1995), atomicity (e.g. Rothstein 2004, 2008), singularity (e.g. Arsenijević 2022), non-homogeneity/quantity (e.g. Borer 2005), scale features (e.g. Hay et al. 1999); for a broader overview, see e.g. Arsenijević et al. (2013); Rothstein (2016). In this paper, I assume that the computation of telicity is based on the quantity properties along the lines of Borer (2005): a predicate is telic (= Quantity) if it is not homogeneous. Since homogeneous predicates in her approach are those that are divisive and cumulative, telicity emerges if a predicate is non-divisive or non-cumulative.[3] The Quantity is assigned in the projection specifying the value of inner aspect — Asp$_{Q}$ in Borer (2005), or Q(uantification)P(hrase) in

[3] For Borer (2005:192), a predicate (*P*) is divisive iff for all *x* with property *P* there is a *y*, proper subset of *x*, with property *P*, such that subtracting *y* from *x* yields a set with the property *P*, whereas *P* is cumulative iff for all *x* with property *P* and all *y* with property *P*, a union of *x* and *y* has the property *P*.

Arsenijević (2006, 2007a, 2013). Hence, in the approach adopted in this paper, the QP is responsible for telicity.

(3) a. John ran *for an hour / *in an hour.* [atelic]
b. John wrote a letter *in an hour* / **for an hour*. [telic]
(English)

It is indeed generally the case that Slavic IVs behave as counterparts of English atelic predicates, while PVs are equivalents of English telic predicates, as illustrated by Serbian analogs of the English examples from (3) given in (4).

(4) a. Džon je trčao^{I} *sat vremena / *za sat vremena.*
John.NOM AUX run.PTCP hour.ACC time.GEN in$_{za}$ hour.ACC time.GEN
'John ran *for an hour / *in an hour.*'

b. Džon je napisao^{P} pismo *za sat vremena / *sat vremena*.
John.NOM AUX write.PTCP letter.ACC in$_{za}$ hour.ACC time.GEN hour.ACC time.GEN
'John wrote a letter *in an hour* / **for an hour*.'

The idea that (simple) IVs are associated with atelicity comes from the common assumption that in Slavic, unlike in English, internal arguments have no role in assigning telicity (e.g. MacDonald 2008; Rothstein 2016). Rather, it is standardly assumed that telicity is triggered by prefixation (Slabakova 1997; Svenonius 2004; Borer 2005; Arsenijević 2007b; Nossalik 2007; Žaucer 2009; Łazorczyk 2010; a.o.). There are, however, IVs that can combine with TSAds, as in (5) (= telic according to the TMT), as well as PVs that are used with DurAds, as in (6) (= atelic according to the TMT). Such examples have led many authors to propose that (im)perfectvity and (a)telicity are independent systems in Slavic (e.g. Filip 2000, 2005; Bohnemeyer & Swift 2004; Borik 2006; Kagan 2007; Gehrke 2008a, b; Ramchand 2008; Stanojević 2012; Althsuler 2013, 2014; Fleischhauer & Czardybon 2016; Fleischhauer & Gabrovska 2019).

(5) Đoković je retko gubio^{I} od Nadala *za sat vremena*.
Đoković.NOM AUX rarely loose.PTCP from Nadal.GEN in$_{za}$ hour.ACC time.GEN
'Đoković rarely lost to Nadal in an hour.'

(6) Mika je juče po-sedeo^{P} kod nas *par sati*.
Mika.NOM AUX yesterday PO-sit.PTCP at we.GEN couple.ACC hours.GEN
'Mika stayed at our place for a couple of hours yesterday.'

In this paper, I address the latter kind of examples — perfective verbs prefixed by the delimitative *po-* (*po*$_{del}$) combining with DurAds, in contexts like (6), termed *pofectives* in Piñón (1994).[4] In Łazorczyk (2010), pofectives are the only class of verbs that passes all the

[4] For the first kind of examples — IVs combining with TSAds — see Milosavljević (2022, in prep); Arsenijević (2022). In a nutshell, these authors propose that IVs are unspecified for both grammatical aspect and telicity, and hence compatible with all types of readings, including telic ones.

tests as atelic despite being prefixed. Yet, they are clearly perfective, as shown by their incompatibility with phasal verbs, as illustrated in (7).

(7) Mika je počeo da *po-leži^{P}.
Mika.NOM AUX begin.PTCP COMP PO-lie.3SG
Intended: 'Mika began to lie down.'

The puzzle of pofectives is even more intriguing if we know that the prefix *po-* has other uses, in which it is clearly part of a telic verbal predicate (hence patterning with all other prefixes in Slavic), as shown in (8–10) for the so-called distributve *po-*, the purely perfectivizing *po-*, and *po-* combined with degree achievements (DAs), respectively. In all these uses, verbs with the prefix *po-* are compatible with TSAds, but not with DurAds.

(8) Mika je po-zatvarao^{P} sva vrata *za pet minuta* /
Mika.NOM AUX PO-close.PTCP all doors.ACC in$_{za}$ five minutes.GEN
**pet minuta*.
five minutes.GEN
'Mika closed all the doors in five minutes / *for five minutes.'

(9) Mika je po-jeo^{P} šargarepu *za pet minuta* / **pet minuta*.
Mika.NOM AUX PO-eat.PTCP carrot.ACC in$_{za}$ five minutes.GEN five minutes.GEN
'Mika ate a carrot in five minutes / *for five minutes.'

(10) Mika je po-crneo^{P} *za pet minuta* / **pet minuta*.
Mika.NOM AUX PO-blacken.PTCP in$_{za}$ five minutes.GEN five minutes.GEN
'Mika turned black in five minutes / *for five minutes.'

Hence, the prefix *po-* is compatible with DurAds only when it is used as the delimitative *po-* (*po*$_{del}$), while in other uses (illustrated in (8–10)), it cannot be combined with DurAds, just like the majority of other prefixed perfective verbs in Slavic. In the vast majority of previous approaches, it is either assumed or explicitly claimed that DurAds enter the structure after *po*$_{del}$ has been merged with the main verb (e.g. Piñón 1994; Borik 2006; Łazorczyk 2010; see section 2 for an overview). An alternative view, that *po*$_{del}$ scopes over the duration of (imperfective) action which can be made explicit by DurAds, is suggested, to the best of my knowledge, only in Progovac (2005), although this idea is implicitly present also in Pereltsvaig (2000:166), where it is stated that DurAds, when combined with pofectives, are generated in the specifier position of an inner aspect projection. In this paper, based primarily on data from Serbian, I propose a detailed syntactic account that builds on Progovac's and Perelstvaig's ideas: the 'unexpected' behavior of *po*$_{del}$ is captured by having it merged above DurAds, instead of below, as this prefix is usually analyzed. Specifically, I propose that DurAds are generated in the QP (= telicity projection), contributing telicity, while *po*$_{del}$ is generated immediately *above* the QP, specifying a telic verbal predicate for singularity. My analysis supports the view that *all* Slavic prefixed perfective verbs are telic, i.e. there is no need for analyzing *po*$_{del}$ as the only exception (Łazorczyk 2010). The analysis supports the view that Slavic prefixes generally combine with a telic predicate (i.e. the QP), specifying it for singularity (Milosavljević 2022, in prep.). The paper is organized as follows. In section 2, I introduce and discuss previous approaches to the delimitative *po-*. Section 3 brings a detailed arguments for the proposal that *po*$_{del}$ combines with the QP hosting DurAds. In

section 4, I show how the proposed analysis enables a unique semantic and syntactic treatment of various uses of the prefix *po-*, and summarize its advantages over the previous approaches. Section 5 concludes.

2. Previous accounts of the delimitative po-

In works that keep perfectivity and telicity as two independent systems, pofectives are treated as one of the main pieces of evidence for such a position (e.g. Borik 2006; Gehrke 2008b; Ramchand 2008; Stanojević 2012; Fleischhauer & Gabrovska 2019), so their compatibility with DurAds comes as no surprise — rather, it reflects the fact that pofectives are atelic. However, in many approaches that endorse the view that Slavic perfective verbs are obligatorily telic and/or that prefixes introduce telicity, the status of pofectives usually remains unresolved. In this section, I provide an overview of some prominent accounts of po_{del} (and pofectives more generally), pointing out the main problems for both the approaches according to which all prefixes are telicity markers (section 2.1), as well as for those that do not necessarily link prefixes to telicity (section 2.2).

2.1. The delimitative po- *and prefixes as telicity markers*

According to Piñón (1994:368), pofectives, just like all other perfectives, have quantized reference, but, at the same time, they are like imperfectives in denoting processes. He states that 'they are just like process-denoting imperfectives with durative adverbials'. The formal definition is provided in (11a) (Piñón 1994:362–363): roughly, po_{del} combines with an imperfective agentive process and returns a perfective (quantized) agentive process at the same time entailing a measure function whose value is some contextually determined small number (i.e., smaller than the expectation value). Since po_{del} and DurAds are of the same type, their combination is natural; in essence, DurAds specify the exact quantity introduced by the prefix, e.g. *20 minut*, which, as modeled in (11b), restricts the denotation of *po-czytać* 'po-read.INF' in Polish, given in (11c) (Piñón 1994:364–365).

(11) a. $po_{\text{del}} \Rightarrow \lambda Q \lambda p[Q(p) \wedge \mu'(p)=r \wedge r<Exp(\mu'(p)) \wedge \exists u[Agent(u)(p)]]$

p – processes;
Q – predicates of type <e, t> u – objects;
μ – contextually determined additive measure function;
μ' – derived measure function: $\forall p[\mu'(p) = \mu(\tau(p))]$;
r – contextually determined small number;
Exp(μ'(p) – the expectation value of μ as applied to the temporal trace p.

b. *20 minut* $\Rightarrow \lambda Q \lambda p[Q(p) \wedge min'(p)=20]$

c. *po-czytać 20 minut* $\Rightarrow \lambda Q \lambda p[Q(p) \wedge min'(p)=20](\lambda p[czytać'(p) \wedge \mu'(p)=r \wedge r<Exp(\mu'(p)) \wedge \exists u[Agent(u)(p)]])$
$\Rightarrow \lambda p[czytać'(p) \wedge \mu'(p)=r \wedge r<Exp(\mu'(p)) \wedge \exists u[Agent(u)(p) \wedge min'(p)=20]$
(Polish; Piñón 1994:364–365)

A problem for Piñón's definition comes from the fact that *po*$_{\text{del}}$ does not necessarily express *small* quantity, as shown in Łazorczyk (2010) for Polish (see also section 4.1 for Serbian and other Slavic languages). In addition, if *po*$_{\text{del}}$ is a sort of DurAds, it is qualitatively different from other uses of the prefix *po-* (see e.g. examples (8–10) above), and from all other Slavic prefixes. Such an outcome is clearly undesirable, since it implies that the same exponent (the prefix *po-*) stands for entirely different syntactic and semantic content entirely accidentally. Further, the use of DurAds with pofectives means that DurAds combine with bounded predicates only in this particular case. All these issues do not arise under the view proposed in this paper: if *po*$_{\text{del}}$ combines with the QP triggered by DurAds, it can be unified with all other uses of *po-* (as shown in section 4.2 of this paper), and with all other prefixes. This prefix does not denote a (small) quantity by itself, rather, as will be shown below, its quantity properties depend on the QP it combines with. Finally, since DurAds merge before the prefix, they still combine with unbounded predicates (more precisely, the projection they are merged in combines with an unbounded predicate).

Borer (2005) analyzes all prefixes in Slavic as telicity assigners. As briefly introduced in section 1, in her approach, a predicate is telic if it is non-divisive or non-cumulative. As for *po*$_{\text{del}}$, Borer (2005:191–193) illustrates her approach in the following way: Russian *poguljat'*$_{\text{P}}$ 'walk for a short time' is telic, since it is not (necessarily) cumulative: 'walk for a short time' + 'walk for a short time' does not have to be 'walk for a short time': it may also be 'walk for a long time', since the sum of two small quantities may result in 'large quantity'. Borer's approach faces at least two difficulties. The first one is that she assumes (following Filip 2000) that *po*$_{\text{del}}$ means 'for a short time', which is problematic, as this prefix does not have to be associated with small quantities (see e.g. Dickey 2006; Zinova 2021:141 for counterexamples from Russian, and section 4.1 for further discussion). The second problem concerns the combinability of pofectives with DurAds. For Borer (2005:233), DurAds (i.e. *for*-adverbials), despite their role in changing non-Quantity to Quantity, are generated in the domain of *outer/grammatical* aspect (in the sense of Verkuyl 1972), at the same time exhibiting the so-called 'anti-telicity' effects: they are barred in the presence of an Asp$_{\text{Q}}$P projection, i.e. they require atelicity. But if *po*$_{\text{del}}$ triggers the projection of Asp$_{\text{Q}}$ in Slavic while DurAds merge above it *and* cannot combine with telic predicates, it is predicted that they cannot be combined — contrary to the empirical facts.[5] Nossalik (2007) also applies Borer's approach in her attempt to show that *po*$_{\text{del}}$ introduces telicity. Her approach, however, runs into exactly the same problem as Borer's, i.e. it does not explain the perfectly natural compatibility of pofectives with DurAds.

Łazorczyk (2010) adopts Borer's approach to telicity, as well as the general claim that prefixes introduce telicity in Slavic. However, she is well aware of the problem of the compatibility of pofectives with DurAds. More specifically, according to Łazorczyk (2010), the following holds for aspectual composition in Polish (and, by extension, in other Slavic languages): (i) prefixes — but not other elements (e.g. incremental objects, goal PPs, adjuncts) — yield telicity in Polish; as expected, (ii) *po-* with DAs (e.g. *po-drož-e-ć* (po$_{\text{Q}}$-expensive-V-INF) 'to get more expensive') are telic; (iii) the prefix *po-* that combines with DAs and *po*$_{\text{del}}$ is one and the same prefix. Premises (i–iii) naturally lead to the conclusion that

[5] A similar kind of problem in Borer's approach emerges with respect to the scopal relations between prefixes and secondary imperfective suffixes. Borer considers that these suffixes, just as DurAds, are generated in the domain of grammatical/outer aspect. Since all prefixes in her approach are generated in the QP, the model falls short of explaining the possibility for some prefixes to scope above the secondary imperfective suffixes, as in (2) above.

(iv) pofectives are also telic. Łazorczyk, however, concludes that all the standard tests for telicity converge in delivering such verbs as atelic.[6] In this way, the prefix *po-* remains the only prefix that, when combined with an imperfective verb, gives rise to a perfective atelic verb, and it does so *only in one of its meanings/uses* — when it surfaces as *po*$_{\text{del}}$. In addition, *po*$_{\text{del}}$ is the only prefix reported in Łazorczyk (2010) that has such a vague meaning which ranges from 'a little' to 'quite a bit' (for the claim that its meaning is vague see also Součková 2004; Jabłońska 2004:368; Filip 2000, 2017). Again, the approach argued for in the present paper, according to which *po*$_{\text{del}}$ combines with the QP hosting DurAds, avoids the problems encountered in Borer (2005), Nossalik (2007) and Łazorczyk (2010), since it correctly derives the combinability of *po*$_{\text{del}}$ and DurAds, at the same time enabling a system in which all prefixes are part of the telic structure.

In the approaches of Biskup & Zybatow (2015), Tatevosov (2018) and Biskup (2019), prefixes introduce result and/or target states. These authors admit that *po*$_{\text{del}}$ is problematic for such a claim since pofectives combine with DurAds and not with TSAds, as expected for telic predicates. They provide examples showing that pofectives (in Czech and Russian) can derive past passive participles, which is an indication that *po*$_{\text{del}}$ must be equipped with the result state component, given that passive participles are standardly assumed to express a result/target state (Biskup & Zybatow 2015:1496; Tatevosov 2018:fn. 21). However, this diagnostics may be problematic for other Slavic languages, given that in e.g. Serbian simple imperfective verbs can also derive past passive participles.[7] But even if we take the passive participle test as evidence that *po*$_{\text{del}}$ introduces a result state, the fact that pofectives are compatible with DurAds still remains unexplained.

A common denominator for all the approaches discussed in this section is that they take for granted that DurAds enter the derivation once the prefix has been merged with the verb. As briefly indicated in the introduction, the opposite perspective — that DurAds merge before *po*$_{\text{del}}$ — is suggested in Progovac (2005) and (implicitly) in Pereltsvaig (2000). Progovac analyzes *po*$_{\text{del}}$ (as other prefixes in Serbian) as generated in an inner aspectual projection (Asp$_{\text{O}}$P in her approach), from where it scopes (quantifies) over the duration of the imperfective action, 'resulting in the interpretation of an action taking place for a limited period of time' (Progovac 2005:105). The duration itself, expressed by an implicit or overt adverb, originates in a low ('object') tense projection (T$_{\text{O}}$P), which immediately dominates the VP (= vP in my approach). Pereltsvaig (2000:166) briefly states that DurAds are felicitous with pofectives since the specifier position of an inner aspect projection in the case of pofectives remains available (and accusative DurAds in Russian in her approach are generally argued to originated in the Spec,(inner)AspP; see section 3.2).

[6] Apart from the Temporal Modification Test, she reports the results of the conjunction and homogeneity tests.

[7] This is illustrated in example (i) below, with the simple imperfective verb *čitati* 'read' used in the passive participle form:

(i) Tri nova teksta biće čitana od strane eminentnih glumaca […]
three new texts will read.PTCP.PASS from side.GEN eminent actors.GEN
'Three new texts will be read by eminent actors […]' (Letnji repertoar Madlenianuma; 03/08/2022)

2.2. The delimitative po- *and prefixes as orthogonal to telicity*

Besides Piñón (1994), in many other works *po*$_{del}$ is analyzed as having the same (type) of meaning as DurAds, or measure adverbials more generally (e.g. Filip 2000, 2017; Braginsky & Rothstein 2008). For Filip (2000, 2017), the behavior of *po*$_{del}$ poses a 'quantization puzzle', as pofectives fail to exhibit quantized properties according to the standard tests. Quantization in her approach must be achieved through the application of the perfectivity operator. Since DurAds in Filip's (2017) approach have a quantization effect, and *po*$_{del}$ performs the same (type of) function as DurAds, it is surprising that *po*$_{del}$ does not bring quantization by itself.

Building on the scale-based approaches of Hay et al. (1999), Kennedy & Levin (2002), and most directly Filip (2000), Součková (2004) proposes a scalar approach to *po*$_{del}$ in Czech, as in (12). Just like Filip, Součková analyzes *po-* as denoting an extensive measure function, comparable to phrases like *two meters* in *two meters long*, with the difference that the content of the prefix *po-* is vague.

(12) [[*po-*]] = $\lambda P \lambda e[P(e) \wedge m(e) = c_{relatively.small}]$,
where *P* stands for a predicate, *e* is an event variable, *m* is a measure function and *c* means that the value is contextually determined. (Součková 2004:410)

As Součková puts it, different interpretations of *po*$_{del}$ in Czech — short time (the most typical examples), short distance (with motion verbs) or low degree (with DAs) emerge due to the application of *po*$_{del}$ with the core meaning as in (4) to different scales: a time scale, a path scale or a degree-of-change scale, respectively. Typically, *po*$_{del}$ applies to a temporal scale whenever there are no other scales available.[8]

Kagan (2016a, b) further builds on Filip's and Součková's approaches to develop a system in which *all* prefixes in Russian (and, by extension, Slavic) relate two degrees/points on a scale and thus receive scalar meanings. Briefly, there are different scales prefixes can operate on: the path scale, the property scale, the volume/extent scale and the time scale, with a scale being provided by the verbal root, the (incremental theme) object, the context or, rarely, by the prefix itself. There are clear tendencies and hierarchies in the application of particular prefixes to different scales, with the property and path scales generally having priority over the volume scale, which in turn is ranked higher than the time scale (see Kagan 2016a:ch. 7, as well as the discussion in section 4.2 of this paper). However, some prefixes may be specified not to apply to scales of a particular type, in which case they apply to a different kind of scale even if that scale occupies a lower position in the hierarchy. The delimitative *po-* is one of the prefixes that choose their own favorite type of scale: in Russian, it clearly prefers the time scale, although it combines also with the property and volume scales (e.g. *po-sušit'* '*po*-dry' and *po-est' jablok* '*po*-eat apples', respectively).[9] The only case where *po*$_{del}$ clearly does not select the time scale is when it attaches to an already perfective verb, as in *po-uspokoit'sja* (*po*-get_calm 'get somewhat calmer'), where *po*$_{del}$ operates on the property scale.

[8] Součková also argues, contra Filip (2000), that extensive measure functions do not pose a homogeneity requirement, hence there is nothing 'wrong' in combining *po*$_{del}$ with already perfective/quantized predicates (see Součková 2004:414–417 for a detailed argumentation based on some parallels from the nominal domain).

[9] Kagan (2016b:313) herself acknowledges that it is extremely difficult to keep these interpretations apart, since there is always a very strong correlation between proceeding along some property and temporal unfolding of the event, e.g. small quantities on the volume scale usually take a small quantity of time. A similar point is made in Fleischhauer & Gabrovska (2019) for Polish.

Building on Filip (2000) and Součkova (2004), Kagan (2016a:47, 2016b) proposes the semantics of po_{del} as in (13):

(13) [[po-]] = λPλdλxλe.[P(d)(x)(e) ∧ d ≤ d_c],
where d is the degree-of-change argument of the event, in the sense of Kennedy & Levin (2002), and d_c is a contextually supplied expectation value.
'Roughly, *po-* looks for a predicate that takes a degree, an individual, and an event argument and imposes the '≤' relation between the degree argument and the contextually provided expectation value d_c.' (Kagan 2016a:47)

With Součkova, Kagan assumes the same semantics of po_{del} regardless of the type of a scale it combines with. Kagan gives credits to Součkova for introducing the time scale into the analysis of prefixes. However, Kagan emphasizes that the role of the time scale differs from other types of scales as far as telicity is concerned, stating that delimitation along this type of scale is not sufficient for a predicate to be telic (at least under most approaches to telicity). Kagan (2016b:312) also states that the time scale to which po_{del} applies, and which is always available in a sentence, is presumably contributed at a higher structural level, i.e. in the AspP or TP area. Although Kagan (2016a:45, 2016b:306–307) states that DurAds in English (in examples such as *John slept for eight hours*) impose a degree of change, which measures the distance between the starting and final points along the time scale, she does not explicitly discuss the exact relation of po_{del} and DurAds in Slavic, i.e. whether they both apply to the existing time scale at the same time, in which order they apply, etc.

3. The proposal

In this section, I present arguments for the claim that the delimitative prefix *po-* combines with the QP triggered by DurAds. The argumentation consists of the following three basic steps. In section 3.1, it will be shown that DurAds can denote both bounded and unbounded quantities. In section 3.2, I present arguments that *bounded* DurAds trigger telicity (i.e. the projection of the QP), specifically: (i) they are in complementary distribution with spatial adverbials, which are standardly assumed to be generated in the QP; (ii) they can combine with TSAds (= *in*-adverbials) in some contexts; (iii) they have a narrow scope with respect to various operators argued to indicate their low position (e.g. Morzycki 2004, 2006). Finally, in section 3.3, I show that perfective verbs with po_{del} can compose only with bounded DurAds, whereas imperfective verbs are unrestricted in this regard, which is accounted for if the prefix composes with the QP triggered by bounded DurAds. The structure I argue for is given in (14).

(14) [$_{AspP}$ Perf° [$_{VoiceP}$ Agent [$_{Voice'}$ Voice° [$_{NumP}$ po_{del} [$_{Num'}$ Sg° [$_{QP}$ DurAd [$_{Q'}$ Q° [$_{vP}$ ...]]]]]]]]

I assume that po_{del}, like all other prefixes in Serbian/Slavic, is generated in the specifier position of the projection responsible for number in the verbal domain (NumP), where it triggers singularity; for detailed arguments, I refer the reader to Milosavljević (2022, in prep), as well as to Kagan (2007, 2008, 2010) and Arsenijević (2022) for additional discussion of Slavic PVs as singular predicates. Note that I take the vP as a verbalizing projection, separated from the external-argument projection, i.e. the VoiceP (cf. e.g. Harley 2013). The

AspP in (14) stands for the grammatical aspect. Singular telic predicates, that is predicates denoted by PVs, being telic/non-homogeneous, must be selected by the perfective operator (the imperfective operator can only select homogeneous predicates; see Łazorczyk 2010; Arsenijević 2022; Milosavljević in prep. for discussion and arguments).

3.1. Durative adverbials: bounded vs. unbounded

It is well-known that DurAds have different potential attachment sites in the structure, the three most typical of which are the Event Time specification, as in (15a), the Reference Time specification, illustrated in (15b), and the Result Time specification, exemplified by (15c). In all these cases, DurAds combine with homogeneous predicates (cf. Csirmaz 2009, 2012).

(15) a. Event Time
Tracy ran *for ten minutes*.
b. Reference Time
Tracy was running to the shed *for ten minutes* but then decided to head to the house.
c. Result Time (the time at which the result state holds)
Tracy opened the window *for two hours*. (English; Csirmaz 2009:237)

For the purposes of this paper, directly relevant is the use of DurAds when they specify the Event Time, and more specifically, the question of whether they are generated in the domain responsible for telicity. In English, two types of DurAds are argued to specify the Event Time: *for*-adverbials and bare DurAds, whereas Slavic DurAds act as counterparts of both these types of adverbials, as illustrated in (16). Only DurAds with a specified/bounded quantity, e.g. in English *(for) two hours*, *(for) an hour* — but not *for hours*, *for days* — are able to assign quantity properties. Notice that in English DurAds with an unspecified quantity can be expressed only by *for*-phrases (as in (17a)), while bounded ones can be expressed also by bare adverbials (as in (17b)). In Slavic, this distinction is encoded by using the accusative case for bounded quantities (18a) and the instrumental case for unbounded quantities (18b) (cf. Pereltsvaig 2000; Szucsich 2001). Such a marking accords with a cross-linguistically observed role of the accusative case in measuring out/delimiting the event (e.g. Pereltsvaig 1999, 2000; Szucsich 2001, 2002; Kratzer 2004; Morzycki 2004; Travis 2010; Kagan 2020).

(16) Džon je spavao dva sata.
John.NOM AUX sleep.PTCP two hours
a. ‘John slept *for two hours*.’
b. ‘John slept *two hours*.’

(17) a. John slept *(for) hours.
b. John slept (for) an hour. (English)

(18) a. Pera je spavao sat vremena.
Pera.NOM AUX sleep.PTCP hour.ACC time.GEN
‘Pera slept (for) an hour.’
b. Pera je spavao satima.
Pera.NOM AUX sleep.PTCP hour.INS
‘Pera slept for hours.’

3.2. Bounded durative adverbials sit in the QP

The question of whether the Event-Time-specifying bounded DurAds should be analyzed as generated in the domain of telicity (= QP) is a subject of debate. For instance, Borer (2005) considers that DurAds are generated in the domain of *outer/grammatical* aspect (in sharp contrast with other quantity assigners, which are generated in the domain of *inner* aspect, i.e. telicity), despite the fact that they assign Quantity to a predicate they combine with. Kagan (2016a, b) claims that the contribution of DurAds is not sufficient to derive telic predicates: they provide the time scale, which is generated higher up in the structure (presumably, in the AspP or the TP) (see also section 2). MacDonald (2008:ch. 2) places DurAds as adjoined to the (external argument introducing) *v*P — above the projection responsible for the inner aspect (= telicity). Unlike the majority of other approaches, MacDonald explicitly claims that DurAds are not subject to the homogeneity requirement, given that they can combine with telic predicates — questioning the so-called homogeneity requirement — the robust generalization that DurAds can be combined only with homogeneous, unbounded predicates (cf. e.g. Borer 2005; Morzycki 2004, 2006; Landman & Rothstein 2010, 2012a, b). On the other hand, according to Pereltsvaig (2000), Slavic accusative (= bounded) DurAds are generated in the (specifier of the) projection responsible for the inner aspect. Specifically, Slavic accusative adverbials share with (some) accusative direct objects a property of quantizing a predicate they combine with. While direct objects that can measure out the event are base-generated in the Spec,vP, moving to the Spec,(Inner)AspP (= QP in my approach) to check the [+(B)oundedness] feature, accusative DurAds are proposed to be base-generated in the specifier of (Inner)AspP. Accusative direct objects and DurAds compete for the position of Spec,(Inner)AspP: when accusative objects move to this position to measure out the event, DurAds are blocked; their combination is felicitous only if accusative objects remain in their base-generated position (Spec,vP), in which case DurAds, and not the object, measure out the event.[10] A similar claim is made in Szucsich (2001, 2002) (also for Russian) and Arsenijević 2006, 2007b, 2013 for English *for*-adverbials — DurAds are proposed to be either modifiers or specifiers of the QP.

In the remainder of this section, I will defend the stance pursued in Pereltsvaig (2000), Szucsich (2001, 2002) and Arsenijević (2006, 2007a, 2013) — that DurAds are generated in the QP, as in the portion of the structure in (19).[11]

(19) $[_{QP}$ DurAds $[_{Q'}$ Q° $[_{vP}$ ...]]

The first argument for the structure proposed in (19) comes from the fact that DurAds form a unique class with spatial measure phrases in both English and Slavic, the latter being standardly analyzed as generated in the QP, since they can combine with TSAds — see (20) for examples from English and Serbian (see also Pereltsvaig 2000 for additional support from Russian). Namely, as shown in Mittwoch (2010:255), DurAds are in complementary distribution with spatial measure phrases in English: (21a) is ill-formed (on the singular event reading) because both *five miles* and *for an hour* apply to a homogeneous predicate and yield

[10] This is in accordance with the constraint stating that there can be only one delimitation per event (e.g. Tenny 1994; Filip 2000).

[11] Once projected, the QP can be embedded under the singular NumP, as in examples with *po*$_{del}$; see the structure in (14) above. However, in imperfective environments, it can also be selected by the progressive or the plural operators, which are contexts that go beyond the scope of this paper (but see Milosavljević 2022, in prep).

a non-homogeneous one. The same holds for Serbian: the sentence in (21b) is ungrammatical, unless DurAds modify the Reference Time (i.e. the action of Pera's walking two miles repeats during the interval of two hours or it receives a progressive interpretation).[12]

(20) a. I have walked five miles *in two hours*. (English)
b. Pera je šetao[I] pet milja *za dva sata*.
Pera.NOM AUX walk.PTCP five miles.GEN in$_{za}$ two hours
'Pera walked five miles in two hours.'

(21) a. *I have walked five miles for two hours. (English)
b. *Pera je šetao pet milja dva sata.
Pera.NOM AUX walk.PTCP five milles.GEN two hours
'Pera walked five miles for two hours.'

It would be indeed surprising that spatial adverbials like *five miles* and DurAds are in complementary distribution, and that *five miles* introduces telicity (= triggers QP) if the two types of measure expressions were generated in two radically different domains (i.e. the inner vs. outer aspect).

The second argument for the structure in (19), which directly complements the argumentation just discussed, concerns the possibility to combine DurAds with TSAds. Usually, DurAds are not combined with TSAds, but this constraint is pragmatic rather than a matter of grammar: both DurAds and TSAds express the temporal duration of an event, so their combination is rarely informative. However, *Google* provides examples like (22a–b), which is a kind of context showing that, under appropriate circumstances, it is actually possible to combine both bare adverbials and *for*-adverbials in English with TSAds.[13] Similar examples are available also for DurAds in Serbian, as illustrated in (23–24). These examples imply that DurAds can indeed be generated in the QP.

(22) a. How to sleep for 8 hours in 3 hours? (English; Twitter; 03/11/2022)
b. How to sleep 8 hours in 3 hours?
(English; Why Am I Too Tired To Sleep?; 03/08/2022)

[12] Notice that in Serbian, unlike Russian, the numerals *pet* 'five' and above are not marked for case, but the accusativity of DurAds is confirmed by examples like (18) above.

[13] An anonymous reviewer raises the question whether in these contexts both *for*-DurAds and bare DurAds are equally acceptable, providing a similar type of example from German (given in (ii) below), in which, according to them, only bare DurAds, but not *for*-DurAds, are acceptable.

(ii) Ich habe (*für) acht Stunden in drei Stunden geschlafen.
I.1SG AUX (for) eight hours in three hours sleep.PTCP
'I have slept (?for) eight hours in three hours.' (German)

Indeed, narrowing down the Google search (performed on August 3rd, 2022) to the queries 'How to sleep 8 hours in 3 hours' and 'How to sleep for 8 hours in 3 hours' (only within the domain .co.uk) delivers 251 results for examples with bare DurAds and 5 results for examples with *for*-DurAds. However, these differences in frequency (or even the possibility that in English or German only bare adverbials are possible) do not affect the main argument of the paper, since DurAds in Serbian are equivalents of both types of English/German DurAds (as also noted by the reviewer). In addition, other tests, discussed with respect to the third argument, show that *for*-DurAds in English are generally possible in all the positions occupied by bare DurAds in English.

(23) Napokon sam savladao tehniku brzog spavanja. Sada spavam
finally AUX master.PTCP technique.ACC fast sleeping.GEN now sleep.1SG
8 sati za 3 sata.
8 hours.GEN in$_{za}$ 3 hours.
'I have finally mastered the fast sleep technique. Now I sleep (for) 8 hours in 3 hours.'

(24) Kada naučite da odmarate *8 sati za 3 sata*, imaćete
when learn.2PL COMP rest.2PL 8 hours.GEN in$_{za}$ 3 hours have.FUT.2PL
kvalitettniji radni dan i više vremena za sebe.
better working day.ACC and more time.GEN for self.ACC
'Once you learn to rest for 8 hours in 3 hours, you will have a better working day and more free time.'

At first glance, the provided examples may sound strange due to our world knowledge: it is not physically possible to sleep/rest (for) 8 hours in 3 hours. However, they are fine under the intended interpretation that one spends sleeping/resting 3 hours which are of the same quality as one's feeling of rest when sleeping/resting (for) 8 hours. A type of example with DurAds in the scope of TSAds that is more compatible with our world knowledge is illustrated in (25).[14]

(25) Context: Suppose that Jana's goal for October is to play the piano for 20 hours, and she manages to accomplish this goal in the first week of October. Then one could say:
Jana je svirala klavir *20 sati za nedelju dana*.
Jana.NOM AUX play.PTCP piano.ACC 20 hours.GEN in$_{za}$ week.ACC days.GEN
'Jana played the piano for 20 hours in a month.'

Finally, the third argument for the structure in (19) comes from a low scope of DurAds with respect to various operators. Morzycki (2004, 2006) and Csirmaz (2009, 2012) argue that bare durative adverbials, unlike *for*-phrases, can measure only the duration of the event time. Morzycki (2006) reports a number of tests showing that bare DurAds in English are generated low in the structure, immediately above the vP, in a projection that he labels Deg$_V$P, which is a vP-domain instantiation of the more general DegP, which hosts measure phrases (e.g. *two meters long* in the adjectival domain). Specifically, according to Morzycki (2006:282, also Morzycki 2004), bare adverbials always have a narrow scope with respect to negation (26), quantified arguments (27), or generic quantifier over intervals (28), while *for*-phrases can have both high and narrow scope in these contexts. Distributional possibilities of *for*-phrases and bare adverbials in contexts like (29) are also taken to indicate their low position in the structure: bare adverbials cannot occur above *for*-adverbials. Morzycki also argues that vP measure phrases, just like measure phrases in other domains, must be quantificationally weak. Quntificationally strong measure phrases behave like *for*-phrases, as shown in (30). Hence, bare durative adverbials are *always* merged immediately above the vP, while *for*-phrases *can* be merged in the same position. Given that Slavic DurAds serve as counterparts of both these adverbials, they are also expected to merge immediately above the vP in one of their uses. Morzycki's (2006) DegP closely matches the QP in the approach argued for in the present paper. It projects right above the vP, hosts expressions specifying a bounded interval on a scale which assigns bounded quantity to the event and hosts DurAds. Hence the proposed account is fully compatible with Morzycki's and his arguments also apply to my analysis.

[14] This type of context was suggested to me by an anonymous reviewer of Milosavljević (2022).

(26) a. Clyde didn't sleep an hour. (¬ ≺ an hour; *an hour ≺ ¬)
b. Clyde didn't sleep for an hour. (¬ ≺ an hour; an hour ≺ ¬)
(English; Morzycki 2006:282)

(27) a. Few chiropractors waltzed ten minutes. (few ≺ 10 min; *10 min ≺ few)
b. Few chiropractors waltzed for ten minutes. (few ≺ 10 min; 10 min ≺ few)
(English; Morzycki 2006:282)

(28) a. Clyde swam a year. (GEN ≺ a year; *a year ≺ GEN)
b. Clyde swam for a year. (GEN ≺ a year; a year ≺ GEN)
(English; Morzycki 2006:282)

(29) a. Clyde usually slept less than six hours for a year.
b. *Clyde usually slept for less than six hours a year. (English; Morzycki 2006:282)

(30) Clyde didn't sleep the whole day. (¬ ≺ the whole day; the whole day ≺ ¬)
(English; Morzycki 2006:282)

To sum up, the following facts indicate that bounded DurAds can be generated immediately above the vP, i.e. in the domain responsible for telicity (= QP), i.e. that they assign quantity properties to a predicate they combine with: they are in complementary distribution with spatial measure phrases, they can fall within the scope of TSAds, and they can have a low scope with respect to various operators. To these arguments, we can add the fact that they are expressed by the accusative case in Slavic (as indicated at the beginning of this section), which makes them a bit object-like in the sense of Pereltsvaig (2000). Hence, DurAds *can* be generated in the QP, but can also be banned from merging in this position when it is occupied by accusative measuring-out objects or spatial measure phrases.[15]

3.3. The delimitative po- *combines with bounded durative adverbials*

The delimitative prefix *po-* can only combine with bounded DurAds, e.g. *svega par minuta* 'for just a few minutes', *neko vreme* 'some time' or *poprilično dugo* 'for quite some time' in (31). DurAds expressing unbounded quantity, such as the instrumental adverbial *satima* in (32) are infelicitous with this prefix.[16] The corresponding imperfective verbs, on the other hand, freely combine with unbounded DurAds, as illustrated in (33). If perfective verbs with *po-*$_{del}$ were 'just like process-denoting imperfectives with durative adverbials' (Piñón 1994:368) or if they were atelic, as suggested by the proponents of the independence of (Slavic) perfectivity and telicity, the boundedness condition would be surprising. However, if

[15] Since singular telic predicates are selected by the Perfective aspect, as indicated in section 3, DurAds are in these cases banned also from merging in higher structural projections, since they can be generated only in projections selecting a homogeneous structure.

[16] Boban Arsenijević (p.c.) suggests that such examples improve if the instrumental adverbial is taken as some kind of apposition to the already established quantity. I believe the behavior of instrumental adverbials can be accounted for if they are analyzed as some kind of quantity-related manner modifiers, adjoined to the QP. In this sense, the distinction between accusative/bounded and instrumental/unbounded adverbials is reminiscent of the accusative vs. instrumental cognate objects, where the former can perform a measuring-out role, while the latter act as manner modifiers (cf. e.g. Pereltsvaig 1999 for Russian; Marelj 2016 for Serbian).

po-$_{del}$ is restricted to combine with the QP, as proposed in (14), this state of affairs is expected, since the QP triggered by accusative DurAds contributes the boundedness.

(31) Janko je *svega par minuta / neko vreme / poprilično dugo*
Janko.NOM AUX just couple.ACC minutes.GEN some time.ACC quite long
po-radio^{P} na zadatku.
PO-work.PTCP on task.LOC
'Janko worked on a task for only a few minutes / for a while / for quite some time.'

(32) Janko je (**satima*) po-radio^{P} na zadatku.
Janko.NOM AUX hours.INS PO-work.PTCP on task.LOC
Intended: 'Janko worked on a task for hours.'

(33) Janko je *satima* radio^{I} na zadatku.
Janko.NOM AUX hours.INS work.PTCP on task.LOC
'Janko worked on a task for hours.'

Additional support for the proposal that *po*$_{del}$ merges with the QP comes from the fact that this prefix can be combined with verbs which are already perfective and telic (thus embedding the QP), as illustrated in (34) and (35). In such cases, the prefix *po*- adds a nuance of the meaning of distribution. Roughly, in (34), it emphasizes that all the relevant parts of the object are assessed (which is a meaning compatible with the quantifier *celu* 'entire', accompanied by the expression *deo po deo* 'piece by piece'). Example (35) is more difficult to paraphrase in English: it is implied that all the relevant 'thinking units' are assessed in a step-by-step fashion until all of them have been fully thought of. In section 4.2, I will argue that distribution is actually the core meaning of the prefix *po*-.

(34) a. Mika je spremio^{P} kuću.
Mika.NOM AUX tidy_up.PTCP house.ACC
'Mika tidied up the house.'

b. Mika je [po-spremio^{P}]^{P} (celu) kuću deo po deo.
Mika.NOM AUX PO-tidy_up.PTCP entire house.ACC part.ACC over part.ACC
'Mika tidied up the entire house piece by piece.'

(35) a. Mika je raz-mislio^{P} o svemu.
Mika.NOM AUX apart-think.PTCP about everything.LOC
'Mika thought about everything.'

b. Mika je [po-[raz-mislio]^{P}]^{P} o svemu.
Mika.NOM AUX PO-apart-think.PTCP about everything.LOC
'Mika thought about everything.'

A potential challenge for the proposal that *po*$_{del}$ merges with a telic predicate instead of marking telicity itself comes from examples where the prefix *po*- is used without DurAds, as in (36). I propose that in such cases the quantity that triggers the projection of QP is expressed by a contextual variable (C-var$_{Q}$), a phonologically null anaphoric element (in the sense of Marti 2003) whose value is contextually determined, relative to a situation in which the respective verbal predicate is interpreted. The relevant structure is provided in (37).

Essentially, such a proposal is a 'syntacticized' version of a common semantic representations according to which the exact value of the time scale is provided by the contextually given standard (see section 2 above) — following the argumentation in Stanley (2000) and Stanley & Szabó (2000), a.o., that all the effects of extra-linguistic context on the truth-conditions are represented at LF (see also Arsenijević 2007a for quantity-related contextual variables represented in the syntactic structure). Essentially, then, the C-var_Q is a default quantity measure, while DurAds are overt expressions of quantity when a precise measure is intended. In a sense, DurAds can be taken as evidence for a syntactic position expressing quantity in the (Spec of) QP. A non-overt quantity specification is a (default) option when expressing other types of quantity-relations, e.g. along the property scale or the volume scale, as shown in section 4.2 with respect to other uses of the prefix *po-*.

(36) Mića i Kića su se juče sreli i po-razgovarali^P.
Mića.NOM and Kića.NOM AUX REFL yesterday meet.PTCP and PO-talk.PTCP
'Yesterday, Mića and Kića met and talked (for a while).'

(37) [$_{NumP}$ *po*$_{del}$ [$_{Num'}$ Sg° [$_{QP}$ C-var_Q / DurAds [$_{Q'}$ Q° [$_{vP}$ ...]]]]]

4. Unifying the meaning of the prefix po-

This section addresses the question of meaning of *po*$_{del}$ with respect to the standard claim that it denotes a small quantity (of time), as well as the possibility to unify its meaning with other uses of the prefix *po-*. I argue in favor of a unified approach, according to which the core meaning of this prefix is distribution, while its different uses stem from different syntactic contexts (or scales) it combines with.

4.1. The meaning of po$_{del}$*: not a small quantity*

As can be observed from example (31) above, repeated here as (38), *po-*$_{del}$ is compatible with small, 'neutral' and large quantities in Serbian. The compatibility with large quantities is even more obvious in examples like (39–40), as in such cases the quantity is significantly greater than some expected standard (an average match duration and an average lifetime, respectively), rather than smaller, as usually assumed for *po*$_{del}$. Similarly, Łazorczyk (2010:192) states that the meaning of *po*$_{del}$ in Polish is usually 'some, little', but it can also connote a satisfactory amount and mean 'quite a bit', while Zinova (2021:141) provides examples that show that *po*$_{del}$ is not always associated with a small quantity in Russian either, as illustrated in (41). Dickey (2006) states that *po*$_{del}$ in Russian is associated with indefinite duration. For instance, in (42), the situation expressed by the pofective is 'simply located between other situations in a sequence of events; nothing is explicitly asserted concerning the duration of the situation' (Dickey 2006:3).[17] All this suggests that *po*$_{del}$ does not entail any *specific* duration by itself. In the next section, I will argue that its meaning, together with other uses of the same prefix, always depends on the bounded quantity scale it combines with.

[17] Dickey (2006) proposes that a nuance of short duration is an implicature arising due to the competition of *po*$_{del}$ with other prefixes.

(38) Janko je *svega par minuta / neko vreme / poprilično dugo*
Janko.NOM AUX just couple.ACC minutes.GEN some time.ACC quite long
po-radio^{P} na zadatku.
PO-work.PTCP on task.LOC
'Janko worked on a task for only a few minutes / for a while / for quite some time.'

(39) Moglo bi se reći da je meč po-trajao.
could.PTCP AUX REFL say.INF COMP AUX match.NOM PO-last.PTCP
'It could be said that the match lasted (→ quite a bit).'

(40) On je bar po-živeo!
he.NOM AUX at_least PO-live.PTCP
'At least he lived! (→ quite a bit)'

(41) Znat', mnogo po svetu po-brodil^{P}, vsjakogo raznogo uspel
know lot over world.DAT PO-wander.PTCP all different manage.PTCP
na-slušat'sja na-smotret'sja.
on-hear.INF.REFL on-look.INF.REFL
'You know, he wandered a lot around the world, he had time to see and hear all kinds of different things.' (Russian; Zinova 2021:141; glosses – S.M.)

(42) Gazetu vzjal, po-čital^{P} i brosil^{P}.
newspaper.ACC take.PTCP PO-read.PTCP and put_down.PTCP
'He took the newspaper, read it for a while, and put it down.'
(Russian; Dickey 2006:3; glosses – S.M.)

4.2. The meaning of po-*: distribution over the bounded quantity scale*

In this section, I propose that the delimitative *po-*, together with other uses of this prefix, has a distributive meaning, and its different 'flavors' (e.g. delimitative, distributive, etc.) result from different kinds of structures (and/or different scales) it combines with. As briefly introduced in section 1 (see examples (8–10)), in addition to its use as a delimitative prefix, illustrated in (43), the prefix *po-* has some other prominent uses, the most typical of which are given in (44–47): the so-called distributve *po-* (po_{dist}), the purely perfectivizing *po-* (po_{PP}) and *po-* that combines with degree achievements (po_{DAs}). Traditionally, the meaning of po_{dist} is described as indicating that the action denoted by the verb is distributed across multiple referents denoted by the internal argument, i.e. the action is performed upon all the object referents in the case of transitives, as in (44) or all the (surface) subjects in the case of unaccusatives, as in (45). The prefix po_{PP}, illustrated in (46), is typically analyzed as just turning an imperfective verb into its perfective counterpart, while po_{DAs}, exemplified in (47), indicates that the property denoted by a degree achievement has achieved some contextually given standard (which may be made explicit via a measure phrase).

(43) Mika je po-ležao na kauču nekoliko minuta. (po_{del})
Mika.NOM AUX PO-lie.PTCP on couch.LOC several minutes.GEN
'Mika lay on the couch for several minutes.'

(44) Mika je po-zatvarao^{P} (sve) prozore. (*po*$_{dist}$)
Mika.NOM AUX PO-close.PTCP all windows.ACC
'Mika closed all the doors.'

(45) (Sve) flaše su po-padale^{P} sa stola. (*po*$_{dist}$)
all bottles.NOM AUX PO-fall.PTCP from table.GEN
'All the bottles fell off the table.'

(46) Mika je po-jeo^{P} (jednu) šargarepu. (*po*$_{PP}$)
Mika.NOM AUX PO-eat.PTCP one carrot.ACC
'Mika ate an/one carrot.'

(47) Mika je po-crneo^{P} (do neprepoznatljivosti). (*po*$_{DAs}$)
Mika.NOM AUX PO-blacken.PTCP until unrecognition.GEN
'Mika has turned black (beyond recognition).'

Similar uses of the prefix *po-* are observed in other Slavic languages as well and various authors have argued that at least some of these meanings, including *po*$_{del}$, should be analyzed in a uniform way. For instance, Součková (2004), Kagan (2016a, b) and Łazorczyk (2010) argue for a unified analysis of *po*$_{del}$ and *po*$_{DAs}$ in Czech, Russian and Polish, respectively, yet they analyze *po*$_{del}$ and *po*$_{dist}$ as two distinct prefixes, which accidentally share the same phonological form. Jabłońska (2004) and Zinova (2021) offer a unified analysis of *po*$_{del}$ and *po*$_{dist}$ in Polish and Russian. The close connection of *po*$_{PP}$ and *po*$_{del}$ has also been observed (e.g. Dickey 2006, 2007; Janda & Lyashevskaya 2013; LeBlanc 2010 for Russian). The basic idea is that in all cases the meaning of *po-* is the same, and it depends on the type of structure/scale it combines with (see Kagan 2016a for an analysis of all Slavic prefixes along these lines). Here I adopt this basic idea, with two important ingredients. First, I propose that the prefix *po-* universally bears the meaning of distribution, shared with its phonologically corresponding preposition *po*, which also involves the meaning of distribution, or mapping, of one entity over/with another (cf. Arsenijević 2007a:30). One typical example of the distributive preposition *po-* is provided in (48) from Serbian.

(48) Pera je jeo^{I} jabuke jednu po jednu.
Pera.NOM AUX eat.PTCP apples.ACC one over one.
'Pera ate/was eating apples one by one.'

Second, I propose that the prefix *po-* always 'distributes' over the bounded quantity brought about by the QP, which can be specified in one of the following ways: as a bounded volume scale expressed by the quantified plural internal argument, as in (44–45), or a (quantized) singular direct object, as in (46); as a bounded property scale, in the case of DAs (47); as a temporal scale, when it surfaces as *po*$_{del}$, as in (43) above. The relevant structure is provided in (49). I assume a common definition of a scale as an ordered set of degrees along a particular dimension, e.g. height, cost, temperature, etc. (e.g. Hay et. al 1999; Kenedy & Levin 2008; Rappaport Hovav & Levin 2010; Beavers & Koontz-Garboden 2012, 2017; Rappaport Hovav 2014). A scale can be denoted by the verbal root itself, as in the case of

typical result/scalar verbs such as DAs *grow, cool, empty* (e.g. Rappaport Hovav 2014),[18] but it can also be provided by the direct object (e.g. Kennedy 2012), or, in the case of the temporal scale, by DurAds (see Kagan 2016a, b) — with the prefix *po-* exploiting all these possibilities.

(49) [$_{\text{NumP}}$ *po-* [$_{\text{QP}}$ bounded_scale [$_{v\text{P}}$ ...]]]

It is important to emphasize that only one bounded scale per event is allowed, i.e. only one scale can end up in the QP to measure out the event. This is in accordance with the common assumption that the event can be delimited only once (e.g. Tenny 1994; Filip 2000; Pereltsvaig 2000). Recall also from section 3.2 that DurAds may measure out the event only when the Spec,QP is not occupied by an accusative measuring-out object or a spatial measure phrase. Similarly, the same event cannot be measured e.g. by the property scale and the volume scale at the same time, or by the volume scale and the time scale simultaneously. In each of the examples (44–46), the volume scale brought about by the internal argument measures out the event, and *po-* applies to the volume scale; in (47), the property scale contributed by the verbal stem measures out the event, and *po-* applies to this scale. Since in these cases the Spec,QP is occupied by these two scales, DurAds are correctly predicted not to be possible, as shown in (50) (the same would hold for other examples listed in (44–47)). At this point, one may wonder why in (44–47) volume and property scales end up measuring out the event rather than DurAds. The answer lies in the fact that, as shown in Kagan (2016a:ch. 7), different types of scales are subject to hierarchies: scales lexicalized by the stem (typically the path or the property scale) have precedence over scales lexicalized by the direct object (typically the volume/extent scale), which in turn have a priority when competing with the time scale.

(50) *Mika je po-jeo$^{\text{P}}$ (jednu) šargarepu *pet minuta*.
Mika.NOM AUX PO-eat.PTCP one carrot.ACC five minutes.GEN
Intended: 'Mika ate one carrot for five minutes.'

Although a unified analysis of at least some of the uses of the prefix *po-* has been proposed in the previous literature, the novelty of the approach presented here is that in all such cases *po-* combines with the QP. Namely, in each of the presented cases, the exact quantity may be either contextually provided or explicitly introduced by some kind of measure expression (numerals, quantifiers, or PPs introducing boundary, specified in brackets in (44–47)) — just like in the case of *po*$_{\text{del}}$ (see section 3.2). The view of the prefix *po-* combining with a telic/bounded structure is in line with the view that Slavic prefixes combine with telic/quantized predicates (cf. Krifka 1992; Verkuyl 1999; Milosavljević 2022, in prep.). Consequently, each prefixed perfective verb denotes a singular telic predicate.

A final quirk that deserves a brief comment concerns the combinability of other prefixes with DurAds. Under the approach presented in this paper, all prefixes merge above the QP, a telic projection that can host DurAds, so it is predicted that other prefixes can combine with DurAds as well. Note, however, that this prediction is constrained by the fact that it is valid only when DurAds are not out-ranked by other measure phrases, so they end up measuring

[18] In terms of Harley (2005), such verbs get their names based on the relevant scalar property (or Result as the highest included degree), as opposed to non-scalar verbs, which are most typically manner verbs, with the base denoting the manner component (e.g. *run, laugh, roll*).

out the event. But, what about those cases where DurAds end up in the QP? As discussed in Kagan (2016a), depending on their semantics, different prefixes posit different restrictions with respect to types of scales they can combine with — e.g. some of them can apply to different types of scales, others are more restrictive (see Kagan 2016a for extensive disussion). In the case of *po-*, its meaning of distribution is compatible with basically all types of scales (the property scale, the volume scale, the time scale). Among more restrictive prefixes, e.g. the prefix *u-* 'in', which encodes a 'container' relation, is not compatible with the time scale, but only with the path scale (and rarely with the property scale as well). A detailed discussion of selectional restrictions of different prefixes with respect to types of scales goes well beyond the ambitions of this paper, and the reader is referred to Kagan (2016a) for a detailed discussion of the phenomena based on Russian data. For the present purposes, note that my analysis *does* allow the possibility that at least some other prefixed perfective verbs be combined with DurAds, providing DurAds end up measuring out the event and the semantics of the prefix is compatible with the time scale. This is shown in (51–53) for prefixes *iz-* 'out', *od-* 'from' and *pro-* 'through'. In (51), these prefixes apply to path scales contributed by measure phrases headed by the prepositions *iz* 'out', *od* 'from' and *kroz* 'through'. In (52), the same prefixes are interpreted relative to extent/volume scales brought about by the respective accusative direct objects. Finally, in (53), these prefixes apply to time scales expressed by DurAds.

(51) a. Pera je iz-trčao^{P} *iz* *šume*.
Pera.NOM AUX out-run.PTCP out woods.GEN
'Pera ran out of the house.'

b. Pera je od-trčao^{P} *od* *kuće*.
Pera.NOM AUX from-run.PTCP from house.GEN
'Pera ran away from home.'

c. Pera je pro-trčao^{P} *kroz* *šumu*.
Pera.NOM AUX through-run.PTCP through woods.GEN
'Pera ran through the woods.'

(52) a. Pera je iz-kopirao^{P} *knjigu*.
Pera.NOM AUX out-copy.PTCP book.ACC
'Pera copied the book.'

b. Pera je od-gledao^{P} *film*.
Pera.NOM AUX. from-watch.PTCP movie.ACC
'Pera watched the movie.'

c. Pera je pro-čitao^{P} *knjigu*.
Pera.NOM AUX through-read.PTCP book.ACC
'Pera read the book.'

(53) a. Pera je iz-blejao^{P} *par* *minuta* napolju sa
Pera.NOM AUX out-hang_out.PTCP couple.ACC minutes.GEN outside with
drugovima.
friends.INS
'Pera hung out outside with friends for a few minutes.'

b. Vino je od-stajalo^{P} u podrumu *neko* *vreme*.
wine.NOM AUX from-stay.PTCP in basement.LOC some time.ACC
'The wine stayed in the cellar for a while.'

c. Pera se pro-šetao^{P} gradom *par* *sati*.
Pera.NOM REFL through-walk.PTCP town.INS couple.ACC hours.GEN
'Pera walked around the city for a couple of hours.'

4.3. The advantages of the proposed analysis

Let me summarize the advantages of the analysis of *po*$_{\text{del}}$ presented in this paper over the previous proposals. There are two important properties shared by virtually all formal approaches to *po*$_{\text{del}}$ introduced in section 2: (i) the assumption that DurAds enter the structure after/above *po*$_{\text{del}}$ and (ii) the analysis of *po*$_{\text{del}}$ as expressing small quantity. Property (i) is problematic for those approaches that analyze prefixed verbs as telic (see section 2.1), since they are not expected to combine with DurAds, while property (ii) is empirically inadequate (see section 4.1). I argued that the problem sketched under (i) can be resolved if *po*$_{\text{del}}$ is analyzed as a singularity marker scoping over DurAds, which license telicity. Consequently, *all* prefixed verbs are singular *telic* predicates. The main advantage of this proposal lies in the fact that *po*$_{\text{del}}$ does not have to be analyzed as the only prefix which fails to provide telicity (as, for instance, in Łazorczyk 2010; see section 4.2). As indicated in sections 1 and 2.1, in developing a syntactic account for my proposal, I build on ideas from Progovac (2005), where it is explicitly stated that *po*$_{\text{del}}$ scopes over a (c)overt adverbial, and Pereltsvaig (2000), where DurAds are predicted to be compatible with pofectives, although the prefix itself is not explicitly discussed. However, my approach differs from Progovac's in that she assumes, with the majority of other approaches, that *po*$_{\text{del}}$ is associated with the small quantity, which is a position I rejected in section 4.1 of this paper (claiming that the exact quantity comes from the QP *po*$_{\text{del}}$ combines with). I also argued for a fully compositional view, according to which DurAds contribute telicity (as in Pereltsvaig 2000), while *po*$_{\text{del}}$, as other prefixes, licenses singularity, and not telicity/inner aspect (as in Progovac 2005). On the other hand, Pereltsvaig (2000), while accounting for the role of DurAds, does not provide any hints on the merging site of the prefix. In this paper, building on the previous approaches, I also offered a mechanism for unifying the syntax and semantics of *po*$_{\text{del}}$ with other uses of this prefix, which is a facet not tackled in Pereltsvaig (2000) or Progovac (2005).

Finally, it is fair to recognize that my approach conceptually owes to the approaches proposing that *po*$_{\text{del}}$ applies to the temporal scale (see section 2.2). The present paper builds on this important assumption, by proposing a syntactic view according to which the temporal scale introduced by bounded DurAds licenses telicity, while the prefix is generated in a higher position, triggering singularity.

5. Conclusion

In this paper, I have argued that the delimitative prefix *po-* in Serbian (and Slavic more generally) is generated in the projection immediately above the QP, a projection responsible for telicity which hosts durative adverbials. The proposal supports the view according to which *all* Slavic (prefixed) perfective verbs are (singular) telic, i.e. there is no need for

analyzing *po-* as the only prefix which (in just one of its uses) gives rise to perfective atelic predicates (as in Łazorczyk 2010). In addition, the proposal supports the view that Slavic prefixes select telic/bounded/quantized predicates, in line with e.g. Krifka (1992); Verkuyl (1999); Milosavljević (2022, in prep). Finally, my proposal also effects a simpler view of durative adverbials, which are generated in a projection that uniformly combines with homogeneous/unbounded predicates, hence there is no violation of the homogeneity requirement.

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Abbreviations

AUX	auxiliary	NOM	nominative
ACC	accusative	PASS	passive
COMP	complementizer	PL	plural
DAT	dative	PTCP	(past) participle
FUT	future	REFL	reflexive
GEN	genitive	SG	singular
INF	infinitive	SI	secondary imperfective suffix
INS	instrumental	TV	theme vowel
LOC	locative		

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How many roads are there to a simultaneous reading?

Anastasia Tsilia

Past-under-past only sometimes yields simultaneous readings in non-Sequence of Tense (SOT) languages. I claim that a distinction should be made among non-SOT speakers. Indeed, only some of them get temporal *de re* readings of the embedded past. An analysis in terms of an individually parametrized *Prefer Local Binding* rule in the temporal domain is proposed, prioritizing logical forms with locally bound temporal variables. So, present-under-past temporal *de se* is preferred over past-under-past temporal *de re* to get simultaneous readings. Finally, interspeaker variation is predicted for SOT languages and a new diagnostic for temporal *de re* in SOT languages is developed.

1. Introduction

Temporal features are used to temporally locate an Inflectional Phrase relative to the time of the utterance or the time of the attitude. However, sometimes temporal features are not semantically interpreted. Consider, for example, the following English sentence:

(1) 2 years ago, John thought that Mary was pregnant.

This sentence has two possible readings: the simultaneous and the back-shifted one. The former conveys simultaneity between John's thought and the embedded event, i.e., his thought two years ago was 'Mary is pregnant'. The latter conveys anteriority of the embedded event relative to John's thought, i.e., his thought two years ago was 'Mary was pregnant'.

How is the simultaneous reading possible if the past tense expresses anteriority relative to the time of evaluation? In other words, what is the effect of *was* in (1)? There are two ways to get a simultaneous reading with a past-under-past sentence: either by leaving the embedded past tense uninterpreted or by interpreting it relative to the time of the utterance rather than John's local 'now'. In the first case, the past tense is *deleted* at LF under an agreeing tense morpheme. In the second case, it is interpreted *de re*, since the temporal variable in the embedded clause is not locally bound; it is interpreted relative to the time of the utterance, not relative to the local

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'now' of the attitude holder.

This paper focuses on the different strategies languages have to convey simultaneous readings. More specifically, it focuses on the accessibility of *de re* readings of the embedded past cross-linguistically. Notice that not all languages use an embedded past to convey simultaneous readings. Some languages, like Hebrew and Russian, directly make use of an embedded present that can be shifted, thus ending up referring to the 'now' of the attitude holder rather than the time of the utterance. Here is an example from Russian, which was unanimously accepted by my consultants:

(2) V dvuxtysjačnom godu Ivan znal, čto Maša beremenna.
In 2000 year Ivan know.PST that Maša pregnant
'In 2000, Ivan knew that Mary was (literally: is) pregnant.'

In this example, the indexical reading of the present tense is blocked by the temporal operator 'in 2000'. Therefore, the embedded present here is *shifted*, since it refers to the 'now' of the attitude holder, rather than the speaker's 'now'.

It thus seems that some languages preferably use an embedded present and some an embedded past to convey a simultaneous reading. I will focus on the following research question: to what extent are simultaneous readings of past-under-past sentences salient in languages with a shiftable present? I will argue that based on data from languages without a deletion rule, such as Russian and Hebrew, there is interspeaker variation with respect to the accessibility of simultaneous readings with past-under-past. I will provide an analysis in terms of a *Prefer Local Binding* rule in the domain of tense.

2. Theoretical background

This section introduces the three main roads to a simultaneous reading: 1. past-under-past with a deleted past (temporal *de se*), 2. past-under-past with a *de re* past, and 3. present-under-past with a shifted present (temporal *de se*). Some languages, like English, have only the first two roads, while others primarily have the last road. In this paper, I will argue that there is variation with respect to how accessible road 2 is for speakers of a language without road 1. Lastly, there are mixed languages, like Modern Greek, where all three roads are available.

2.1. Sequence of Tense rule

As previously mentioned, there are two ways that yield a simultaneous reading with a past-under-past sentence. Either the embedded past is left uninterpreted or it is interpreted relative to the time of the utterance rather than the attitude holder's local 'now'. This subsection introduces the deletion rule that makes it possible to leave the embedded past uninterpreted. Crucially, as we will see, not all languages have such a deletion rule.

How can an embedded past as in (1) express simultaneity rather than anteriority? One explanation is that this is due to a *Sequence of Tense* (SOT) rule which deletes past tense features. In the literature, a distinction is usually made between Sequence of Tense (SOT) languages, like English, and non-SOT ones, like Hebrew and Russian. In SOT languages past tense features can be 'deleted', thus remaining uninterpreted. How does one test whether a language has such a

rule? One would need to block a *de re* reading of the embedded past and see if a simultaneous reading is still possible. To do so, the embedded past should not be interpretable relative to the time of the utterance. If the past tense still does not express anteriority, despite the fact that it has to be interpreted, then it must be the case that it is deleted, remaining uninterpreted. This is the point made by Abusch (1988, 1994), who provides the following example in English, reconstructed from Kamp & Rohrer (1983):

(3) John decided a week ago that in 10 days he would say to his mom that they *were having* their last meal.

The temporal relations in this sentence are understood as follows:

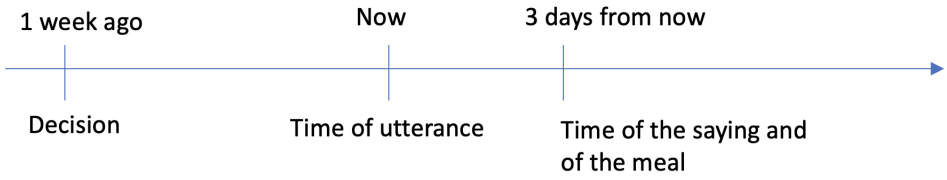

Figure 1. Temporal relations in (3).

The time of the meal is after any other time in the sentence. This example demonstrates that the embedded past tense can under certain circumstances remain truly uninterpreted. The same holds for Modern Greek (Schlenker 1999; Sharvit 2018; Tsilia 2021, forthcoming). Sharvit (2018) provides the following example, where a *de re* interpretation of the past is false and yet a simultaneous reading is accessible:

(4) Prin mia evdhomadha, o Jorghos ipe oti se dheka meres tha eleghe
Before one week the Jorghos say.PST that in ten days will say.IMPFV.PST
stin kopela tu oti sinadjiondusan ja teleftea fora.
to-the girlfriend of-his that meet.IMPFV.PST for last time.
'A week ago, Jorghos said that in ten days he would say to his girlfriend that they were meeting for the last time.' (Sharvit 2018:233)

What Jorghos planned to say is 'We are meeting for the last time'; the embedded past remains uninterpreted. Indeed, if past tense features were computed semantically, the most embedded past tense would have to denote a point in time anterior to (i) the time of the utterance (temporal *de re*) or (ii) the time of the saying (temporal *de se*). Yet, the temporal relationships are understood in a way that excludes both (i) and (ii): the embedded past does not refer to any past moment at all. Therefore, the past tense seems to be there solely for morpho-syntactic reasons, being in a sense 'deleted' in the semantic computation. Non-SOT languages would necessarily use a shifted present in this case. Thus, the conclusion is that the embedded past can remain truly uninterpreted in English as well as in Modern Greek, but not in non-SOT languages. Past tense features can remain uninterpreted thanks to an SOT rule that deletes them at LF.

I should mention that there are two ways to implement an SOT rule. One is by feature deletion under c-command (Ogihara 1996; Sharvit 2003, 2018), another is by feature transmission under

agreement (Abusch 1997; Grønn & Von Stechow 2010). Semantically, whether a feature is deleted or inserted will not make any difference, so for the purposes of this paper, I will follow Ogihara (1996) and Sharvit (2003, 2018) in stating the SOT rule in terms of feature deletion. I posit an agreement rule in the domain of tense, namely an SOT rule, which deletes the past tense features at LF. Such features are merely there so that an agreement relation with the c-commanding matrix past can be established, like an agreement marker. Here is the rule in its simplest form, reconstructed from Ogihara (1996); Sharvit (2018):

(5) **SOT rule:** When a tense morpheme is c-commanded by an agreeing tense morpheme (attached to an intensional predicate), it may be deleted at LF.

According to this rule, a past c-commanded by another past can be deleted at LF and thus remain uninterpreted. Past tense features are first transmitted through the lambda binder to the embedded verb with the bound time variable, but are then deleted by the SOT rule at LF. That is precisely what happens with (3), as seen in the following LF:[1]

(6) [a week ago] λt1 John decide^{past}t1 λt0$^{\sout{past}}$ he will$^{\sout{past}}$t0 say λt0 that they have$^{\sout{past}}$t0 their last meal together.

Whenever a language has such a deletion rule, it is considered an SOT language. Yet, as previously mentioned, not all languages display tense deletion. For example, Russian, Hebrew, and Japanese are non-SOT languages; thus, all tense features have to be semantically interpreted. As seen above, an embedded past can be interpreted either *de re* or *de se*. In (3), however, the *de re* reading is blocked since the embedded past is not prior to the time of the utterance. Thus, the Hebrew equivalent of (3) would necessarily get a back-shifted reading. In other words, the embedded past would express anteriority with respect to the c-commanding one. Consider the following example from Hebrew:

(7) Lifney šavua, Dan hexlit še be'od asara yamim, bizman aruxat ha-boker, hu
Before week Dan decide.PST that in ten days at-time food the-morning he
yomar le-imo še hu hitga'agea ele-ha.
will-tell to-his-mother that he miss.PST to-her
'Dan decided a week ago that in ten days at breakfast he would say to his mother that he had missed (literally: missed) her.' (Sharvit 2003:670)

In this case, what Dan will say in three days is 'Mom, I missed you'. All five consultants agreed with this judgment. I also tested the following sentence with five consultants:

(8) Lifney šavua, Yosef amar še be'od asara yamim hu yagid le xavera šelo še
Before week, Yosef say.PST that in ten days he say.FUT to girlfriend his that
hemnifgešu ba pa'am ha'axrona.
they meet.PST for last-time
'A week ago, Yosef said that in ten days he would say to his girlfriend that they have

[1] I provide simplified LFs and represent tense features as superscripts by analogy with other features. Also, I take the t0 parameter to be the perspectival point, i.e., the 'local now' to use the terminology of Abusch (1988) and Heim (1994). Finally, only the deleted past tense features on the verb are important. The features on the lambda binder illustrate feature transmission, since the past tense features are transmitted to the verb through the lambda binder before being deleted.

met for the last time.'

All my consultants agreed that this sentence only has the back-shifted reading, according to which Yosef will say 'We met for the last time'. Crucially, the simultaneous reading is inaccessible, which confirms that Hebrew does not have tense deletion (Ogihara & Sharvit 2012; Sharvit 2003, 2018). Therefore, every embedded past must be interpreted.

The same holds for Russian. I tested the following sentence with five consultants:

(9) Nedelju nazad, Ivan skazal, čto čerez 10 dnej on skažet svoej devuške čto oni
Week back, Ivan say.PST that across 10 days he say.FUT his girlfriend, that they
vstretilis' v poslednij raz.
meet.PST.PFV in last time.
'A week ago, Ivan said that in 10 days he would say to his girlfriend that they have met (literally: met) for the last time.'

As was the case for Hebrew, this sentence unambiguously had the back-shifted reading. I asked my consultants to pick between these two scenarios:

(10) Simultaneous scenario: In 10 days from now, Ivan will meet his girlfriend and say in person 'We meet.PRS for the last time'.

(11) Back-shifted scenario: In 10 days from now, Ivan will say to his girlfriend over the phone 'We met.PST for the last time'. In other words, he will say that their last meeting was their very last one.

The sentence is felicitous in the back-shifted scenario and infelicitous in the simultaneous one. Interestingly, however, it is not incompatible with them meeting in person in 10 days. The crucial part is only that what Ivan utters is in the past tense. For example, he could say at the end of the meeting something like 'Now, we have met for the last time'. One Hebrew consultant expressed the same intuition. So, in both languages, the requirement is that the utterance be in the past tense, not that the event is in the remote past.

The unavailability of simultaneous readings in Hebrew and Russian shows that these languages do not have an SOT rule. Therefore, the most embedded past is always interpreted, expressing anteriority with respect to the time of the utterance.[2]

In this subsection I showed how to test whether a language has an SOT rule, controlling for the temporal *de re* confound. Based on the literature and my own fieldwork, I concluded that English and Modern Greek have an SOT rule, while Russian and Hebrew do not. In non-SOT languages, sentences where temporal *de re* is blocked only have a back-shifted reading. The main focus in what follows will be whether simultaneous readings of past-under-past through temporal *de re* are accessible in non-SOT languages.

2.2. De re readings of the embedded past

What if *de re* readings of the embedded past are not blocked? I show that in simple past-under-past cases simultaneous readings are in principle accessible via temporal *de re*, without an

[2] As previously mentioned, the anteriority does not have to refer to the remote past, but it crucially has to be in the past, i.e., prior to the time of the utterance.

SOT rule. This is because the embedded past could indeed be interpreted (and not deleted), but relative to the time of the utterance rather than relative to the local 'now' of the attitude holder. Let us compare the temporal *de se* and the temporal *de re* LFs giving rise to the simultaneous reading of the sentence in (1), repeated below as (12) for clarity:

(12) 2 years ago, John thought that Mary was pregnant.

(13) Temporal *de se* (SOT rule):
[2 years ago] λt1 John think^{past}t1 λt0$^{\sout{past}}$ that Mary be$^{\sout{past}}$**t0** pregnant.

(14) Temporal *de re*:
[2 years ago] λt1 John think^{past}t1 λt0 that Mary be^{past}**t1** pregnant.

In temporal *de re*, where the temporal variable is not locally bound, the embedded past tense is indeed interpreted, but not with respect to John's temporal perspective. It is rather interpreted with respect to the same temporal perspective as the matrix past tense is. Therefore, John's thought and Mary's pregnancy are in the speaker's past, but the two could co-occur. In temporal *de se*, however, the embedded past tense is deleted by an SOT rule and then interpreted as a zero-tense with respect to John's local 'now'. Therefore, t0 ends up being simultaneous with t1, which on its turn precedes the time of the utterance by 2 years. The LF in (13) is only available in SOT languages, such as English and Modern Greek, but the LF in (14) is in principle available in non-SOT languages as well. The empirical question is whether this LF is indeed attested in non-SOT languages, giving rise to simultaneous readings of past-under-past.

Therefore, there are in principle two ways to get a simultaneous reading with past-under-past: (i) temporal *de re*, where the embedded past is interpreted relative to the time of the utterance and (ii) temporal *de se*, where the embedded past is deleted by an SOT rule and thus remains uninterpreted. The latter is only available in SOT languages, but the former is in principle available in non-SOT ones, too. The rest of this paper empirically investigates the extent to which this reading is indeed attested in non-SOT languages.

2.3. Shifted present

A separate question that arises is whether a present-under-past sentence allows for simultaneous readings. In other words, can the embedded present tense in a given language refer to the same moment as the matrix past tense? This depends on whether the present tense is shiftable, in the sense that it can refer to the local 'now' of the agent in indirect discourse (possible in Hebrew, Russian and Japanese, often impossible in French and English).

If a non-SOT language has a shiftable present tense, then the simultaneous reading can be expressed with a present-under-past. Non-SOT languages usually achieve this reading via a shiftable present indeed. On the contrary, standard SOT languages, like English, usually have a non-shiftable present, which has to be evaluated at the time of the utterance. Yet, there is also at least one SOT language with a shiftable present, namely Modern Greek, which has been argued to be a mixed-tense language (Schlenker 1999; Sharvit 2003, 2018; Tsilia 2021, forthcoming). The present tense is a matrix indexical in English, necessarily referring to the time of the utterance. Thus, it cannot be shifted, as shown by the infelicity of the following sentence:

(15) #20 years ago, John thought that Mary is pregnant.

By contrast, in non-SOT languages the present tense shifts under past tense attitude verbs. This is the mechanism non-SOT languages use to express a simultaneous reading. Here is an example from Hebrew:

(16) Lifney alpayim šana, Yosef gila še Miriam ohevet oto.
Before 2,000 year Yosef find-out.PST that Miriam love.PRS him
'2,000 years ago, Yosef found out that Miriam loved (literally: loves) him.'
(Ogihara & Sharvit 2012:642)

In this example, the indexical reading of the present tense is blocked by the temporal operator '2,000 years ago'. The only plausible LF for (16) would thus be:

(17) [before 2,000 years] λt1 Yosef find-out^{past}t1 λt0 that Miriam love-**t0** him.

In other words, the present tense is interpreted relative to Yosef's local 'now'. What he found out is: 'Miriam loves me (now)'. The exact same pattern is observed in Japanese (Ogihara & Sharvit 2012), in Russian (Grønn & Von Stechow 2010), and in Modern Greek (Tsilia 2021, forthcoming).

It thus seems that SOT languages use a matrix indexical present (Schlenker 1999; Sharvit 2003), while non-SOT languages use a shiftable present. From a theoretical perspective, there are thus two parameters: (i) a deleted past and (ii) a shiftable present. Modern Greek is the only language observed so far where both parameters are active, showing that the correlation between having either a deleted past or a shiftable present but not both is accidental. This is theoretically important, because it confirms that the two parameters are independent and can both be active in the same grammar.[3]

Importantly, non-SOT languages with a shiftable present would express the English example (3), repeated here as (18) for clarity, with an embedded present. Here is an example from Russian, which was unanimously accepted by my consultants as having the simultaneous reading:

(18) John decided a week ago that in 10 days he would say to his mom that they *were having* their last meal.

(19) Nedelju nazad, Ivan skazal, čto čerez 10 dnej on skažet svoej devuške, čto oni
Week back, Ivan say.PST that across 10 days he say.FUT his girlfriend, that they
vstrečajutsja v poslednij raz.
meet.PRS in last time.
'A week ago, Ivan said that in 10 days he would say to his girlfriend that they met (literally: meet) for the last time.'

The same holds for Hebrew. As for Modern Greek, it was previously seen that (18) can be expressed with an embedded past as in (4) thanks to the SOT rule. Interestingly, however, since Modern Greek also has a shiftable present, it has one more way to express (18), namely using an embedded present as in Russian and Hebrew:

[3] I thank an anonymous editor for raising the question of what happens if both parameters are inactive and a language cannot express simultaneous readings. Such languages are not attested. Sharvit (2003) argues that there is a principle of Universal Grammar, requiring every well-formed matrix sentence to be 'embeddable' under an attitude verb. She calls this the *Embeddability Principle*.

(20) Prin mia evdhomadha, o Jorghos ipe oti se dheka meres tha eleghe
Before one week the Jorghos say.PST that in ten days will say.IMPFV.PST
stin kopela tu oti sinadjiondude ja teleftea fora.
to-the girlfriend of-his that meet.PRS for last time.
'A week ago, Jorghos said that in ten days he would say to his girlfriend that they were (literally: are) meeting for the last time.'

Therefore, having a shiftable present is another strategy languages have to express the simultaneous reading. This strategy is usually available in languages without a deletion rule, such as Hebrew and Russian, but it can also be available in some SOT languages, such as Modern Greek.

This section presented all the ways of getting a simultaneous reading under a past tense attitude verb. If a past-under-past sentence has a simultaneous reading, then (a) the language has an SOT rule, or (b) there is temporal *de re*. If a present-under-past sentence has a simultaneous reading, then the language has a shiftable present. What follows investigates the following question: is there temporal *de re* in non-SOT languages?

3. Temporal de re: the empirical picture

This section is an empirical investigation of the availability of temporal *de re* in non-SOT languages. The focus is on Russian and Hebrew, providing data from 10 consultants in total, 5 for each language. The claim in the literature for non-SOT languages is usually that past-under-past preferably conveys a back-shifted reading rather than a simultaneous one (Grønn & Von Stechow 2010; Ogihara & Sharvit 2012; Altshuler 2016). However, there are authors who claim that past-under-past has a simultaneous reading, too; in Russian (Vostrikova 2018), as well as for some Hebrew speakers (Ogihara & Sharvit 2012).

Based on my own fieldwork, the main generalization will be that there is interspeaker variation with respect to the availability of a simultaneous reading with a past-under-past sentence. Given that there is no SOT and that therefore temporal *de re* is the only explanation for such a reading, I will conclude that there is variation with respect to the availability of a *de re* LF of past-under-past.

Before I present the empirical picture, a few words about the judgment elicitation methodology used: I gave the consultants past-under-past sentences with statives in out of the blue contexts.[4] First, they were asked to make a binary acceptability judgment. If the sentence was acceptable, I asked them to reproduce the attitude in direct speech. I then asked them whether the sentence was ambiguous and if so, which was their preference (if any). In some cases, I presented them with two sentences in direct speech and they had to choose which attitude the sentence reports.

[4] Eventive predicates often block simultaneous readings for aspectual reasons, independently of tense (Stowell 2007; Altshuler 2016).

3.1. Simultaneous readings in Russian

My goal was to see to what extent Russian speakers get simultaneous readings with past-under-past sentences. I tested the following sentence:

(21) V dvuxtysjačnom godu Ivan znal, čto Maša byla beremenna.
In 2000 year Ivan know.PST that Masha be.PST pregnant
'In 2000, Ivan knew that Masha was/had been pregnant.'

I asked my consultants to choose either one or both of the following answers to the question 'What did Ivan know?'. They had to choose the one(s) that could be reported by (21):

(22) 'Maša is pregnant' (in 2000)

(23) 'Maša was pregnant' (before 2000)

For 3/5 of my consultants the sentence was ambiguous between a simultaneous and a back-shifted reading, while for 2/5 only the back-shifted reading was possible. When asked if they have a preference for one of the two original utterances, 2/5 consultants had no preference, (21) being completely ambiguous, while 3/5 had a preference for the back-shifted reading in an out-of-the-blue context.

Therefore, I conclude that there is interspeaker variation in Russian with respect to whether and to what extent simultaneous readings of past-under-past are accessible. For some speakers they are not accessible at all, for others they are accessible but dispreferred, while for yet others they are accessible and as available as back-shifted readings.

3.2. Simultaneous readings in Hebrew

The claim in the literature for Hebrew is that although both readings are accessible for some (but not all) speakers, the back-shifted reading is more salient. Ogihara & Sharvit (2012) provide the following example:

(24) Lifney alpayim šana, Yosef gila še Miriam ahava oto.
Before 2000 year Yosef find-out.PST that Miriam love.PST him
'2,000 years ago, Yosef found out that Miriam had loved (literally: loved) him.'
(Ogihara & Sharvit 2012:640)

My goal was to test whether simple past-under-past sentences, where temporal *de re* is possible, are ambiguous between the simultaneous and the back-shifted reading in Hebrew. Here is the example I tested:

(25) Be šnat alpayim, Yosef yada še Miriam haita be-heraion.
In year 2000 Yosef know.PST that Miriam be.PST pregnant
'In 2000, Yosef knew that Miriam was/had been pregnant.'

3/5 consultants found this sentence ambiguous, while 2/5 could only access the back-shifted reading. Among those who found it ambiguous, one had a preference for the back-shifted read-

ing in out-of-the-blue contexts, while the other two perceived complete ambiguity.[5]

Again, notice the interspeaker variation seen in Russian. For some speakers the simultaneous reading of past-under-past is not accessible at all, for others it is accessible but dispreferred, while yet for others it is accessible and at the same level as the back-shifted reading.

In the next section, I will aim to explain this observed interspeaker variation with respect to the accessibility of temporal *de re* in non-SOT languages. Note the contrast with the judgments about SOT, as in the examples in (8) and (9), which where sharp and unanimous. Why is there no interspeaker variation when it comes to whether the language has an SOT rule, but there is variation with respect to whether temporal *de re* is possible?

4. Enriched typology

Based on the literature and my own fieldwork, I conclude that simultaneous readings can be achieved through a *de re* reading of the embedded past in past-under-past sentences at least for some non-SOT speakers. Whenever temporal *de re* is blocked, this reading disappears for all speakers unanimously. Therefore, these languages clearly do not have an SOT rule. But some speakers can still use a past-under-past sentence to express a simultaneous reading, indicating that temporal *de re* is possible.[6]

So far in the literature, a distinction was made between SOT (e.g., English, Modern Greek) and non-SOT languages (e.g., Hebrew, Russian). Based on my empirical investigation, there seems to be a further division between non-SOT speakers, since some can get simultaneous readings with an embedded past, while others cannot. I propose a new 4-way distinction between (i) SOT and non-SOT languages on the one hand and (ii) the availability of a simultaneous reading with an embedded past in non-SOT languages on the other hand:

	English	**Modern Greek**	**non-SOT speaker A**	**non-SOT speaker B**
Embedded Tense	PAST	PAST or PRESENT	PAST or PRESENT	PRESENT
SOT rule	✓	✓	✗	✗

Table 1. Preferred embedded tense for simultaneous readings

The above table should be read as indicating what embedded tense is used to convey a simultaneous reading (*Embedded Tense* row) and whether a language has an SOT rule or not (*SOT rule* row). In what follows, I will propose an analysis in terms of *Prefer Local Binding*, accounting for this enriched typology.

[5] The reader could be worried about *know* being a factive verb. Bar-Lev (2014) notes that when the matrix verb is non-factive, simultaneous readings might be somewhat harder, but still accessible. His hypothesis is that simultaneous readings are easier when the embedded clause is contextually false. A non-factive verb triggers the inference that the complement is not known to be true (but still not that it is known to be false) and is therefore closer to the conditions that facilitate a simultaneous reading. If anything, having a factive verb, which presupposes the truth of its complement, should make simultaneous readings harder given this hypothesis. Yet, they are still accessible for many speakers. In this paper, I will abstract away from the difference between factives vs. non-factives, trying to account for the possibility of temporal *de re* with past-under-past, *whenever this is possible*.

[6] Lungu (2008) shows that Romanian also allows for simultaneous readings of the embedded past in simple past-under-past cases, while being a non-SOT language. Whether there is interspeaker variation in Romanian, too, as in the other non-SOT languages investigated here, is left for future research.

5. Proposed analysis

In this section I will aim to predict the difference between non-SOT speakers that get a simultaneous reading of past-under-past via temporal *de re* and those who do not. I will propose an analysis in terms of a *Prefer Local Binding* rule, referring to the syntax of LF. The parametrization of this rule will account for the observed interspeaker variation.

5.1. Possible LFs

First, let us present all the possible LFs that give rise to a simultaneous reading. The criteria that determine which language has which LF are: (i) whether the language has an SOT rule, (ii) whether the language has a shiftable present, and (iii) whether the language/speaker allows for temporal *de re*.

There are two *de se* and one *de re* way to get to a simultaneous reading. In other words, there are two possible LFs where the temporal variable in the embedded clause is locally bound by the 'now' of the attitude holder (temporal *de se*) and one LF where the temporal variable is non-locally bound (temporal *de re*) that give rise to a simultaneous reading.

If a language has an SOT rule, then it has a way to delete the embedded past tense features if they are locally bound. Therefore, the result is a simultaneous reading, because the embedded past is never interpreted. Such an LF is available in all SOT languages (e.g., English, Modern Greek):

(26) [In 2000] λt1 John know$^{\text{past}}$t1 λt0$^{\sout{\text{past}}}$ that Mary be$^{\sout{\text{past}}}$**t0** pregnant.

In this LF, the embedded temporal variable is locally bound (temporal *de se*), but the past tense is deleted and therefore the embedded tense is treated as semantically vacuous.

If a language has a shiftable present, then the embedded present tense need not refer to the speaker's 'now', but can refer to the 'now' of the attitude holder, giving rise to a simultaneous reading. This is again a case of temporal *de se*, since the embedded temporal variable is locally bound. But contrary to the SOT case, there is no past tense morpheme to delete and given that the present tense is semantically vacuous, the same reading as with (26) arises. Such an LF is available in all languages with a shiftable present tense, namely non-SOT languages as well as mixed tense languages (e.g., Hebrew, Russian, Modern Greek) (Schlenker 1999; Sharvit 2018; Tsilia 2021, forthcoming):

(27) [In 2000] λt1 John know$^{\text{past}}$t1 λt0 that Mary be$^{\text{present}}$**t0** pregnant.

So, there are at least two ways to get to a simultaneous reading with temporal *de se*, one via an embedded deleted past and one via an embedded shifted present. In principle, the past-under-past sentence may have another LF as well, namely one where the embedded temporal variable is read *de re*.

If a language or a speaker of a language allows for temporal *de re*, i.e., if they allow for the embedded temporal variable to be bound non-locally, then there is yet another LF that can give rise to a simultaneous reading of a past-under-past sentence. More specifically, the embedded temporal variable may be bound non-locally, in which case the past tense features can still be interpreted without expressing anteriority with respect to the time of the attitude. In other words,

the embedded past and the matrix past may take the same temporal variable, namely the time of evaluation, the speaker's 'now'. In this case, a past-under-past sentence conveys that the matrix as well as the embedded event precede *the speaker's 'now'*; but nothing prevents them from being simultaneous. Thus, this LF of past-under-past is compatible with a simultaneous reading without requiring an SOT rule. This is the LF I argue gives rise to simultaneous readings of past-under-past for some non-SOT speakers of Russian and Hebrew:

(28) [In 2000] λt1 John know^{past}t1 λt0 that Mary be^{past}**t1** pregnant.

Notice that the embedded temporal variable is the same as the matrix one. However, one could wonder why t1 was chosen rather than some other temporal variable. After all, temporal *de re* only requires that the embedded temporal variable is not locally bound, not that it is the same as the temporal variable of the matrix verb.

I motivate this choice by a general tendency/cognitive preference towards *de se* descriptions. For example, if one hears the following sentence in an out-of-the-blue context, there is a tendency to interpret *she de se* as referring to 'Rosa':

(29) Rosa believes that she is smart.

Crucially, not all *de se* readings arise from *de se* LFs. So a *de re* LF can still give rise to a simultaneous reading. Given a view of *de re* where the temporal description is not quantified over at LF but is rather contextually provided via the assignment function (Cresswell & von Stechow 1982; Heim 1994), a sentence like *John believed that Mary was pregnant* would be equivalent to 'John believed that Mary was pregnant at time *d*, where *d* is the description assigned to *t* by the assignment function'. So in such a system *de re* LFs can be specified to achieve *de se* truth conditions if the temporal description provided contextually in a *de re* LF happens to be *de se*. I propose that there is a pragmatic preference for *de se* readings, due to a *Prefer De Se* rule (Schlenker 1999; Ogihara & Sharvit 2012): *Prefer de se readings whenever they are true.* This describes a pragmatic or cognitive preference for *de se* readings, independently of their LF. In the case of the LF in (28), *Prefer De Se* would predict that if the temporal variable is non-locally bound, the preferred contextually provided temporal description is *de se*. So, the reason why t1 was chosen as the contextually provided temporal variable in (28) is *Prefer De Se*.[7]

Closing this parenthesis, three possible LFs that give rise to simultaneous *de se* readings, i.e., readings where the embedded clause is simultaneous with the time of the attitude, are identified:[8]

(30) Deleted past: [In 2000] λt1 John know^{past}t1 λt0$^{\sout{past}}$ that Mary be$^{\sout{past}}$**t0** pregnant.

(31) Shifted present: [In 2000] λt1 John know^{past}t1 λt0 that Mary be^{present}**t0** pregnant.

(32) Temporal *de re*: [In 2000] λt1 John know^{past}t1 λt0 that Mary be^{past}**t1** pregnant.

Based on (i) whether a language has an SOT rule, and (ii) whether it has a shiftable present, I predict the following LFs to be possible in the languages I have investigated so far:

[7] A version of this rule was used in Schlenker (1999) to explain disjoint reference effects triggered by logophoric pronouns. For example, in *John hopes he*$^{de.re}$ *will be elected* the logophoric pronoun *he* needs to be disjoint from *John*.

[8] Even though the meta-language used in the LFs is English, note that (31) is not available in the grammar of English (as an object language).

	English	**Modern Greek**	**Rusian**	**Hebrew**
Deleted past	✓	✓	✗	✗
Shifted present	✗	✓	✓	✓
Temporal de re	✓	✓	✓	✓

Table 2. Predicted LFs for simultaneous readings

As this table illustrates, all languages in principle have temporal *de re*. Indeed, given the current system, nothing prevents a temporal variable from being non-locally bound. In SOT languages, such as English and Modern Greek, this prediction would be hard to test, given that simultaneous readings are independently accessible with past-under-past thanks to the SOT rule. I will develop a diagnostic based on ellipsis in section 6 of this paper. In non-SOT languages, such as Russian and Hebrew, this predicts that past-under-past sentences should always be ambiguous between the standard back-shifted reading (achieved via temporal *de se* by locally binding the variable and interpreting the embedded past) and a simultaneous reading (achieved via temporal *de re*). This is indeed the case for some non-SOT speakers, but crucially not for all. The research question to be answered is: what blocks temporal *de re* in the grammar of some non-SOT speakers? In other words, what makes the LF in (32) unavailable?

5.2. Prefer Local Binding

The empirical investigation has shown that some non-SOT speakers can only express the simultaneous reading with present-under-past. This suggests that the only available LF is the one in (31). Thus, something that blocks the LF in (32) is needed. Otherwise, the cross-linguistic typology would over-generate simultaneous readings for some non-SOT speakers.

So, the question that arises is: why do some speakers of non-SOT languages disprefer a *de re* simultaneous reading of the embedded past? I suggest that this observed competition between a *de se* present- and a *de re* past-under-past to derive the simultaneous reading is the result of a *Prefer Local Binding* rule, referring to the syntax of LF:

(33) *Prefer Local Binding*: Let S and S' be two LFs such that they only differ in a temporal variable being bound locally in S and being provided contextually in S'. If S and S' have the same meaning, S' is ungrammatical.

The rule falls under a more general principle, which has been argued to operate in the pronominal domain. Related principles are Condition C and Rule I (Reinhart 1983, 2006; Heim 2009). I argue that *Prefer Local Binding* may vary across speakers. When relevant, it prioritizes structurally *de se* LFs, where the temporal variable is locally bound.

Given that the shifted present LF in (31) and the *de re* past LF in (32) both yield a simultaneous reading in Russian/Hebrew, the one where the temporal variable is bound locally is preferred. Thus, the shifted present LF in (31) is preferred. This is how the unavailability of temporal *de re* is explained for some non-SOT speakers. The proposal is that this principle is part of the grammar of some (but not all) non-SOT speakers.

5.3. Interspeaker variation

Given *Prefer Local Binding*, I predict that *de se* LFs with locally bound temporal variables are preferred over *de re* ones. However, given that temporal *de re* is possible in non-SOT languages at least for some speakers, *Prefer Local Binding* cannot be a language parameter. In other words, to account for the two different populations of non-SOT speakers observed, I need to parametrize *Prefer Local Binding* individually.[9] The proposal is that there are there are two sub-grammars of non-SOT languages, one with and one without *Prefer Local Binding*:

	non-SOT sub-grammar 1	**non-SOT sub-grammar 2**
Prefer Local Binding	✓	✗

Table 3. Sub-grammars of non-SOT languages

In this way, individual variation is accounted for, since a given non-SOT speaker may have acquired sub-grammar 1 or sub-grammar 2. If they acquire sub-grammar 1, they prefer present-under-past to express the simultaneous reading and do not get temporal *de re* with past-under-past, which ends up having only the back-shifted reading. If they acquire sub-grammar 2, then temporal *de re* is not blocked by anything, in which case past-under-past is ambiguous between a simultaneous and a back-shifted reading. Thus, table 2 can now be fine-grained as follows:

	English	**Modern Greek**	**non-SOT 1**	**non-SOT 2**
Deleted past	✓	✓	✗	✗
Shifted present	✗	✓	✓	✓
Temporal de re	?	?	✗	✓

Table 4. Attested LFs of simultaneous readings

The existence of *Prefer Local Binding* in non-SOT sub-grammar 1 accounts for the absence of temporal *de re*, while its absence in non-SOT sub-grammar 2 accounts for the presence of temporal *de re*. If there is *Prefer Local Binding*, then temporal *de re* is blocked, since LFs with temporal variables that are non-locally bound are dispreferred. If there is no *Prefer Local Binding*, then nothing prevents temporal *de re*.

Why would speakers of the same language acquire two different sub-grammars, one with and one without *Prefer Local Binding*? From a learnability perspective, the data that would arguably be needed to distinguish between the existence of a *Prefer Local Binding* rule and its absence in a given grammar are so scarce that a child could plausibly make an arbitrary choice for the value of this parameter. In other words, given the poverty of the stimulus, interspeaker variation is the result of an arbitrary choice for *Prefer Local Binding*. Some speakers assume

[9] If parametrizing an economy principle makes the reader uncomfortable, because economy laws are pragmatic and thus universal, I could in principle parametrize the comparison of LFs of morphologically different sentences. The idea would be that some non-SOT speakers tolerate comparison across morphologically different sentences (present- and past-under-past), while others do not. In other words, it could be that all speakers have *Prefer Local Bidning*, but some consider the present to be an alternative to the past, while others do not. However, this move is not theoretically preferable, since the morphology playing a role in determining which LFs are in competition is implausible — especially morphology that is by definition not visible at LF, i.e., deleted past.

their language has it in the temporal domain, while others do not. Thus, the result are the two sub-grammars in table 3.

To sum up, I have proposed a new enriched typology of simultaneous readings, positing a division between non-SOT speakers. I accounted for the variation in the availability of temporal *de re* among non-SOT speakers in terms of a *Prefer Local Binding* rule, referring to the syntax of temporal variables in the LF. If the parameter is active, then LFs where temporal variables are locally bound are preferred over ones where they are not. Finally, I argued that the interspeaker variation is a result of two non-SOT sub-grammars, differing in the value of *Prefer Local Binding*. I argued that these two sub-grammars are the result of an arbitrary choice by the speakers, given the limited data they have about binding of temporal variables. For this reason, different speakers end up learning different things about their language.

6. Insights from ellipsis

I argued that there are two sub-grammars in non-SOT languages, accounting for the interspeaker variation observed. The question that naturally arises is: are there two sub-grammars in SOT languages as well, such as English and Modern Greek? If there is interspeaker variation with respect to the availability of temporal *de re*, then this is the case. In other words, the question that needs to be answered is: is *Prefer Local Binding* active for some but not all SOT speakers?

As previously mentioned, the problem with SOT languages is that the effects of *Prefer Local Binding* are not easily felt, given that there is an SOT rule that independently accounts for simultaneous readings of past-under-past. Therefore, the simultaneous reading of past-under-past does not teach us anything about the possibility of temporal *de re*.

I develop an ellipsis diagnostic, arguing that it detects whether a temporal *de re* LF of past-under-past is available in SOT languages. Modern Greek is a mixed tense language, which has both an SOT rule like English and a shiftable present like Hebrew and Russian. Therefore it is going to be particularly informative since comparing the present- and the past-under-past sentence as antecedent of an ellipsis will show us whether (i) the two are equivalent having only the LFs in (31) (repeated below as (35)) and (30) (repeated below as (34)) respectively, or (ii) the past-under-past sentence has the temporal *de re* LF in (32) as well (repeated below as (36)), creating an additional antecedent for the ellipsis compared to the shifted present.

(34) Deleted past: [In 2000] λt1 John know^{past}t1 λt0$^{\sout{past}}$ that Mary be$^{\sout{past}}$**t0** pregnant.

(35) Shifted present: [In 2000] λt1 John know^{past}t1 λt0 that Mary be^{present}**t0** pregnant.

(36) Temporal *de re*: [In 2000] λt1 John know^{past}t1 λt0 that Mary be^{past}**t1** pregnant.

Thus, the present-under-past sentence in Modern Greek, which only has the temporal *de se* LF in (35) will be the control. Only the LF in (35) should be available for reconstruction in the ellipsis site. The crucial diagnostic will be whether the past-under-past sentence gives rise to two potential antecedents, namely (34) and (36), or just the temporal *de se* (34).

So, if a temporal *de re* reading of the embedded past is possible, ambiguity is expected with the past-under-past antecedent, since both (34) and (36) could be copied in the elided material. But if the temporal *de re* reading is blocked by *Prefer Local Binding*, then the present- and the past-under-past antecedents are expected to give rise to the same unambiguous reading for the elided material. I tested the following sentence in Modern Greek with three consultants:

(37) Context: *There are everyday press conferences for the ongoing pandemic situation.*

Chtes i omilitria iche tin
yesterday the.NOM.FEM spokesperson.NOM.FEM have.PST.3SG the.ACC.FEM
entiposi oti kani / ekane ena lathos.
impression.ACC that make.**PRS**.3SG / make.**PST**.3SG a.ACC.NEU mistake.ACC.NEU.
Simera episis.
Today too.
'Yesterday the spokesperson had the impression that she is making/was making a mistake. Today too.'

The use of the embedded present gives rise to an unambiguous reading as expected since only a *de se* LF , namely (35), is available to be copied. More specifically, it means that the spokesperson is making a mistake again today, thus having made two mistakes in total. On the contrary, the use of the embedded past is ambiguous for all my consultants; it could have the same meaning as the embedded present, giving rise to the inference that the spokesperson made two mistakes, one yesterday and one today. In this case the *de se* LF in (34) is copied. It could also have another meaning, namely that today she has again the impression of having made a mistake yesterday, thus having made only one mistake in total. In this case the temporal *de re* LF in (36) is copied.

Given that the past-under-past is ambiguous, I conclude that the temporal *de re* LF in (36) is an available antecedent. Thus, *Prefer Local Binding* is absent for at least some SOT speakers as well. I conclude that temporal *de re* is possible for at least some Modern Greek speakers.

What about English? Given that English does not have a shiftable present, I do not have the present-under-past antecedent that acts as a baseline. However, the diagnostic still holds, because the crucial part is whether there is ambiguity in the ellipsis site or not. If there is ambiguity between one and two mistakes in total, then both the temporal *de se* LF in (34) with the SOT rule and the temporal *de re* LF in (36) can be copied in the elided material. Meaning that both are available antecedents. If there is no ambiguity and the sentence only has the two mistakes in total reading, then *Prefer Local Binding* must be blocking the temporal *de re* LF in (36) from being an available antecedent. Here is the sentence:

(38) Context: *There are everyday press conferences for the ongoing pandemic situation.*

Yesterday the spokesperson had the impression that she was making a mistake. Today too.

I tested this sentence with two speakers: for one this sentence was ambiguous between the one and the two mistakes reading, suggesting that there is no *Prefer Local Binding*, while for another there was a strong preference for the two mistakes reading, suggesting that *Prefer Local Binding* is active, making the temporal *de re* LF dispreferred. This fits well into the picture of Hebrew and Russian, since there seems to be interspeaker variation in SOT languages as well with respect to whether *Prefer Local Binding* is active or not. This would suggest that there are two sub-grammars in SOT languages as well, accounting for the attested typology:

	English	**Modern Greek**	**Russian**	**Hebrew**
Deleted past	✓	✓	✗	✗
Shifted present	✗	✓	✓	✓
Temporal de re	✗/✓	✓	✗/✓	✗/✓

Table 5. Typology of simultaneous readings

The interspeaker parametrization of *Prefer Local Binding* accounts for the ✗/✓difference in some SOT (English) and some non-SOT languages (Russian, Hebrew). As for Modern Greek, all my consultants seem to access temporal *de re*, which is surprising, since the variation would be expected across the board.

Does this suggest that *Prefer Local Binding* is inactive in the language? If so, how would that fit with my argument that there is not enough data to infer whether *Prefer Local Binding* is active in the language? A more thorough empirical investigation is needed to settle the issue of whether there is interspeaker variation in Modern Greek as well. However, I would like to point out that Modern Greek has an SOT rule and there is an interaction between having an obligatory or optional SOT rule and having *Prefer Local Binding*. More specifically, if the SOT rule in (5) is obligatory, then a past-under-past sentence can only have a back-shifted reading via a *de re* LF as in (36). So, if SOT is obligatory, then a past-under-past sentence can only have a back-shifted reading if *Prefer Local Binding* is inactive. Indeed, if there is both an obligatory SOT rule and *Prefer Local Binding*, then there would be no way of accessing a back-shifted reading via a simple past-under-past sentence; an additional layer of past would be needed to get the back-shifted interpretation (e.g., 'Mary thought that she *had* been pregnant'). If SOT is optional, then a past-under-past sentence could be ambiguous between a simultaneous and a back-shifted reading, regardless of whether there is *Prefer Local Binding* or not. This is summarized in the following table:

	Prefer Local Binding ✓	*Prefer Local Binding* ✗
SOT obligatory	Past-under-past only simultaneous	Past-under-past ambiguous
SOT optional	Past-under-past ambiguous	Past-under-past ambiguous

Table 6. Interaction between SOT and *Prefer Local Binding*

Thus, the absence of variation in Modern Greek can be accounted for by the obligatoriness of the SOT rule in the language, together with the fact that past-under-past sentences are generally ambiguous. If SOT is obligatory, then for past-under-past to be able to have a back-shifted reading, *Prefer Local Binding* should be inactive. As for English, to the extent that there is variation w.r.t. *Prefer Local Binding*, I could argue that the SOT rule is optional.

7. Predictions

A prediction of this theory, according to which *Prefer Local Binding* is a principle that can be parametrised, is that other related principles could be parametrized as well. One such principle is Rule I from Reinhart (1983, 2006), which is meant to derive Condition C effects. Here is its simplified version in Trinh & Truckenbrodt (2018):

(39) Rule I: If coreference and binding are semantically indistinguishable, then use binding instead of coreference.

The idea is that if temporal economy is parametrized, then pronominal economy could be as well. So, this would predict that there are languages without Condition C effects.[10] Indeed, this typological prediction is borne out in Vietnamese. Trinh & Truckenbrodt (2018) argue that Rule I is parametrized and in fact inactive in Vietnamese. This is because the equivalent of the following two sentences in Vietnamese can be synonymous, i.e., truth-conditionally equivalent:

(40) Minh said to Linh: 'I will live here.'

(41) Minh said to Linh: 'Minh will live here.'

Saying 'I' or the proper name can convey the same meaning. In other words, there is no requirement that the speaker and the addressee must be referred to by pronouns; one can use their own name to refer to themselves. Thus, it seems that Rule I is inactive, since it would otherwise predict that these two sentences are in competition, and that binding (i.e., the pronoun) should be used instead of coreference (i.e., the proper name). I take this as evidence that there is parametrization of Rule I operating in the pronominal domain, which is related to *Prefer Local Binding* operating in the temporal domain. Therefore, parametrizing principles that promote binding over coreference is something independently needed to explain the absence of condition C effects in Vietnamese. I argued that a related principle, operating in the temporal domain, is parametrized within a language, across speakers (interspeaker variation).[11]

8. Conclusion

To sum up, the literature so far has made a distinction between SOT and non-SOT languages. SOT languages, being able to delete the past tense features on the embedded verb, can express the simultaneous reading with a past-under-past. Non-SOT ones, being unable to do so, have a shiftable present and thus express the simultaneous reading with a present-under-past. Mixed tense languages, like Modern Greek, which have both an SOT rule and a shiftable present have two ways of expressing the simultaneous reading.

Based on my empirical observations, I argued that there is interspeaker variation with respect to how accessible a simultaneous reading of a past-under-past sentence in non-SOT languages is. More specifically, I argued that there are two populations of non-SOT speakers in Hebrew and in Russian: those who get a simultaneous reading with past-under-past and those who do not. For the former, past-under-past sentences are ambiguous between a simultaneous and a back-shifted reading, while for the later, they only have a back-shifted reading.

Having introduced a further distinction between non-SOT speakers, I proposed to account for it in terms of a *Prefer Local Binding* rule in the temporal domain, stating that LFs where the temporal variable is locally bound are preferred. This rule is parametrized across speakers, who

[10] Notice that in this case, the parametrization is at the level of the language, not the speaker. This could be because there are plausibly more data available to the learner than there are in the temporal domain. I expect to find interspeaker parametrization when the stimulus is too poor to determine the value of the parameter. In such cases, speakers make an arbitrary choice for its value, resulting in interspeaker parametrization.

[11] As an anonymous editor notes, we proposed interspeaker rather than intraspeaker variation, since speakers themselves have consistent judgements.

— given the poverty of the stimulus — make arbitrary choices for the value of this parameter. This predicts the existence of two sub-grammars in non-SOT as well as SOT languages. I argued that this is borne out, developing a diagnostic for the availability of temporal *de re* in SOT languages. Thus, I explained the attested interspeaker variation in non-SOT languages, while also making a novel prediction for interspeaker variation in SOT ones.

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Abbreviations

IMPFV	imperfective	NOM	nominative
3SG	third person singular	ACC	accusative
FEM	feminine	PST	past
MASC	masculine	PRS	present
NEU	neuter	FUT	future

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The intensifying accusative clitic *ga* 'it' in Serbian

From syntax to pragmatics

Aleksandra Milosavljević & Stefan Milosavljević

We explore the intensifying accusative clitic (IAC) *ga* ('it') in Serbian, which has no explicit antecedent, neither introduced in the previous discourse, nor contextually available for deictic reference, thus resembling standard 'dummy' pronouns. We argue that the IAC *ga* is referential — it refers to a specific Topic Situation (TS). Specifically, it is base-generated as a Direct Object, marking affectedness of the specific TS. The intensification effects of this clitic emerge pragmatically, due to Levinson's (2000) M-principle. The paper provides evidence for TSs as legitimate syntactic objects (Kratzer 2007/2021), supporting the view that there are no 'dummy' pronouns (e.g. Langacker 2011).

1. Introduction

In this paper, we explore the Intensifying Accusative Clitic (IAC) *ga* (3rd neuter singular) in Serbian, which is used with both typical transitive (1), and intransitive verbs, that is, with unergatives, as in (2), and with unaccusatives, as in (3). This clitic is mostly found in informal registers: all our examples are either from spoken language or social media (forums, social networks, etc.). Relying on Beltrama & Trotzke (2019)'s definition of intensification, the IAC *ga* can be analyzed as an intensification trigger: it implies that some property related to a predicate at hand is given prominence by virtue of being selected from the upper range of a scale along some dimension. For instance, in (1), it is the degree of 'complexity' denoted by the main verb that is implied to be intensified. In (2), the most prominent pragmatic effect is related to the manner of dancing, that is, Pera is dancing in a particular way that exceeds the standard (i.e. a typical way of dancing) — for instance, he is dancing like a professional. In (3), the intensification targets the scale of coldness, that is, it is implied that it is extremely cold in a given situation.[1] Due to its intensifying effects, non-obligatory nature and non-(easily)-identifiable referent, this clitic is usually treated as an expletive-expressive particle/pronoun, which has lost its referentiality and only serves as a means of expressing emphasis (Janjušević Oliveri 2018; Kovačević 2021).

[1] The effect of intensification that the IAC usually produces is not contained in the English translation, in order to avoid 'wordy' paraphrases. Rather, we add [+IAC effect] to each translation.

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(1) Vala, Pero, baš si ga zakomplikovao sad!
INTERJ Pera.VOC exactly AUX.2SG IAC complicate.PTCP now
'Well, Pera, you have just complicated it now! [+IAC effect]'

(2) [Mika, looking at the podium, where Pera is dancing in an extraordinary way:]
Pera ga đuska.
Pera.NOM IAC dance.3SG
'Pera is dancing. [+IAC effect]'

(3) [Directly experiencing the extreme coldness:]
Zahladnelo ga!
get_cold.PTCP IAC
'It has got cold. [+IAC effect]'

We asses the following two hypotheses. (I) The IAC *ga* is an evaluative/expressive clitic, which triggers intensifying (and potentially some other evaluative) effects by virtue of being merged in some higher, evaluative projection, in a way characteristic of dative clitics (for evaluative dative clitics, see Arsenijević 2013). This state of affairs would be unusual, since accusative clitics, unlike datives, are rarely evaluative cross-linguistically (see Kagan 2020 for a recent overview). (II) The IAC *ga* is an 'ordinary' accusative clitic, with the intensification effect emerging pragmatically. In this article, we opt for the second hypothesis and claim that the IAC *ga* is generated in the Direct Object (DO) position, specifying the DO as referential, in the relevant case referring to a definite and/or specific Topic Situation (TS) (in the sense of Klein 2008). The IAC *ga* thus contributes affectedness to the relevant specific TS, while its intensification effects emerge when the verb provides a gradable property, due to the M-principle (Levinson 2000). On a broader theoretical level, the paper provides evidence for TSs as legitimate syntactic objects that introduce discourse referents that can be referred to by personal pronouns. At the same time, our analysis supports the view (put forward in Langacker 2007, 2011) that there are no 'dummy' or empty personal pronouns.

The paper is organized as follows. In section 2, we introduce the pronominal clitic system in Serbian. Section 3 provides a more detailed description of the distribution of the IAC *ga* with different types of verbs in Serbian, comparing it to similar kinds of 'dummy' objects in other languages. The argument structure properties of the constructions with the IAC *ga* are analysed in section 4. In section 5, we provide arguments for the claim that the IAC *ga* refers to a specific TS. The mechanisms leading to the pragmatic effects of intensification constitute the topic of section 6. Section 7 concludes the paper.

2. Clitic (personal) pronouns in Serbian

Genitive, Dative and Accusative personal pronouns in Serbian come in two forms: they can be used either as the strong forms or as clitics, as shown in table 1.

	NOM	GEN (strong / clitic)	DAT (strong / clitic)	ACC (strong / clitic)
1SG	ja	mene / me	meni / mi	mene / me
2SG	ti	tebe / te	tebi / ti	tebe / te

3SG.M	on	njega / ga	njemu / mu	njega / ga
3SG.F	ona	nje / je	njoj / joj	nju / ju, je
3SG.N	ono	njega / ga	njemu / mu	njega / ga
1PL	mi	nâs / nas	nama / nam	nâs / nas
2PL	vi	vâs / vas	vama / vam	vâs / vas
3PL.M/F/N	oni/one/ona	njih / ih	njima / im	njih / ih

Table 1. Clitic (personal) pronouns in Serbian

Together with other enclitics (auxiliary verbs, the question particle *li*), Serbian pronominal clitics are second-position clitics — they always occupy the second position in a sentence and/or an intonational phrase[2] (see Popović 2004; Mišeska Tomić 2006:273–274; Bošković 2016; Zec & Diesing 2016). When there is more than one clitic in a sentence, they always form a cluster, which occupies the second position. Clitic clusters are strictly ordered, as specified in (4), and illustrated in (5) from Progovac (1996:420).[3] The left-most clitic (i.e. the question particle, which is standardly analyzed as base-generated in the CP) is hierarchically the highest one, while the right-most places are reserved for the syntactically most deeply embedded clitics (the accusative ones, base-generated in the DO position) (see Progovac 1996).

(4) Q_part *li* – Aux – Dat – (Gen) – Acc/Refl. *se*

(5) Da li si mu ga dao?
COMP Q AUX.2SG he.DAT.CL it.ACC.CL give.PTCP
'Have you given it to him?'

Generally, there is only one type of clitic (i.e. Q, Aux, Dat, Gen or Acc) per cluster. The only type of clitic that can take multiple slots within a cluster is the dative clitic, as exemplified by (6). The dative clitic on the left is always syntactically higher, hence closer to the left periphery of a clause, and usually performs some expressive, evaluative or a discourse-related function (cf. Janda 1990, 1993; Popović 2004; Palić 2010; Arsenijević 2013; Milosavljević 2017, 2019; Jovanović 2020). For instance, in (6a), the Interested Hearer Dative *ti* and the Indirect Object Dative *mu* are used in the same clause. In (6b), the Interested Hearer Dative is combined with an evaluative Personal Dative, which is always realized as a third person singular clitic that is syncretic between the neuter and the masculine, and serves to present the situation as 'objective' (see Jovanović 2020 for a detailed analysis).

[2] What counts as the second position depends on how one defines the first position: it may be a first word or a first constituent; see Mišeska Tomić (2006), Zec & Diesing (2016) for detailed discussion.

[3] Accusative and genitive clitics generally do not cluster together, but genitive clitics can precede the reflexive clitic *se*. The auxiliary clitic for the 3pl *je* behaves exceptionally in that it always comes at the end of the cluster, unlike all other clitic auxiliaries (see Progovac 1996; Popović 2004 for detailed analyses of clitic clusters in Serbian).

(6) a. I tako ti mu ja u oči kažem
and so you.DAT.CL he.DAT.CL I.NOM in eyes.ACC say.1SG
da je pogrešio.
COMP AUX.3SG make_mistake.PTCP
'And so I told him without hesitation that he was mistaken.'

b. Šta ti mu (ga) ja znam?!
what you.DAT.CL it.DAT.CL IAC I.NOM know.1SG
'I have no idea about that!'

In South-East Serbian, up to three dative clitics can be used within a single cluster, as illustrated in (7) from Arsenijević (2013), where the Interested Hearer Dative, the evaluative reflexive dative, and the benefactive dative are combined (a similar case is reported in Janda 1990 for Czech).

(7) Ja ti si mu otvorim vrata.
I.NOM you.DAT.CL REFL.DAT.CL he.DAT.CL open.1SG door.ACC
'(And then,) I open the door for him.'

3. The distribution of the IAC ga: an overview

In this section, we first briefly introduce similar kinds of accusative pronouns in some other languages and then provide a descriptive overview of the classes of verbs that are used with the IAC *ga* in Serbian. Accusative 'dummy' pronouns that share at least some properties with the IAC *ga* in Serbian are found in other languages, for instance in English and Chinese, and are usually referred to as 'dummy' pronouns — that is, semantically light elements that do not carry a significant semantic load. Syntactically, these pronouns are characterized as a kind of direct (pseudo-)object, which contributes to the degree of transitivity of the verb they appear with (see Lin 1994 for Chinese, Gardele 2011; Mondorf 2016 for English). For instance, in English, 'dummy' *it* can be used with both (optionally) transitive and intransitive verbs with a transitive effect, as illustrated in (8–10) from Gardele (2011):

(8) The senate dispatched their ambassadors to Alaric, desiring him to give them leave to fight it with him in the open field.

(9) Tomorrow the instance will reset. So if those few want to camp it again tonight, so be it… life and the game will still go on!

(10) Defence sources told the Jerusalem Post they were considering going it alone in a strike on Iran.

As Gardelle (2011:173) puts it, the transitive pattern *fight it* in (8) denotes the situation of *fighting* applied to an unidentified element, yielding a telic interpretation of the event. If the transitive verb *fight* were used in an intransitive construction (i.e. *fight Ø*), the sole action would be foregrounded and thus an atelic interpretation would emerge. When it comes to prototypically intransitive verbs (both unergatives in (9) and unaccusatives in (10)), which are not usually found in transitive constructions, the personal pronoun seems to fill the syntactic position of the DO. Namely, in (9), the typical unergative verb *camp* is used in a transitive

construction (i.e. *camp it*), suggesting that the event should be viewed as affecting an element that cannot be clearly identified (*idem*:169). The 'dummy' *it* is, in general, easily combined with verbs converted from nouns (e.g. *camp → camp (it)*), supporting the verbal status by equipping them with some degree of transitivity, thus rendering weakly-established verbs more verby (Mondorf 2016:97). In (10), the prototypical unaccusative verb *go* is found in the transitive pattern *go it alone*, with its meaning being changed due to transitivization ('act alone') (Gardele 2011:165, 167, cf. also Mondorf 2016:97).

As stated in section 1, in Serbian, basically all the major types of verbal predicates — verbs that are typically used in transitive, unergative or unaccusative environments — can be used with the IAC *ga*, as summarized in table 2. In the remainder of this section, we present all these possible combinations with the relevant examples. Since the context is very important for the felicitous use of this clitic, all the examples are presented as originally found in corpora (sources indicated in footnotes) — with the original interpunction, emojis, etc. In cases in which the actual context includes some large data (like images or maps), the context is paraphrased.

(I) TRANSITIVE VERBS (*zakomplikovati* 'make complicated', *ubosti* 'stab') (II) INTRANSITIVE VERBS a. UNERGATIVES (*đuskati* 'dance', *živeti* 'live', *uživati* 'enjoy', *žuriti* 'hurry up') b. UNACCUSATIVES (zahladneti 'get cold', zazimiti 'get wintry', naoblačivati 'get cloudy')	+ *ga*

Table 2. Classes of verbs and the IAC *ga*

The IAC *ga* is found with verbs that are most typically used in transitive constructions, as exemplified by (11) and (12): *zakomplikovati nešto* 'make something complicated, complicate something' or *ubosti* 'stab someone'. When used with the IAC *ga*, the verb *ubosti* tends to have the metaphorical meaning 'guess the outcome'.

(11) ☑ Lako je biti otac, ali samo onaj poseban 👌 postaje
easy COP.3G be.INF father.NOM but only that special become.3SG
otac.🤍 Ustvari, lako je postati otac. 🤍 naprotiv, teško
father.NOM actually easy COP.3SG become.INF father.NOM on_the_contrary hard
je biti pravi otac (e jesam ga zakomplikovao 🙂).[4]
cop.3SG be.INF true father.ACC INTERJ AUX.1SG IAC make_complicated.PTCP
'It is easy to be a father, but only the special one becomes a father. Actually, it is easy to become a father. On the contrary, it is difficult to be a true father. (I have really made it complicated! [+IAC effect])'

[4] Source: https://www.facebook.com/serijeilepoteTurske/photos/-lako-je-biti-otac-ali-samo-onaj-poseban-postaje-otacustvari-lako-je-postati-ota/1139156256461468/.

(12) KOJI TIM CE OSVOJITI OVE GODINE NBA?
which team.NOM AUX.FUT.3SG win.INF this year.GEN NBA.ACC
Mislim da ce ovaj put neko sa Istoka
think.1SG COMP AUX.FUT.3SG this time.ACC someone.NOM from East.GEN
al sam ga ubola ko prstom u dzem [5]
INTERJ AUX.1SG IAC stab.PTCP like finger.INS in jam.ACC
'[Which team will win the NBA this year?]
I think someone from the East. I hit it like a finger in the jam. [+IAC effect]'

The IAC *ga* appears also with verbs commonly used in both transitive and intransitive constructions, for instance *preterati* 'overdo' in (13), or *usporiti* 'slow down' in (14).

(13) Pretera ga sa metaforom: Poraz od Jermenije
overdo.AOR.3SG IAC with metaphor.INS defeat.NOM from Armenia.GEN
težak kao 11. septembar?![6]
difficult like 11th September.NOM
'You have gone too far with the metaphor: the defeat of Armenia is as severe as 11th September. [+ IAC effect]'

(14) ala su ga usporili sa vizama katastrofa....[7]
INTERJ AUX.3PL IAC slow_down.PTCP with visas.INS catastrophe.NOM
'They have extremely slowed down the visa issuance process [+ IAC effect]. What a disaster…'

Many typical unergative verbs easily combine with the IAC *ga*. Some of them can also easily be found with Cognate Objects, such as *đuskati (đus)* 'dance (a dance)', illustrated in (15), or *živeti (život)* 'live (a life)', exemplified by (16). The compatibility with (accusative/bounded) Cognate Objects is usually taken as a diagnostics of their unergative status (e.g. Tenny 1994; Marelj 2016; Levin & Krejci 2019). There are also unergatives that are not used with a Cognate Object in Serbian, but are found with the IAC *ga*, such as *uživati* 'enjoy' (17) or *žuriti* 'hurry up' (18). Their unergative behavior is supported by the volitional component of their subjects, which is a property of unergatives, as opposed to unaccusatives (Aljović 2000).

(15) [A report describing the situation in which Roger Federer found himself:
Even off the field, the Swiss has the image of an elegant and somewhat withdrawn man whom we have rarely seen performing acrobatics or communicating with audiences beyond the ordinary. However, at the exhibition in Sao Paulo, Roger completely relaxed and during one of the breaks between games, together with the mascot, he danced to the song 'Gangnam Style'.]
[A comment of a reader:]
E jest ga i đuskao!!! [8]
INTERJ AUX.3SG IAC and dance.PTCP
'He indeed did dance!!! [+IAC effect]'

[5] Source: https://forum.krstarica.com/threads/ko-ce-osvojiti-nba.26708/.
[6] Source: https://www.mozzartsport.com/fudbal/vesti/pretera-ga-sa-metaforom-poraz-od-jermenije-tezak-kao-11-septembar/200320/o-nama.
[7] Source: https://forum.krstarica.com/threads/dobijanje-radne-boravisne-vize-u-nemackoj.754188/page-372.
[8] Source: https://www.b92.net/sport/komentari.php?nav_id=668557.

(16) [a Facebook status with a shared vacation location]
Ja ga vala živim
I.NOM IAC INTERJ live.1SG
'I live it up. [+IAC effect]'

(17) Mnogo ti dobro ide e, uzivas ga 600 na sat
much you.DAT.CL well go.3SG INTERJ enjoy.2SG IAC 600 on hour.ACC
'You're doing really well, you're really enjoying it. [+IAC effect]'[9]

(18) [As a comment on a photo displaying a car accident]
Ja nikad ovaj narod nece doci pameti pa
INTERJ never this people.NOM AUX.NEG.FUT.3SG come.INF mind.DAT well
gdje ga zuris sunce ti jebem.[10]
where IAC hurry.2SG sun.ACC you.DAT.CL fuck.1SG
'These people will never get smarter, well where are you rushing, damn…!? [+IAC effect]'

The IAC *ga* can also be used with some typical unaccusatives, such as *zahladneti* 'cool down, get cold', as in (19), or *zazimiti* 'get wintry', illustrated in (20). Unaccusatives are diagnosed in Serbian by their possibility to be used as participial adjectives, as in the phrase *zahladneli odnosi* 'chilled relationships' (see Aljović 2000). Some typical unaccusatives, that is those verbs whose internal argument behaves as a Theme, are almost exclusively used in reflexive constructions in Serbian, accompanied with the reflexive particle *se*, *naoblačivati se* 'get cloudy', or *smračiti se* 'get dark' (see Miličević 2016 for reflexive unaccusatives in Serbian). When used with the IAC *ga*, the reflexive particle is obligatorily omitted, as in (21) and (22).

(19) [Experiencing enormous coldness outside]
Napolju ga baš zahladnelo! (pers. com.)
outside IAC extremely get_cold.PTCP
'It has got extremely cold outside! (+IAC effect)'

(20) -4.0C bas ga zazimilo ovog marta, ne secam
-4.0C extremely IAC get_wintry.PTCP this March.GEN not remember.1SG
se hladnijeg marta[11]
REFL colder March.GEN
'It has got extremely wintry this March, I don't remember a colder March. [+IAC effect]'

(21) [Looking at the sky:]
Naoblačuje ga! (pers. com.)
get_cloudy.3SG IAC
'It's getting cloudy! [+IAC effect]'

[9] Source: https://vukajlija.com/forum/teme/18317-kaladont-37?strana=458.

[10] Source:https://pages.facebook.com/vatrogasnajedinicaistocnosarajevo/photos/a.1898256416966135/3294187397373023/?type=3&source=48.

[11] Source: http://www.serbianmeteo.com/forum/index.php?topic=4490.0.

(22) Stiže nova tura i sigurno jača, čule su se i
arrive.3SG new tour.NOM and certainly stronger hear.PTCP AUX REFL and
rakete, opasno ga smračilo, počinje kiša i grad.[12]
rockets.NOM dangerously IAC darken.PTCP begin.3SG rain.NOM and hail.NOM
'The new, even stronger [storm] tour is on the way, the [anti-hail] rockets could also be heard, it got extremely dark [+IAC effect], the rain and hail are about to begin.'

Finally, the IAC *ga* combines with some other intransitive verbs that are difficult to classify with respect to the distinction between unaccusatives and unergatives. We will mention two classes which are quite common with the IAC *ga*. The first one is the class of weather or atmospheric verbs such as *sevati* 'lighten' in (23); see also example (56) for the verb *grmeti* 'thunder'. The second class comprises verbs with the cumulative prefix *na- 'on'*, which contributes the quantitative meaning 'lot of', as in (24) and (similar holds for verbs *na-grabusiti* and *na-jebati*, which are used as synonyms of the verb *na-drljati*).

(23) UUU matori al ga seva negde na zapadu od
INTERJ old_man.VOC INTERJ IAC lighten.3SG somewhere on West.LOC from
Zemuna[13]
Zemun.GEN
'Man, there is a lot of lightning somewhere west of Zemun. [+IAC effect]'

(24) DIJEGO, SAD SI GA NADRLJAO! UEFA pokrenula
Diego.NOM now AUX.2SG IAC get_into_trouble.PTCP UEFA.NOM initiate.PTCP
postupak protiv Simeonea.[14]
procedure.ACC against Simeone.GEN
'Diego, you're in trouble now [+IAC effect]. UEFA has initiated procedure against Simeone.'

In sum, we have shown that, in the right context, the IAC *ga* can be used with any type of verb (transitive, unergative, unaccusative). As we will see in section 4, the necessary condition for felicitously using *ga* is that the DO position is not filled by some other object. In addition, the context supporting the use of the IAC *ga* must be consistent with the nature of the referent of this pronoun, as elaborated in section 5.

4. The IAC ga *as an internal argument*

In this section, we argue that the IAC *ga* is generated in the DO position. The evidence comes from its complementary distribution with other accusative NPs and clitics. We follow a neo-constructionist perspective, according to which the same verb (or the same root, depending on the approach) can participate in different event schemas, which are in turn reflected in different

[12] Source: http://www.serbianmeteo.com/forum/index.php?topic=4248.300.
[13] Source: https://twitter.com/ciriloimetotije.
[14] Source: https://informer.rs/sport/fudbal/422372/dijego-sad-nadrljao-uefa-pokrenula-postupak-protiv-simeonea.

argument realizations (e.g. Borer 2005; Harley 2005; Ramchand 2008; Mateu & Acedo-Matellán 2012; Levin 2017; Levin & Krejci 2019).[15]

As we have seen in the previous section, the IAC *ga* can be used with some typical transitive verbs. In such cases, it is always in complementary distribution with the verb's object. This is an argument in favor of the analysis that the IAC *ga* is generated in the DO position, rather than being an expletive pronoun or a particle.

(25) a. Pera ga je baš zakomplikovao.
Pera.NOM IAC AUX.3SG exactly make_complicated.PTCP
'Pera really complicated it. [+IAC effect]'

b. Pera je baš zakomplikovao svoj život.
Pera.NOM AUX.3SG exactly make_complicated.PTCP POSS.REFL life.ACC
'Pera really complicated his own life.'

c. Pera (*ga) je baš zakomplikovao sve / posao / svoj život.
Pera.NOM IAC AUX.3SG exactly make_complicated.PTCP all.ACC job.ACC POSS.REFL life.ACC
'Pera really complicated everything / the job / his own life.'

When the IAC *ga* is used with transitive verbs such as *zakomplikovati*, *ubosti*, etc., we assume for convenience a standard structure like (26), with a DO base-generated in the Spec, vP[16] (following Perelstvaig 1999, 2000).[17]

(26) [$_{AspP}$ … [$_{VoiceP}$ (Agent) [$_{Voice'}$ Voice° [$_{vP}$ DO / IAC *ga* [$_{v'}$ v°]]]]]

When used with typical unergative verbs, the IAC *ga* cannot be combined with accusative Cognate Objects in Serbian, *đuskati (đus)* 'dance (a dance)', *plesati (ples)* 'dance a dance', *živeti život* 'live (a life)', etc. (for an overview of Cognate Objects in Serbian, see Marelj 2016). The example in (27) shows that the verb *đuskati* can be used without a DO, as in (27a), with an accusative Cognate Object, as in (27b), or with the IAC *ga*, as illustrated in (27c), but, crucially — the sentence is ungrammatical if both the Cognate Object and the IAC *ga* are used, as shown in (27d).

(27) a. Pera đuska Ø.
Pera.NOM dance.3SG
'Pera is dancing.'

b. Pera đuska đus.
Pera.NOM dance.3SG dance.ACC
'Pera is dancing a dance.'

[15] Our approach is also compatible with more radical constructional approaches (e.g. Goldberg 2006; Croft 2012).

[16] With Harley (2013), we use the projection vP as a verbalizing projection, separating it from the agent-introducing VoiceP.

[17] What is usually assumed by 'Direct Object' may occupy different syntactic positions in more fine-grained representations, depending on the thematic role and/or the verb class (see in particular Borer 2005; Ramchand 2008, 2013). Crucial for our purposes is that regardless of how this notion is defined, the IAC *ga* behaves syntactically in the same way as 'regular' DOs: it behaves as a vP internal argument rather than a high evaluative pronoun (or a particle).

c. Pera ga đuska.
Pera.NOM IAC dance.3SG
'Pera is dancing. [+ IAC effect]'

d. Pera (*ga) đuska đus.
Pera.NOM IAC dance.3SG dance.ACC
'Pera is dancing a dance [+IAC effect].'

Tenny (1994:38–40) argues that Cognate Objects perform a measuring-out role, which is a role shared with other DOs. She observes that cognates are used with typical intransitive unergative verbs which otherwise describe non-delimited events (compare (28a) with (28b) from Tenny (1994:39). With Massam (1990), Tenny states that Cognate Objects only occur with verbs that do not have an affected or measuring argument in their basic sense, and states that this state of affairs follows from the constraint that there can only be one measuring argument for each event described by a verb. Similarly, Perelstvaig (1999) shows that in Russian, accusative Cognate Objects behave exactly the same as other accusative objects, in performing the measuring-out role, as shown by the possibility to combine with time-span adverbials (i.e., counterparts of English *in*-adverbials), just as in English, see (29) from Perelstvaig (1999:276–277).

(28) a. Josie danced (for an hour / *in an hour).
b. Mary danced a silly dance (in five minutes / for five minutes).

(29) a. *Oni tancujut za pjat' minut.
they.NOM dance.3PL in five minutes
'*They dance in five minutes.'

b. Oni tancujut svoj tanec za pjat' minut.
they.NOM dance.3PL own dance.ACC in five minutes
'They dance their dance in five minutes.'

Following the argumentation in Tenny (1994) and Pereltsvaig (1999) on the argument status of (accusative) Cognate Objects, the impossibility to use the IAC on a par with such objects strongly indicates their complementary distribution. This, in turn, suggests that the IAC *ga* occupies the DO position, which is the position of an affected argument. It contributes affectedness[18] in that it brings or enhances transitivity (just as other DOs), delimits the event and marks the situation as specific, hence salient/individuated, despite referring to an abstract object (in the sense of Asher 1993, 2000) such as TS (see section 5 for a detailed discussion of its referential properties).

A potential objection to relying on the complementary distribution of the IAC *ga* and Cognate Objects as evidence for their DO status is that both elements bring expressivity, hence their combination is simply not natural rather than being structurally blocked. If so, we would expect that *ga* also fails to combine with other evaluative expressions. However, the IAC *ga* combines well with such expressions, evaluative manner adverbials, as illustrated in (30), or instrumental Cognate Objects, which act as modifiers/adjuncts (cf. Pereltsviag 1999; Marelj 2016), as shown in (31). Note that instrumental Cognate Objects, as manner modifiers, can also

[18] The notion of affectedness has been used to define Direct Objecthood and transitivization patterns in various approaches (e.g. Hopper & Thomson 1980; Jackendoff 1990; Dowty 1991; Næss 2004; Anderson 2006; Gardelle 2007; von Heusinger & Kaiser 2011; Mondorf 2016). Specifically, the affectedness reflects some more primitive properties such as aspectual influence of the (accusative) DO cross-linguistically (e.g. delimitation, telicity, scalarity, change of state, measuring-out, see Tenny 1994; Beavers 2011; Kagan 2020), or salience/individuation, which is in turn reflected via referentiality and animacy (the more referential and animate the entity, the more affected it is) (e.g. Hopper & Thomson 1980; Næss 2004; Gardelle 2011; Mondorf 2016).

be combined with accusative DOs, including accusative Cognate Objects, as shown in example (32) from Serbian (Marelj 2016:171).

(30) Pera ga živi *vrhunski*!
Pera.NOM IAC live.3SG superbly
'Pera lives superbly! [+IAC effect]'

(31) Pera ga živi *vrhunskim* *životom*!
Pera.NOM IAC live.3SG superb life.INS
'Pera lives a superb life! [+IAC effect]'

(32) Odlučio je da živi život *životom* filmske zvezde.
decide.PTCP AUX.3SG COMP live.3SG life.ACC life.INS movie star.GEN
'He decided to live the life of a movie star.'

Assuming that all unergative verbs have an underlying object position (e.g. Burzio 1986; Rothstein 1992; Hale & Keyser 2002; Armstrong 2016; see also Marelj 2016 for a detailed discussion), we can represent their structure as in (33). The DO position can be occupied by an unspecified object (see Mittwoch 2005; Armstrong 2016)[19], by a Cognate Object, or by the IAC *ga*, which follows from the fact that they are in complementary distribution. The different status of these three objects with respect to referentiality will be discussed in detail in section 6.

(33) [$_{AspP}$ … [$_{VoiceP}$ (Agent) [$_{Voice'}$ Voice° [$_{vP}$ ∅ / Cognate_Object / IAC *ga* [$_{v'}$ v°]]]]]

Let us now turn to the analysis of the IAC *ga* with typical unaccusative verbs, in particular degree achievements (DAs) — a class of gradable predicates among unaccusatives exemplified by the verb *zahladneti* 'get cold' in (35). It is typically assumed that in unaccusative constructions, the underlyingly internal argument surfaces in the subject position, and the structure they are generated in lacks the VoiceP, see (34a). In (35), the subject is a covert pronoun akin to the English 'dummy' subject *it* (note that Serbian is a pro-drop language). We assume that the 'dummy'/expletive subject with meteorological predicates is referential, following, among others, Bolinger (1973), Langacker (2007, 2011), and Levin & Krejci (2019).

(34) a. [$_{AspP}$ … [$_{vP}$ (Theme) [$_{v'}$ v°]]]
b. [$_{AspP}$ … [$_{vP}$ *pro* [$_{v'}$ zahladneti]]]

(35) Al' je zahladnelo!
INTERJ AUX.3SG get_cold.PTCP
'It has got cold.'

When used with unaccusative verbs, as in (36), the clitic *ga* has a transitivizing effect, and the event is construed as including the affected TS. In this type of construction, the referent of the covert subject situation pronoun is construed as an Initiator, which triggers (or initiates) the affectedness of the situation, as represented in (37). Strictly speaking, then, the construction comprising an unaccusative verb and the IAC *ga* is not unaccusative anymore: it is a transitive (causative) construction.

[19] In many analyses, including Armstrong (2016), the null (bare noun) object undergoes incorporation into the verb. We do not pursue this issue here in detail, since it is not directly relevant for our analysis.

(36) Al' ga je zahladnelo!
INTERJ IAC AUX.3SG get_cold.PTCP
'It has got cold. [+IAC effect]'

(37) a. [$_{AspP}$ … [$_{VoiceP}$ (Initiator) [$_{Voice'}$ Voice° [$_{vP}$ IAC *ga* [$_{v'}$ v°]]]]]
b. [$_{AspP}$ … [$_{VoiceP}$ *pro* [$_{Voice'}$ Voice° [$_{vP}$ *ga* [$_{v'}$ zahladneti]]]]]

Cross-linguistically, it is not surprising that unaccusative verbs can be used in different event schemas, e.g. in the inchoative/causative alternation, with unaccusatives and causatives 'sharing' the same verb, or in various cases when the same verb is used in an unaccusative or an unergative construction, depending on the type of construction it appears in (e.g. Ramchand 2013; Levin & Krejci 2019). For instance, according to Levin & Krejci (2019), the verb *rain* in (38a) is used in an unergative construction (the 'substance emission event structure'), as evidenced by the possibility that it takes a Cognate Object, whereas in (38b), the same verb is used in an unaccusative construction (the 'directed motion event structure').

(38) a. It rained (a light rain / sulfuric acid).
b. A light rain rained from the sky.

Another example comes from the English 'equivalent' of the IAC *ga* — the so-called pseudo-object 'dummy' *it* (see section 3). Building on Salkoff (1988), Mondorf (2016:82–83) analyzes the unaccusative verb *move* (in (39)) as appearing in different transitive (causative) constructions — with the 'dummy' *it* (40a), the *way*-construction (40b) or the reflexive (40c).

(39) The water was two feet deep at the treetrunk ... Move! he yelled.

(40) a. Hurry up! Tom yelled from the living room a couple of days later. Move it, Judy … You can't be late at your own reception.
b. They run in laughing — Amy closing the door behind them as Virgil moves his way into the center of the room.
c. From the bunk below him Rod Porter grunted and turned over, as if to resume the peaceful sleep from which he'd just been disturbed. Move yourself, Porter …

We have seen in section 2 that evaluative dative clitics can be combined with other types of dative cltics, which suggests that they are generated in different syntactic positions.[20] The IAC *ga*, on the other hand, never combines with other accusative clitics, including the reflexive clitic *se*, which we take as evidence that they compete for the same position. Namely, just as the IAC *ga*, the reflexive *se* can be used with different classes of verbs in Serbian, including unaccusatives (see Miličević 2016). One such example is provided in (41): while the sentence is grammatical with both the reflexive (41a) and the IAC *ga* (41b), the combination of the two clitics is infelicitous, as illustrated in (41c). While the exact analysis of the reflexive *se* is very much subject to debate (see in particular Miličević 2016), there are arguments in favor of analyzing the reflexive clitic as base-generated in the DO position. First, it takes the accusative

[20] We adopt the view that pronominal clitics in Serbian are generated in separate maximal projections (e.g. Bošković 2002, 2016) low in the structure – in the vP itself (from where they move to the AgrP, or AspP, to receive/check the Case). For the low position of Serbian clitics, see e.g. Stjepanović (1998), with arguments based on the vP-ellipsis; for an overview of different approaches to Slavic clitics, see Franks (2010).

case (compare the accusative reflexive clitic *se* with the dative reflexive clitic *si*), and is clustered with other clitics in the same way as other accusative clitics (Progovac 1996:422). Secondly, the verb with the reflexive *se* in Serbian never takes another accusative object, which implies that they occupy the same underlying position. The second argument is empirically supported by the fact that among the 5.300 most frequent Serbo-Croatian verbs (from Arsenijević et al. in prep.), there are no verbs that take both the reflexive *se* and the accusative object.

(41) a. Napolju se baš smračilo.
outside REFL.ACC exactly get_dark.PTCP
'It has got extremely dark outside.'

b. Napolju ga baš smračilo.
outside IAC exactly get_dark.PTCP
'It has got extremely dark outside. [+IAC effect]'

c. Napolju (*ga se) / (*se ga) baš smračilo.
outside IAC REFL.ACC REFL.ACC IAC exactly get_dark.PTCP

In this section, we have shown that the IAC *ga* is generated in the DO position since it is in complementary distribution with other accusative NPs and clitics. When used with unergative and unaccusative verbs, the IAC *ga* has a transitivizing effect: the relevant event is construed as referring to the affected situation, which is specific and topical. In other words, the IAC *ga* contributes affectedness of the relevant TS in that it brings or enhances transitivity (just as other DOs), delimits the event and marks the situation as specific, hence salient/individuated, despite referring to an abstract object such as TS. In the next section, we turn to a detailed discussion of such a referent.

5. The specific Topic Situation as a referent of the IAC ga

As an argument pronominal clitic in the position of the DO, the IAC *ga* is expected to be referential, and as a referential pronominal clitic, it is expected to have a discourse-topical referent (cf. Cardinaletti & Starke 1999). In this section, we argue that the IAC *ga* is indeed referential and that it refers to the (epistemically) specific TS. Before presenting arguments for our claim in subsection 5.2, we first introduce the notion of Topic Situation in subsection 5.1.

5.1. The Topic Situation

The notion of Topic Situation, as a situation the relevant sentence is about, is usually attributed to Austin (1950), and it has received particular prominence in the Situation Semantics since the work of Barwise & Perry (1983) (see Kratzer 2007/2021 for a recent overview). One typical example illustrating the relevance of TS which is often cited in the literature is shown in (42) (originally provided by Barwise & Etchemedy (1987:122), and subsequently discussed in Schwarz 2009:92–93; Kratzer 2007/2021:sect. 3). In the described scenario, a person stating *Claire has the three of clubs* would be wrong on the Austinian account, even if Claire had the three of clubs across town. The example is meant to illustrate that whether the proposition

described by the sentence is true or false depends, among other things, on what situation the sentence is about.

(42) We might imagine, for example, that there are two card games going on, one across town from the other: Max is playing cards with Emily and Sophie, and Claire is playing cards with Dana. Suppose someone watching the former game mistakes Emily for Claire, and claims that Claire has the three of clubs.

Recently, the TS has proved useful in syntactic and semantic analyses of various phenomena — tense and aspect (Maienborn 2005a), quantification and definiteness (Schwarz 2009), subordinate clauses (Arsenijević 2021). However, it is a subject of debate whether TSs should be syntactically represented, or they are just 'unarticulated constituents' (in the sense of Recanati 2002). Among others, Kratzer (2007/2021), Schwarz (2009), Ramchand (2014, 2018), Ramchand & Svenonius (2014), Arsenijević (2021) argue for a TS as a proper syntactic entity, with its syntactic relevance receiving support also from the online processing experiments (see Frazier & Clifton 2018; Schwarz 2019; Grubic & Wierzba 2021).

Extending Klein's (1994) notion of the Topic (Reference/Assertion) Time, which mediates between the event domain and the Utterance Time, to the TS, Ramchand (2014:110) proposes that the T(ense) head combines with the TS and establishes a relationship between it and the Utterance Situation (similarly in Ramchand 2018:175; Ramchand & Svenonius 2014). This basically means that the TS is hosted in the projection responsible for the grammatical aspect (AspP) (see also Maienborn 2005a). It is important to note that the AspP itself is agnostic with respect to the (un)specificity and (in)definiteness of a Topic Time (Klein 1995:691) — the speaker can relate their claim to both specific and nonspecific TSs (cf. Maienborn 2005a:169).

Following Kratzer (2007/2021), Schwarz (2009:sect. 4.1.1) proposes to derive the TS from the Question Under Discussion (QUD). The TS based on the QUD is the unique actual situation (or the sum of all situations) that exemplifies the question extension (Schwarz 2009:144). Schwarz argues that representing the TS syntactically proves useful in explaining the domain in which weak definites and quantificational determiners are interpreted. For example, in (43), the weak definite (*the winner*) is interpreted relative to the TS derived from the relevant QUD (see Schwarz 2009 for a detailed technical implementation).

(43) (QUD: What did the players do at the end of the game?)
Hans took a picture of *the winner*.

In this paper, we assume with Klein (1994, 1995), Maienborn (2005a) and Ramchand (2014) that the AspP is a locus of the TS. Specifically, we propose that the TS is generated in the Spec, AspP (as suggested in Ramchand & Svenonius 2014:163), but moves to the Spec, TopicP if the TS acts as a topic of a given sentence, that is, if the relevant sentence receives a thetic interpretation (with pro_s as a subject of predication), as represented in (44). This is in line with Basilico (2003), for whom the TopicP hosts a *pro* that saturates the event argument under the thetic interpretation.[21] The movement to the Spec, TopicP is responsible for the

[21] The TopicP in the sense described above closely matches several other projections argued for in the literature to perform similar (or identical) functions. For instance, the projection E(vent)P (generated immediately above the TP), which hosts an event argument (in the sense of Borer 2005, 2010), has been proposed in Progovac (1998) to host the event/situation pronoun *to* in Serbian (to be introduced shortly below). According to Hinterhölzl (2019), the FinP, the lowest projection in the C-domain (immediately above the T-domain), which acts as a close correlate

specificity/definiteness of the TS (see, e.g., Erteschik-Shir 1997; Aboh 2010; Jiménez-Fernández & Spyropoulos 2013, and references cited therein, for arguments that topicalization licenses definiteness/specificity effects). The TS pronoun is usually null (hence labeled pro_s in (44)), but some demonstratives can also represent specific TSs, as we will see below (cf. examples (49–52)).

(44) [$_{TopicP}$ pro_s [$_{Topic'}$ Topic° [$_{TP}$ (Subject) [$_{T'}$ T° [$_{AspP}$ ~~pro_s~~ [$_{Asp'}$ Asp° [$_{VoiceP}$ … [$_{vP}$ …]]]]]]]]

In the majority of languages, TSs are often non-overt, but there are some cues that help identify them.[22] For instance, Klein (2008) differentiates external and internal 'tools' for identifying TSs. The external ones include directly experienced situational identification, as in (45), the identification by text structure principles, as in (46), or by an explicit question, as in (47). The internal cues include word order (the TS identifiers come first), intonation, some particles, inflectional morphology (e.g. tense marking), topic drop, etc. We will briefly illustrate those internal identifiers that will be most important for our analysis. Among typical 'introducers' of the TS are the 'topic time' and the 'topic place', also analyzed in the literature as frame-setting adverbials (e.g. Maienborn 2005b; Frazier & Clifton 2018; Schwarz 2019), as in (48). In addition, the topical subject also contributes to the identity of the TS.

(45) *[Event on soccer field]* Offside!

(46) *We arrived around 10. Mary opened the kitchen door.* The light was on.

(47) *What did you notice?* The light was on.

(48) *On Jan. 29th in Bergen*, it was snowing.

The role of the TS identifiers can be performed by 'expletives' like *es* in (49) from German, which are proposed to be a sort of anaphorical element taking up an externally identified TS (Klein 2008:301; see also Klein 2006).

(49) a. *Es* hat jemand angerufen.
it.NOM AUX.3SG someone.NOM call.PTCP
'Someone (has) called.'

b. *Es* war das Licht an.
it.nom COP.PST.3SG ART.DEF light.NOM on
'The light was on.'

Similarly, in Serbian, demonstrative pronouns can refer to the TS, as in (50–52). Their use is optional, and is usually exploited as a means for a situational identification of a TS. Namely, they are used to refer to a specific TS, where the specific entity should be broadly understood

of Kiss's (1996) RefP, is responsible for referential anchoring of the TS. Finally, the TopicP is also a close analog of the SubjP in the sense of Cardinaletti (2004), which hosts the subject of predication (where, e.g., Bentley & Cruschina (2018) place a TS pronoun). Note though that there are approaches according to which the TP itself hosts a TS pronoun (e.g. Sluckin 2021).

[22] There are, however, languages that employ grammaticalized means that indicate the syntactic reality of Topic Situations. For instance, Switch-Reference in the North American language Kiowa is signaled by the same or different marking at the juncture of two clauses depending on whether the (Topic) Situation is the same or different (McKenzie 2015).

as an entity epistemically available to the speaker (or the secondary speaker in indirect statements) (see von Heusinger 2002, 2011 for a discussion of specificity along these lines). For instance, in (50), the situation is anchored relative to the speaker's spatio-temporal coordinates ('here and now'). In (51), the relevant situation is identified as perceivable by the speaker at a certain distance. The pronoun *to* in (52) refers to the past situation introduced in the narrative which is directly witnessed by the speaker (= narrator in this case) (see also Progovac 1998, 2005, for an analysis of *to* as a situational/event pronoun in Serbian).

(50) Jel' *ovo* pada kiša, ili mi se pričinjava?
Q this fall.3SG rain.NOM or I.DAT.CL REFL appear.3SG
'Is it raining or does it just seem so to me?'

(51) *Ono* Marko silazi s brda.
that Marko.NOM get_off.3SG from hill.GEN
'That's Marko coming from the hill!'

(52) Idemo juče Mika i ja kroz šumu.
go.1PL yesterday Mika.NOM and I.NOM through woods.ACC
Odjednom, *to* ne da je počelo da grmi!
suddenly that not COMP AUX.3SG start.PTCP COMP thunder.3SG
'Yesterday, Mika and I were walking through the woods. Suddenly, it started to thunder!'

5.2. The specific Topic Situation is a referent of the IAC ga

In this subsection, we provide arguments for analyzing the IAC *ga* as referring to the definite/specific TS and hence co-referring with the TS pronoun sitting in the TopicP.

First, in all the examples with the IAC *ga*, the situation itself is topical: the sentence is 'about' a specific situation in a way reminiscent of thetic judgments. Specifically, we follow the assumption that thetic judgmenets, like [*What's up*?] *Pablo is sick*, are not topicless, but 'about' the actual TS (Maienborn 2005a; Bentley & Cruschina 2018; Hinterhölzl 2019; Sluckin 2021; Sluckin et al. 2021, a.o.). The IAC *ga* most typically occurs in those environments in which the TS is identified by the immediate context (i.e. the preceding discourse, directly experienced by the speaker, etc.). This is usually accompanied by the TS identifiers such as 'frame-setting' adverbials (e.g. the spatial adverbial *ovde* 'here' in (53)), or some kind of expressive (e.g. the interjection *vala* in (54)), etc.

(53) [The speaker laying on the beach:]
Ovde ga baš upeklo.
here IAC exactly get_hot.PTCP
'It has got extremely hot here. [+IAC effect]'

(54) [A comment on a photo from the beach (Facebook)]
Ti ga *vala* živiš!
you.NOM IAC INTERJ live.2SG
'You live it up! [+IAC effect]'

With Maienborn (2005a), we assume that the speaker's restriction of their claim to a specific TS makes sense if the context supports some TS contrast along a spatial, temporal, or epistemic

dimension, with the latter leading to the so-called discovery interpretation. For a situation described in (55), both the version without the IAC *ga* and the one with this clitic are suitable to describe the TS at hand. However, the version with the IAC *ga* is more marked and is only suitable under the discovery interpretation — in (55) encountering a friend who lies relaxed and is drinking wine at a specific time and place — and without commitment to ascribing some general property to the subject referent that goes beyond the described situation. On the other hand, the version without *ga*, as an unmarked one, is suitable for both the specific TS at hand, but also as a more general statement about the subject referent (when enjoyment is presented as a characteristic property of the subject referent).

(55) [Looking at the friend who lies reclining in an armchair and drinking wine.]

a.	Ti	uživaš!	b.	Ti	ga uživaš!
	you.NOM	enjoy.2SG		you.NOM	IAC enoy.2SG
	'You are enjoying!'			'You are enjoying it! [+IAC effect]'	

Secondly, the IAC *ga* naturally co-occurs with the situational (nominative) demonstrative pronoun *to* 'that' in (56a), where both the demonstrative and the IAC *ga* resemble 'dummy' pronouns in the sense that the basic (propositional) meaning of a sentence would be the same if only one of them, or neither of the two, were used. As we have seen in subsection 5.1, the demonstrative *to* serves to indicate an epistemically specific TS. Assuming that the pronoun *to* sits in the TopicP, the IAC *ga* is accidentally co-referential with this pronoun, since they pick out the same discourse referent — the TS itself.

(56) a. *To* ne da ga grmi napolju!
that not COMP IAC thunder.3SG outside
'How it thunders out there! [+IAC effect]'

b. *To* ne da grmi napolju!
that not COMP thunder.3SG outside
'How it thunders out there!'

c. Ne da ga grmi napolju!
not COMP IAC thunder.3SG outside
'How it thunders out there! [+IAC effect]'

d. Ne da grmi napolju!
not COMP thunder.3SG outside
'How it thunders out there!'

The specific thundering-situation in (56) can be referred to in four ways: with both *to* and *ga* (56a), with only one overt TS pronoun (*to* in (56b), *ga* in (56c), or without an overt marker (but with its specificity recoverable from the context). The motivation behind these four options lies in a different degree of markedness of these constructions with respect to the specificity and the affectedness. Namely, the nominative TS pronoun *to* marks only specificity, while the IAC *ga* marks affectedness and presupposes specificity, thus co-referring with a TS pronoun sitting in the TopicP. Although the TS may remain null by default when the context is sufficiently supportive for identifying the TS (as in (56d)), the overt TS like *to* (in (56b)) comes in handy as a means of (potential) disambiguation and/or emphasis. Using the version with the IAC *ga* (56c), on the other hand, is the only way to convey affectedness of the TS. Finally, the

combination of *to* and *ga* serves to foreground both the specificity and affectedness of the TS. Since such a configuration is highly marked, it usually induces additional pragmatic effects of high emphasis (which are discussed in detail in section 6).

pro		TS pronoun *to*		IAC *ga*
+ specific		+ specific		+ specific + affected
default/neutral	<	marked	<	most_marked

Table 3. TS marking w.r.t. the specificity and the affectedness

The third argument in support of the IAC *ga* as a situation pronoun comes from its morphological makeup. Namely, the featural configuration [3rd[sing[neut[pron]]]] is the morphologically least marked set of features (e.g. Harley & Ritter 2002) and is characteristic of situation-referring pronouns (e.g. Klein 2006, 2008 for German; Langacker 2007, 2011 for English). Why is a personal pronoun, rather than a demonstrative, used to refer to the affected TS? Following Gardelle (2011:174, and references therein), personal pronouns are default thematic pronouns.

As an aside, note that there is a strong intuition among some Serbian speakers (including the authors of the paper) that the IAC *ga*, when combined with unergative verbs such as *živeti* 'to live', *đuskati/plesati* 'to dance', serves as some kind of pronominal Cognate Object, that is, its referent is the entity (i.e. the event) denoted by the verb, similarly to the use of a Cognate Object (e.g. *to live a/the life, to dance a/the dance*). This intuition is expected under our analysis, since events are essential parts of TSs (see Ramchand & Svenonious 2014 for a discussion), and the referent of the IAC *ga* is a TS which comprises specific spatio-temporal coordinates the relevant event takes place in.

6. From syntax to pragmatics: The IAC ga *and markedness*

In previous sections, we have analyzed constructions with the IAC *ga* as more marked than ones without this clitic. In this section, we examine the pragmatic effect of intensification associated with the IAC *ga*. We argue that this markedness is responsible for pragmatic intensification effects that this clitic typically induces. Specifically, the intensification effect emerges due to the M-principle (in the sense of Levinson 2000), which relies on the mapping between the marked form and the marked meaning, in the sense that the marked form implies the marked meaning. In the case at hand, the marked form corresponds to constructions with the IAC *ga* (in comparison to those without the IAC *ga*), while the marked meaning corresponds to the intensified meaning (in comparison to 'regular', typical, or neutral meaning), as summarized in table 4. The marked meaning always presupposes a scalar property and picks out the high(est) values on a (non-binary) scale. Since the high(est) values on a scale universally receive prominence, this yields the pragmatic effect of intensification (cf. Beltrama & Trotzke 2019).

	Form	meaning
unmarked	constructions without the IAC *ga*	'regular', typical, or neutral meaning
marked	constructions with the IAC *ga*	intensified meaning along some available gradable property (e.g. manner, result, duration)

Table 4. Marked form and marked meaning

Before moving to the discussion of concrete examples and how the M-principle is employed in them, let us additionally motivate the markedness hierarchies of constructions the IAC *ga* appears in (cf. also table 3). Observe first unergative constructions, repeated for convenience in (57) from (27) above.

(57) a. Pera đuska Ø.
Pera.NOM dance.3SG
'Pera is dancing.'

b. Pera đuska đus.
Pera. NOM dance.3SG dance.ACC
'Pera is dancing a dance.'

c. Pera ga đuska.
Pera.NOM IAC dance.3SG
'Pera is dancing. [+IAC effect]'

As discussed in section 4, the DO position can be occupied by an unspecified object (labeled Ø) (57a), by a cognate object (57b), or by the IAC *ga* (57c). These three types of objects are ranked by their argument structure and referentiality as summarized in table 5: the zero marked form (Ø), being a *bare* null argument, is the least marked, and it lacks any referential capacity whatsoever, while the IAC *ga* is the most marked by virtue of referring to the specific TS, specifying it as affected (see section 5.2).

DO = Ø	DO = *đus*	DO = IAC *ga*
null bare noun argument (in the sense of Armstrong 2016)	Cognate Object: NP, not a true referential argument (following Ramchand 2008:96)	clitic (referring to the specific TS)
Ø_N	< Cognate Object	< IAC *ga*

Table 5. Markedness hierarchy (1)

Now we move to the two constructions with prototypical unnaccusative verbs — one 'regular', and the other one 'transitivized' by the IAC *ga*, exemplified in (58–59), repeated from (35–36):

(58) Al' je zahladnelo!
INTERJ AUX.3SG get_cold.PTCP
'It has got cold.'

(59) Al' ga je zahladnelo!
INTERJ IAC AUX.3SG get_cold.PTCP
'It has got cold. [+IAC effect]'

These two constructions with the same unaccusative verb form a hierarchy as shown in table 6. In short, the version with the IAC *ga* is more marked with respect to the affectedness, referentiality and topicality, since it 'transitivizes' 'regular' unaccusatives and refers to a specific TS.

unaccusatives	'transitivized' unaccusatives
pro: Theme (internal argument)	*pro*: Initiator (external argument)
	IAC *ga*: Theme (internal argument)
unaccusatives <	'transitivized' unaccusatives

Table 6. Markedness hierarchy (2)

Let us now turn to concrete examples of pragmatic effects of intensification in the presence of the IAC *ga*. Unergatives are typically based on manner roots, which specify a manner of carrying out an action, e.g. *laugh*, *run* (see Rappaport Hovav & Levin 2010; Rappaport Hovav 2014, 2017). The manner component provides a default scale available for intensification when the IAC *ga* is used with such verbs. Such a scale is based on the conceptual gradability in the sense of McNally (2017), according to which eventualities can be ordered to reflect the degree to which each one qualifies as a prototypical event in the denotation of a given verbal predicate. For instance, in (60), the most salient pragmatic enrichment is that the manner of Pera's dancing goes beyond an average, typical dancing, i.e. he is dancing like a professional. However, some other intensification effects are also available, for instance that the duration of his dance exceeds the standard of an average dancing.

(60) [Context: Directly observing Pera's dancing]
Pera ga đuska.
Pera.NOM IAC dance.3SG
'Pera is dancing [+IAC effect: *like a professional*].'

Unaccusatives are typically built on the so-called scalar/result roots, which encode a scale and/or a result state, e.g. *empty*, *fill* (see Rappaport Hovav & Levin 2010; Rappaport Hovav 2014, 2017). When used with such verbs, the IAC *ga* most typically triggers the intensification effect along the result scale provided by the verbal root. For instance, (61) strongly implies that it is cold to a higher degree in comparison to the expected, standard coldness.

(61) Zahladnelo ga.
get_cold.PTCP IAC
'It has got [+IAC effect: *extremely*] cold.'

The pragmatic inference of intensification that may be induced by the IAC *ga* is often made explicit by using the intensifying particle *baš* 'exactly' (e.g. 62–63), or some other intensifiers (e.g. *kako* 'how', or the interjecation *al(a)*, which is used to indicate a high degree). This indicates that the intensification effect is not semantically encoded in the IAC *ga*.

(62) Pera ga *baš* đuska!
Pera.NOM IAC exactly dance.3SG
'How is Pera just dancing!'

(63) *Baš* ga je zahladnelo!
exactly IAC AUX.3SG get_cold.PTCP
'It has got extremely cold.'

An argument in favor of treating the intensification effect triggered by the IAC *ga* as an implicature (rather than a semantic entailment) comes from the fact that a gradable property associated with a given verbal predicate only enables the intensification to emerge, but does not impose it. This is clear in examples like (64), where the adverbial *malo* 'little' is perfectly compatible with the IAC *ga*.

(64) *Malo* ga zahladnelo.
little IAC get_cold.PTCP
'It has got a little colder.'

An additional argument for the intensification effect as a pragmatic enrichment comes from those examples where there is no prominent gradable property provided by the verbal predicate, as in (65). The verb *zaspati* 'to fall asleep' does not provide a suitable gradable property, hence there is no pragmatic effect of intensification.

(65) [In a situation when the earthquake is announced/expected]
Ko da ga zaspi noćas?!
who COMP IAC fall_asleep.3SG tonight
'Who can fall asleep tonight.'

To briefly sum up this section, we have shown that intensification effects associated with the IAC *ga* emerge when the verb provides a gradable property due to the Levinson's (2000) M-principle, which says that a marked form (the IAC *ga* construction) implies a marked meaning (the intensification). As a pragmatic enrichment, the intensification effect can be canceled or may not be induced at all. What remains constant is the core contribution of this clitic: marking affectedness of a specific TS.

7. Conclusion

In this paper, we have argued that the IAC *ga* in Serbian is an ordinary accusative clitic pronoun — and not an evaluative one. Specifically, we have shown that this clitic is generated in the DO position (since it is in complementary distribution with other accusative internal arguments), contributing to the affectedness of a specific TS. The intensification effect emerges

pragmatically as an M-implicature (in the sense of Levinson 2000) which exploits the gradable properties of the verbal predicate.

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Abbreviations

1SG	first person singular	FUT	future
1PL	first person plural	GEN	genitive
2PL	second person plural	IAC	Intensifying Accusative Clitic
2SG	second person singular	INF	infinitive
3PL	third person plural	INS	instrumental
3SG	third person singular	INTERJ	interjection
ACC	accusative	LOC	locative
ART	article	NOM	nominative
AOR	aorist	POSS	possessive
AUX	auxiliary	PST	past
CL	clitic	PTCP	participle
COMP	complementizer	Q	question particle/marker
COP	copula	REFL	reflexive
DAT	dative	VOC	vocative
DEF	definite		

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Mermaid construction: a case of Kazym Khanty

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This paper investigates the syntax of mermaid constructions in Kazym Khanty. Mermaid constructions (MMCs) consist of the following parts: [[Clause] Noun Copula] (for a detailed description and criteria, see Tsunoda 2020). MMCs can express modal, aspectual, evidential and other meanings. MMCs have been argued by Tsunoda (2020) to be monoclausal, but data from Kazym Khanty suggests otherwise: Khanty MMCs are biclausal and exhibit control. Based on arguments involving clausal negation, passivisation of the embedded clause, scope of negative pronouns and partial control, I demonstrate that MMCs can be biclausal, thus potentially expanding Tsunoda's classificaton of mermaid constructions.

1. Introduction

Khanty belongs to the Finno-Ugric language family, Ob-Ugric branch. It is mainly spoken in the Khanty-Mansi and Yamalo-Nenets autonomous regions in Russia. The data I use in this paper is the result of my own fieldwork in July–August 2021 in the village of Kazym, in the Khanty-Mansi autonomous region.

Kazym Khanty is left-branching and head-marking with respect to both noun phrases and clauses. Nouns can take possessive suffixes and can have three cases: dative, locative and unmarked nominative. Both finite and non-finite verbs can have either past or non-past tense. Non-finite verbs can be sentential arguments as well as adnominal, temporal and conditional clauses. For a detailed description of the Kazym Khanty language see Kaksin (2010).

1.1. Defining the mermaid construction

The mermaid construction (MMC) is a construction that consists of a clause, a noun and a copula, as shown in (1). MMCs can express modal, aspectual, evidential and other meanings. This type of construction has been attested in multiple languages, with the most prominent groups being Tibeto-Burman and languages of East Asia, according to Tsunoda (2020).

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(1) [Clause] Noun Copula

An example of a mermaid construction is provided in (2) below.

(2) [Asita Hanako=ga Nagoya=ni ik-u] yotee=da.
tomorrow Hanako=NOM Nagoya=DAT/LOC go-NPST plan=COP.NPST
'Hanako plans to go to Nagoya tomorrow.' (Japanese; Tsunoda 2020:2)

MMCs are defined using the five criteria listed in (3).

(3) i. The structure is as shown in (1) — superficially at least.
ii. The Noun is an independent word (not a clitic) that is a noun.
iii. The subject of the Clause and the Noun are non-coreferential.
iv. The Clause can be used as a sentence by itself.
v. The Clause is not the subject of the 'Noun + Copula'. (Tsunoda 2020:4)

Example (2) illustrates all of the properties of a prototypical MMC listed in (3): *[Asita Hanako=ga Nagoya=ni iku]* is the Clause, the Copula slot is taken by the copula *=da* and the noun *yotee* 'plan' occupies the Noun slot, thus criteria i and ii are satisfied. The subject of the Clause is *Hanako*, which is not coreferential with *yotee* 'plan' in the Noun slot (criterion iii). The Clause can be used as a sentence by itself (criterion iv) and is not modified by Noun+Copula (criterion v is meant to exclude constructions with a nominal predicate whose subject is a clause, which would look like *[That he won] is a surprise*).

Tsunoda (2020) allows for some departures from the prototype. For instance, MMCs can have properties listed in (4) below.

(4) Non-prototypical properties of MMCs
a. content verbs in the Copula slot (Korean);
b. clitics or nominalizer affixes in place of Noun (Hindi, Koryak);
c. variations in the linear order of Clause, Noun, Copula (Mandarin Chinese).
(Tsunoda 2020)

Tsunoda introduces the term 'mermaid construction' to refer to a particular type of sentence that looks like it comprises two different structures: is starts with a verb predicate clause (*Asita Hanako=ga Nagoya=ni ik-u*, see example (2)) and ends with a nominal predicate (*yotee=da*). He notes that previously such sentences were falsely classified as noun predicate constructions with an adnominal or a relative clause, hence a new term for them is necessary (Tsunoda 2020:3). Given that the definition of the mermaid construction is based not only on the prototype but also, crucially, on comparison with other constructions in a given language, it is important to show that Khanty really does have a construction that deserves to bear the MMC label. In the next section I am going to give an overview of what I consider to be the Khanty MMC and contrast it with other types of sentences it might belong to.

1.2. MMCs in Kazym Khanty

There is a construction in Khanty that conforms to all five of the criteria above, with a caveat for criterion iv, i.e. the ability of the Clause to be used as an independent sentence. In Khanty, non-finite verbs used in independent clauses usually agree with the subject by taking a possessive marker, but this does not happen in mermaid constructions. There is also a semantic change due to insubordination (Evans 2007) — independent clauses with non-finite verbal predicates have a mirative meaning (Bikina et al. 2020). As I have already mentioned, some departures from the prototype are allowed, and the Clause of the MMC can have a non-finite predicate, for instance in Hindi (Imamura 2020) or Tagalog (Katagiri 2020).

Examples of the Khanty MMC are presented in (5).[1]

(5) a. Ma ari-ti śir-ɛm wɵ-λ.
I sing-NFIN.NPST possibility-POSS.1SG be-NPST.[3SG]

b. Ma ari-ti śir tăj-λ-əm.
I sing-NFIN.NPST possibility have-NPST-1SG
'I can sing.' (lit. 'I have a possibility to sing.')

The Noun slot can be filled with various nouns (*śir* 'possibility', *numəs* 'thought', *kɵm* 'time, moment', *kaš* 'wish', etc.). The construction can have the meaning of possibility, wish, intention, etc. depending on the Noun (see examples (6–7) below for some of the possible meanings of Khanty MMCs other than possibility).

(6) *kaš* 'wish'
Ma uλə-ti kaš-ɛm wɵ-s.
I sleep-NFIN.NPST wish-POSS.1SG be-PST[3SG]
'I wanted to sleep.'

(7) *numəs* 'thought'
Ma pa pɛləkˑa măn-ti numəs-ɛm wɵ-λ.
I ADD side-DAT go-NFIN.NPST thought-POSS.1SG be-NPST[3SG]
'I was planning to go to the other side (of the river).'

The noun *kaš* 'wish' creates a meaning analogous to the verb 'want' (6). The noun *numəs* 'thought' gives the MMC the meaning of planning or considering doing something (7).

The Copula slot can be occupied with content verbs like *tăjti* 'to have', *wəjətti* 'to find', *wəšti* 'to get lost' (see (8) for an example involving a content verb).

(8) *wəšti* 'get lost'
Ma jak-ti śir-ɛm wɵš-əs.
I dance-NFIN.NPST possibility-POSS.1SG get lost-PST[3SG]
'I am no longer able to dance.' (lit. 'My ability to dance disappeared.')

It is important to note that the modal meaning of the MMC is not changed when a content verb

[1] I use a modified version of the Uralic phonetic alphabet (UPA) for the transcription of the examples. The λ symbol corresponds to the voiceless lateral fricative (the IPA symbol is ɬ).

is put in the copula slot. However, if the Noun slot is taken, for instance, by *śir* 'possibility' and the Copula slot is occupied by *wəšti* 'to get lost', like in (8), there appears a meaning of the possibility vanishing. Content verbs in the Copula slot of Khanty MMCs behave somewhat like compound predicates when combined with the Noun, which is what Tsunoda notices about the Noun+Copula combination in prototypical MMCs as well (Tsunoda 2020:3).

I now turn to the comparison between Khanty MMC and (a) non-finite adnominal clauses (ACs) and (b) periphrastic nominalisations with the noun *wɛr* 'deed' (see Starchenko 2019 about the syntax of *wɛr*-nominalisations). There is a number of morphosyntactic differences between what I consider to be MMCs and the above mentioned analogous constructions. The differences are listed in Table 1 below.

Criterion	**MMC**	**AC**	**Periphrastic nominalisation**
Past tense participles as embedded predicates	–	+	+
Distinct embedded and matrix subjects	–	+	+
Noun inflected for number and case	–	+	+

Table 1. MMCs compared to *wɛr*-nominalisations and ACs

First, MMCs feature only non-past tense participles as embedded predicates and disallow past tense participles (9), unlike ACs (10) and *wɛr*-nominalisations (11).[2]

(9) *Ańa-jen **măn-əm** śir tăj-λ.
A.-POSS.2SG **go away-**NFIN**.**PST possibility have-NPST[3SG]
Expected: 'Maybe Anya has left.'

(10) Śaś-ɛm **λɵt-əm** păsan nuχ məŋ-s-ɛm.
paternal.grandmother-POSS.1SG **buy-**NFIN**.**PST table up wipe-PST-1SG>SG
'I wiped the table that my grandmother bought.' (Bikina & Starchenko 2019:2)

(11) waśaj-en jaj-əλ **wɵjt-əm** tɯtχot šiwaλ-əs.
W.-2SG brother-3SG **find-**NFIN**.**PST wallet see-PST[3SG]
'Wasya saw the wallet that his brother found.' (Starchenko 2019:3)

Next, the subject of MMC's Clause and the matrix possessor/subject are necessarily coreferent (12), whereas in ACs (see (10) repeated below in (13)) and periphrastic nominalisations (14) two different subjects are possible.

(12) ***Ma** kaš-ɛm wɵ-λ [**năŋ** jira măn-ti].
I wish-POSS.1SG be-NPST[3SG] **thou** away go-NFIN.NPST
Expected: 'I want you to go away.' (lit. 'I have a wish that you would go away.')

[2] In example (10) et passim, subject-object conjugation is glossed using > symbol: SUBJ>OBJ. The subject-object conjugation endings reflect the person and number features of the subject and the number features of the object.

(13) [**Śaś-ɛm** λət-əm **păsan**] nuχ məŋχ-s-**ɛm**.
grandmother-POSS**.**1SG buy-NFIN.PST **table** up wipe-PST-1SG>SG
'**I** wiped the **table** bought by my grandmother.' (Bikina & Starchenko 2019:2)

(14) [Tăm **ewij-en** ńawrɛm λəmət-tə-ti wɛr-λ] **ma** wə-λ-ɛm.
this **girl-**POSS**.**2SG baby dress-CAUS-NFIN.NPST deed-3SG **I** know-NPST-1SG>SG
'I know that this girl is dressing the baby.' (lit. 'I know about the dressing of the baby by this girl.') (Starchenko 2019:2)

The Noun of the mermaid construction cannot be inflected for number or case, while the noun modified by an AC can attach number markers, since it is but a regular noun with a modifier, and the *wɛr* of the periphrastic nominalisation can be non-singular as well, like in (15).

(15) Ma wɛr-ti wɛr-λ-am λʉw-eλ turas.
I do-NFIN.NPST deed-PL-1SG he-DAT discomfort
'My tricks disturb him.' (Starchenko 2019:8)

The construction I have been describing so far deserves to receive the MMC label for two reasons: it conforms to the prototype outlined by Tsunoda (2020) and it is distinct from other similar constructions in Kazym Khanty. Given this conclusion, I will now lay out the aims of this paper.

1.3. Aims

Tsunoda (2020) argues for the monoclausality of MMCs. According to various tests (availability of two different subjects, clause deletion, clefting, etc.) MMCs typically pattern with monoclausal independent sentences with verbal predicates rather than with any kinds of constructions featuring a subordinate clause. Khanty MMCs appear to constitute a counterexample, as I will demonstrate in the following sections.

The aim of the paper is to introduce the Khanty mermaid construction and to provide arguments in favour of an alternative syntactic analysis in the framework of Minimalist Syntax (Chomsky 1995), thus putting the monoclausality of MMCs up for debate.

The paper is laid out as follows. Section 2 elaborates on the existing analysis of MMCs. Section 3 covers the Khanty data and its interpretation with regard to the proposal. Section 4 presents the syntactic structure of Khanty MMCs and section 5 concludes with the discussion of the implications my results might have.

2. Existing analysis of MMCs

The main claims of Tsunoda (2020) about MMCs are summarised as follows:

(16) a. the mermaid construction does not contain an adnominal clause;
b. there is only one clause, although there might appear to be two;
c. the mermaid construction has just one compound predicate instead of two;
d. the compound predicate consists of the predicate of the Clause, the Noun and the

Copula, where the Copula is present.

These claims are made on the basis of several syntactic tests: (i) agreement between the verb and the subject, (ii) topic marking, (iii) contrast marking, (iv) focus marking, (v) kakarimusubi (agreement between a focus marker and the predicate), (vi) adverbs of modality, (vii) negation, (viii) case marking of the subject, (ix) anticipatory pronouns, (x) clefting, (xi) relativization, (xii) gapping, (xiii) one subject or two subjects, (xiv) deletion of ACs and the Clause, (xv) sentence-final particles, (xvi) modal and aspectual markers, and (xvii) copula. (Tsunoda 2020:35)

All of the above mentioned aspects are used to differentiate between MMCs and other types of sentences (e.g., sentences with adnominal clauses, regular independent monoclausal sentences). In the languages examined in Tsunoda (2020), MMCs pattern with monoclausal sentences rather than with those containing an adnominal clause.

The notion of MMC is created so as to be useful for crosslinguistic comparison (Tsunoda 2020:11). I will be working within the minimalist framework, so both the syntactic diagnostics I use and the conclusions I draw may be different from Tsunoda's. However, it is alarming when different frameworks show opposite results when applied to similar constructions. If the comparative concept of mermaid construction is meant to capture its monoclausality, which is one of Tsunoda's main claims about MMCs, an MMC that exhibits biclausal behaviour, albeit in a different framework, calls for a reinvestigation of this concept. I return to this issue in section 5.

In the next sections, I apply various diagnostics for restructuring, movement and control in order to determine the structure of Khanty MMCs.

3. Evidence for biclausality and control

I claim that the Khanty MMC is biclausal and that the subject position of the embedded clause is occupied by PRO — a silent pronoun bound from the matrix clause. In this section I present syntactic evidence that supports this claim.

3.1. Ruling out restructuring

Restructuring is a phenomenon of so-called 'clause unification' (Cable 2004); I draw a more formal definition from Wurmbrand (2004): 'restructuring constructions are infinitival constructions which are characterised by the lack of clause-boundedness effects (in languages in which infinitives otherwise show clausal behaviour)' (Wurmbrand 2004:991).

The availability of restructuring for MMCs would mean a possibility of monoclausality, and the absence of restructuring would entail biclausality. As tests from Wurmbrand (1998) show, Khanty MMCs do not exhibit restructuring, which rules out monoclausality altogether.

The first argument against restructuring is the so-called 'long passive', like in example (17) from German. The matrix predicate is passivised rather than the embedded predicate, which means that the two predicates behave like one with respect to case assignment and agreement, and there is thus one clause rather than two. Long passives are impossible in mermaid constructions (18). If MMCs were monoclausal, passive morphology would be able to appear on the matrix predicate, but this is prohibited.

(17) dass der Traktor zu reparieren versucht wurde
that the tractor.NOM to repair tried was
'that it was tried to repair the tractor' (German; Wurmbrand 2001:19)

(18) *Ma wasa-jen-ən sɛŋk-ti śir tăj-λ-aj-əm.
I Wasya-POSS.2SG-LOC hit-NFIN.NPST possibility have-NPST-PASS-1SG
Expected: 'I can get hit by Wasya.'

Nevertheless, passive voice can appear inside the embedded clause of an MMC, like in (19). Kazym Khanty has no way of marking passive voice on non-finite verbs, rather, the passivisation results in the change in case marking of the embedded predicate's arguments.

(19) Mʉŋ [aŋke-λ-aw-ən λapət-ti] śir-ew wɵ-λ.
we mother-PL-POSS.1PL-LOC feed-NFIN.NPST possibility-POSS.1PL be-NPST[3SG]
'Our parents can feed us.' (lit. 'There is a possibility for us to be fed by our parents.')

Clausal negation is allowed inside of the Clause by some speakers, which I have marked with the percent sign. Example (20) constitutes a point against restructuring. The possibility of negating only the embedded clause indicates that this clause has some autonomy from the matrix clause. Clausal negation has been shown by Wurmbrand (2001) to be prohibited within complements of restructuring predicates.

(20) %Ma [tămxătəλ školaj-a ăn măn-ti] śir tăj-λ-əm.
I today school-DAT NEG go-NFIN.NPST possibility have-NPST-1SG
'I can skip school today.' (lit. 'I have a possibility not to go to school today.')

In light of the arguments above, Khanty MMCs cannot be analysed as monoclausal. The impossibility of long passive on the one hand, and the possibility of passive transformations and clausal negation inside the embedded clause on the other hand, prove that restructuring is not an option for mermaid constructions in Khanty. Thus, there is more than one clause.

3.2. Limited independence of Clause

While Khanty MMCs are not monoclausal, the matrix clause and the embedded clause are not completely independent. Adnominal non-finite clauses and periphrastic nominalisations in Khanty can have subjects of their own, possibly different from the matrix subjects (see section 1.2). The embedded subject of the Khanty MMC, however, must be silent and coreferent with the matrix subject. Sentences like (21) below are not acceptable.

(21) *Ma kaš-ɛm wɵ-λ [năŋ jira măn-ti].
I wish-POSS.1SG be-NPST[3SG] you.SG away go-NFIN.NPST
Expected: 'I want you to go away.' (lit. 'I have a wish that you would go away.')

There must be a dependency between the matrix clause and the embedded clause of the MMC. There are two options: control or subject raising (exceptional case marking (ECM) is not an option, since the argument in the matrix clause is nominative and bears no exceptional case).

Either there is a silent pronoun in the embedded subject position or the embedded subject moves to the matrix clause. I will argue for the first option — control. The next two subsections provide arguments for this analysis: one comes from the scope of negative pronouns and the other from partial control.

3.2.1. Scope of negative pronouns

To provide evidence for control, I need to show that subject raising is not a possible scenario for Khanty MMCs. The argument against subject raising comes from a test employing the scope of negative indefinite pronouns. The pronoun *nɛm xujat* 'nobody' in (22) below can only have wide scope. Note that there is a phenomenon of negative concord in Khanty, so no double negative effects occur in (22).

(22) Tăm xop-ən **nɛm xuj-at** λowəλ-ti śir ăntəm.
this boat-LOC **nobody who-**INDEF row-NFIN.NPST possibility NEG.EX
'Nobody can row in this boat.' (*'This boat does not require that anybody row.')
NEG > ∃, *∃ > NEG

Example (22) contains a modal *śir* 'possibility' and a negative pronoun *nɛm xujat* 'nobody', so the sentence may have two interpretations with different scopes of the negative pronoun: the meaning could be either 'nobody can row in this boat' if the negative pronoun was c-commanding the modal, or 'this boat is such that it can go without anybody rowing' if the negative pronoun was in the embedded clause, c-commanded by the modal. In Khanty MMCs only one option is available — the one where 'nobody' is in the matrix subject position, scoping over *śir* 'possibility'. If *nobody* moved out of the embedded clause, every copy of it would be available for interpretation, yielding two possible meanings, but this is not so. The control hypothesis, on the other hand, makes an accurate prediction that only PRO's antecedent in the matrix clause can be interpreted.

3.2.2. Partial control

The partial control test, as described by Landau (2001), makes use of group verbs, whose subject is always plural, such as *gather* in English (see (23a)). When such a verb becomes the embedded predicate in a control environment, the matrix subject can still be singular, like in (23b). That is because PRO and the matrix subject may have non-identical referents, for instance, the PRO in (23b) is a group, which John is a part of.

(23) a. *John gathered at noon.
b. John$_i$ wanted [PRO$_{i+j}$ to gather at noon].
c. *John seemed to have gathered at noon.

The phenomenon of non-identical referents is incompatible with raising — the matrix subject raised from the embedded clause has the same referent. That is why (23c) is unacceptable, and partial control can be used as a diagnostic for control.

For Khanty MMCs I will use the verb *ăktəśti* 'to gather'. The PRO in its clausal complement is plural, which can be further proved by (24), where a secondary predicate 'by oneself' bound

locally by PRO can only be plural.

(24) a. *Annaj-en$_i$ [PRO$_{i+j}$ **λɯw satt-əλ-a$_{i/j}$** λɵjŋ-λ-aλ piλa
A.-POSS.2SG **she by oneself-POSS.3SG-DAT** girlfriend-PL-POSS.3SG with
wot´śa ăktəś-ti] λăŋxaλ.
together gather-NFIN.NPST want-NPST[3SG]
Expected: 'Anya wants to gather with her friends by themselves.'

b. Annaj-en$_i$ [PRO$_{i+j}$ **λiw satt-eλ-a$_{i+j}$** λɵjŋ-λ-aλ piλa
A.-POSS.2SG **they by oneself-POSS.3PL-DAT** girlfriend-PL-POSS.3SG with
wot´śa ăktəś-ti] λăŋxaλ.
together gather-NFIN.NPST want-NPST[3SG]
'Anya wants to gather with her friends by themselves.'

Now that it is established that plural PRO exists in Khanty, we can apply the partial control diagnostic using *ăktəśti* 'to gather'. The behaviour of MMCs in this test suggests that there is a PRO in the embedded subject position. As shown in (25), partial control is acceptable in Khanty MMCs.

(25) Annaj-en$_i$ [PRO$_{i+j}$ λɵjŋ-λ-aλ piλa wot´śa ăktəś-ti] kaš
A.-POSS.2SG girlfriend-PL-POSS.3SG with together gather-NFIN.NPST wish
tăj-λ/ kaš-əλ wɵ-λ
have-NPST[3SG] wish-POSS.3SG be-NPST[3SG]
'Anya wants to gather with her friends by themselves.' (lit. 'Anya has a wish to gather with her friends by themselves.')

The secondary predicate 'by oneself' is plural, which indicates that the embedded subject is plural as well and thus not completely coreferent with the matrix subject. That disproves the raising hypothesis and constitutes another argument in favour of control.

4. Structure of MMC

I have provided arguments for biclausality of the Khanty mermaid constructions and shown that they exhibit control rather than subject raising. I suggest the following structure for Khanty MMCs (the trees in Figure 1 and Figure 2 correspond to examples (26a)-(26b)).

(26) a. Ma ari-ti śir-ɛm wɵ-λ.
I sing-NFIN.NPST possibility-POSS.1SG be-NPST.[3SG]

b. Ma ari-ti śir tăj-λ-əm.
I sing-NFIN.NPST possibility have-NPST-1SG
'I can sing.' (lit. 'I have a possibility to sing.')

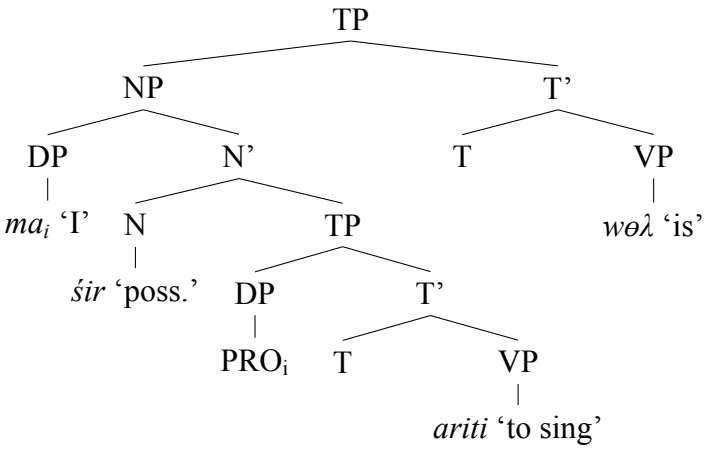

Figure 1. Copula MMC

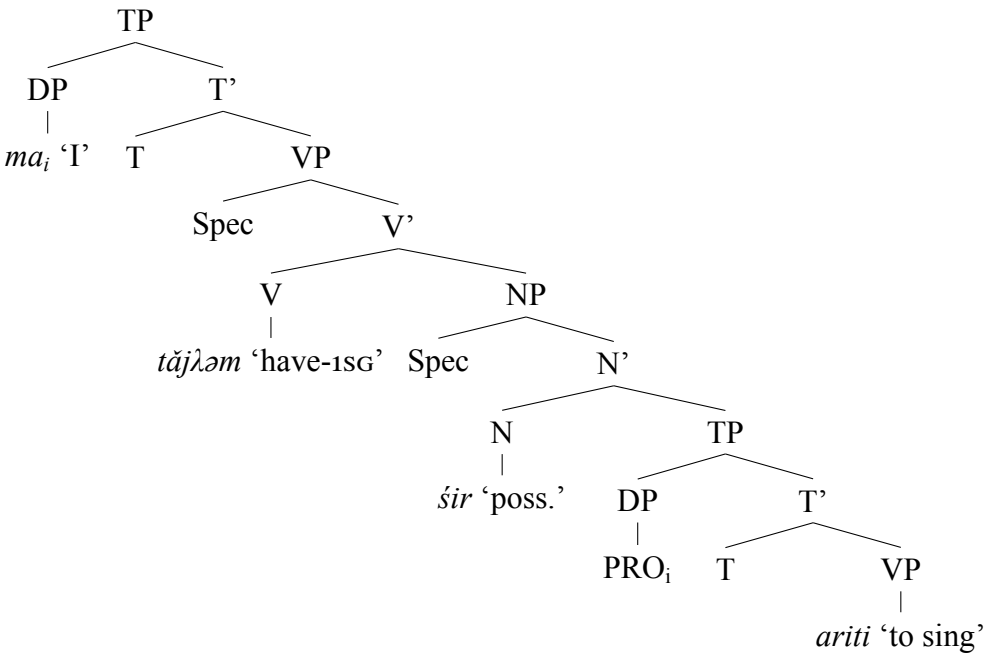

Figure 2. Matrix predicate MMC

The subordinate clause is embedded under Noun (*śir*), which is the argument of the matrix verb. PRO in [Spec, TP] of the embedded clause is controlled by the possessor of Noun in [Spec, NP], like in (26a), or the subject (*ma*) in matrix clause’s [Spec, TP], like in (26b).

When it comes to the size of the nominal shell that the Noun of the MMCs constitutes, I tentatively assume it to be a small nominal on account of the unavailability of number or case inflection as well as any referential properties. This is reflected in the tree representations above (Figures 1–2): the Noun is labelled as an N-head in contrast to personal pronouns and PRO, which are DPs (see Bernstein 1991 about the DP hypothesis).

5. Summary and discussion

I have shown that MMCs in Kazym Khanty are biclausal, contrary to previous research in other languages. In particular, they exhibit obligatory subject control by either the possessor of MMCs' Noun or the matrix subject. This analysis can be extended to other languages in which MMCs have been attested, although such an enterprise might run into some problems stemming from the way MMCs are defined.

The definition of an MMC (or rather its key properties) is repeated below as given by Tsunoda (2020).

(27) i. The structure is (at least superficially): [Clause] Noun Copula.
ii. The Noun is an independent word (not a clitic) that is a noun.
iii. The subject of the Clause and the Noun are non-coreferential.
iv. The Clause can be used as a sentence by itself.
v. The Clause is not the subject of the 'Noun + Copula' (Tsunoda 2020:4)

The criteria above describe a prototype of an MMC, meaning that particular MMCs may vary in how close to the prototype they are. Tsunoda (2020:7), for instance, lists the following possibilities for the Noun slot: (a) an independent word independent word that is a noun—the prototypical MMC; (b) a clitic; (c) an affix; (d) zero.

The quote describes what can occupy the Noun slot of MMCs. It allows departures from the prototype: criterion (ii) from the definition above states that the Noun slot should be filled by a noun, but this is apparently not mandatory.

The order of the constituent parts of the MMC (Clause, Noun, Copula) is also subject to variation. For instance, there are constructions in Mandarin Chinese, according to Ono (2013), that have the order presented in (28) below. The subject is separated from the Clause by the Copula.

(28) [Subject] Copula [Clause] Noun

For detailed descriptions of MMCs that do not strictly adhere to the prototype, see the volume by Tsunoda (2020). The data from Kazym Khanty indicates that a construction can conform to the prototype of the MMC to a large extent and still constitute a counterexample to the generalisations made by Tsunoda (2020). How many languages have a mermaid construction that requires a syntactic analysis different from that of Tsunoda (2020) is a question for future research.

It is possible that mermaid constructions are not as uniform in their syntactic properties as they seem. If that is the case, the very notion of a mermaid construction would not be very useful for crosslinguistic comparison: we would gain no knowledge about the syntax of a construction from establishing that it is an MMC. I leave it to further investigation how reliable the definition actually is and whether my conclusions about the Khanty MMC can be extended to other languages.

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Abbreviations

1, 2, 3	first, second, third person	NFIN	non-finite
ADD	additive	NPST	non-past tense
DATIVE	dative case	PASS	passive voice
INDEF	indefinite pronoun	PL	plural number
LOC	locative case	POSS	possessive marker
NEG	negation	PST	past tense
NEG.EX	existential negation	SG	singular number

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Scope ambiguities among suffixes in Hungarian

Mood and modality at Logical Form

Timea Sarvas

The invariable order of verbal inflectional suffixes in Hungarian has been claimed to raise issues for the Mirror Principle. While the categories Mood, Tense and Modality can take scope over one another in various ways, this supposedly syntactic trait is not reflected in the morphological component. I propose a new analysis of the ambiguities, relocating their source from syntax proper to Logical Form. I show that affix movement at LF correctly predicts all possible and impossible scope relations.

1. Introduction

Hungarian, an agglutinating language of the Uralic family, makes extensive use of suffixes both in the derivational as well as inflectional domain. The inflectional morphology of verbs includes suffixes expressing Mod(ality), T(ense) and M(ood), followed by suffixes for both subject and object Agr(eement). Restrictions apply regarding which suffixes can appear on the stem of the main verb. If all categories are marked at the same time, an expletive root is employed to carry the mood suffix:

(1) Vár-hat-t-a-tok vol-na.
wait-**MOD-PST**-INDEF-2PL EXPL-**M**
'(You$_{PL}$) could have waited.' (cf. É. Kiss 2002:44-45)

The explanation for this is the assumption of a morphophonological constraint, i.e. that certain suffixes cannot stand next to one another. Tense and mood are the offending categories in this case, which is why the corrective strategy is pursued whenever they are marked (cf. Bartos 1999; Rebrus 2000). The underlying syntactic representation of the heads corresponds to their morphological surface order, as represented below:

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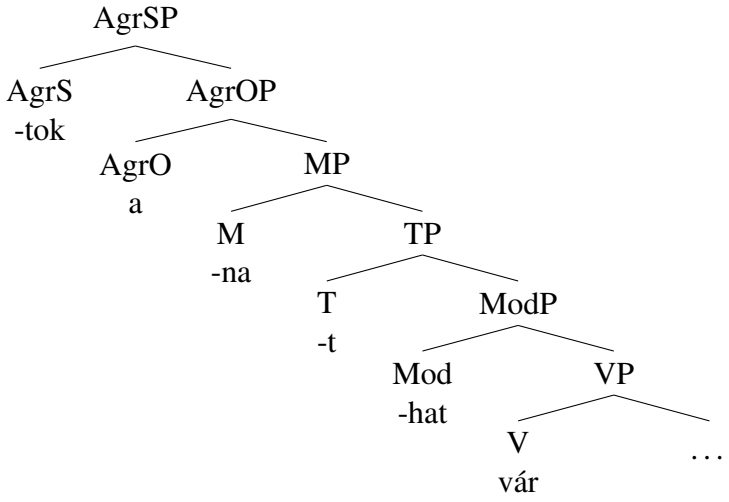
(2) Structural representation of Hungarian verbs



(cf. É. Kiss 2002:44–45)

The aim of this paper is to show that there is more to these structures than a clear one-to-one mapping from one component of grammar to the other. Ambiguities arise in all (co-)occurrences of these suffixes, as illustrated by the following paradigm. The data in (3) constitute the regular cases where the scope of the affixes corresponds to their surface order: (3a) expresses past tense and root modality, (3b) expresses conditional mood and past tense, (3c) expresses conditional mood and root modality, and finally, (3d) denotes the basic relation between all three categories, resulting in conditional mood, past tense, and root modality. The examples in (4), on the other hand, exhibit the inverse scope readings of the respective data, i.e. the unexpected cases. With modality taking scope over tense, (4a) denotes epistemic modality (that is, possibility) opposed to root modality (permission). If tense takes scope over mood as in (4b), the result is the expression of a wish, i.e. a desiderative reading. The expression of some type of wish persists in (4c), and remains available in the presence of all three categories, yielding (4d). What is most interesting about (4c) (4d) is that the scope relations do not seem to change compared to (3c) and (3d), yet the same scope leads to different readings. In these cases, i.e. in the presence of modality, the desiderative shifts perspectives: it is the wish of the speaker that is expressed, rather than that of the agent as in (4b).

(3) a. T>MOD

Vár-hat-ott.
wait-**MOD-PST**
'She was allowed to wait.'

b. M>T

Vár-t vol-na.
wait-**PST** EXPL-**M**
'She would have waited.'

c. M>MOD

Vár-hat-na.
wait-**MOD-M**
'She would be allowed to wait.'

d. M>T>MOD

Vár-hat-ott vol-na.
wait-**MOD-PST** EXPL-**M**
'She would have been allowed to wait.'

(Bartos 1999:76–79)

(4) a. **MOD>T**

Vár-hat-ott.
wait-**MOD-PST**
'She may have waited.'

b. **T>M**

Vár-t vol-na.
wait-**PST** EXPL-**M**
'She wanted to wait.'

c. **M>MOD**

Vár-hat-na.
wait-**MOD-M**
'It is desirable that she would wait.'

d. **M>T>MOD**

Vár-hat-ott vol-na.
wait-**MOD-PST** EXPL-**M**
'It is desirable that she would have waited.'
(Bartos 1999:76–79)

The ambiguities that do not arise are equally crucial. Such are the co-occurrence of epistemic modality with any type of mood, be it on their own or in combination with tense marking, thus there clearly seems to be an interaction between epistemic modality and mood. Likewise, the truly desiderative, i.e. agent-oriented mood observed in (4b) is only available in the absence of modality, further pointing to an interwoven relationship between the two categories. Contrary to mood and modality, tense does not seem to actively participate in these scope relations. The systematic nature of these observations constitutes the foundation of the current paper. The research questions are as follows: Why is the epistemic reading categorically unavailable in the presence of mood? How do mood and epistemic modality interact in Hungarian, and how can we derive the readings that do not correspond to the surface scope of the affixes?

Based on the re-evaluation of these ambiguities, I offer a scenario explaining why and how they could arise within a transformational framework of grammar, by adopting the idea of affix movement at Logical Form (LF). The remainder of this paper is structured as follows: first, the conceptual and structural properties of mood and modality are examined, focusing on how they differ from one another. In section 3, the empirical picture is presented in more detail, before summarizing the previous treatment of the phenomenon and how it has been described this far. I show that a morphosyntactic approach is bound to have technical difficulties and is insufficient to capture all facets of the data, while a purely pragmatic account is bound to overgeneralize due to the lack of structural constraints. Section 4 comprises the new analysis of the ambiguities, focusing on the representation at LF. I argue (i) that there is no mismatch between the syntactic and the morphological representation to begin with, but (ii) that the affixes move to their respective position to achieve the scope readings only at LF and not at an earlier point in the derivation, depicting (iii) that mood and modality closely interact with one another only in the semantic component, while being morphosyntactically distinguished. The implications of the approach and the impact that the presented ideas bear for the Mirror Principle are discussed in section 5. Section 6 concludes.

2. Mood versus modality

2.1. Distinction

Mood and modality are difficult to distinguish from one another conceptually, as both categories encompass a broad spectrum of meanings that may coincide. The two categories seem to interact in some ways in Hungarian based on the scope ambiguities dealt with here, and as shall be seen shortly, this seems to fit the cross-linguistic picture. Based on the structural distinction of the

two categories, the close link between the two is acknowledged by Cinque (1999), noting that the same category may be expressed by mood in one language and modality in another. On the other hand, Bybee (1985) does not even handle mood and modality as a morphological division to begin with, but a conceptual one: generally, mood is used to express the speaker's perspective, i.e. what they want to do with the proposition in the particular discourse, while modality alters the meaning of the verb itself with respect to the agent's circumstances (Bybee 1985; Cinque 1999). Crucially, mood takes scope over the entire proposition, not just the verb: it does not affect the meaning of the verb per se. Mood is used to put the proposition into context regarding the speaker's intentions about it. Modality, on the other hand, expresses the agent's ability, volition, or permission granted to them, constituting a strictly subject-oriented category.

Modality also differs from mood with respect to its morphological occurrence. While mood reliably surfaces as an inflectional category, modality is usually expressed through independent words like auxiliaries, verbs or particles (Cinque 1999:78). Likewise, Bybee notes that in the 50 languages she sampled, modality does not commonly occur as an inflectional category on the verb. The fact that Hungarian marks modality inflectionally is thus rather exceptional — note, however, that even here its status as an inflectional category can be called into question. Recall the data from our introduction, where an expletive root is necessary to express tense and mood at the same time, but not to express modality and tense or modality and mood. The morphophonological rule does not seem to apply to modality, and hence the suffix appears to have a somewhat distinguished status, one hypothesis postulating it to behave as a derivational suffix morphophonologically and as an inflectional one syntactically (Bartos 1999 based on Rebrus 2000). Yet, and this is what matters for our study, it clearly contributes an interpretation falling somewhere into the realm of mood or modality, and more importantly, it actively partakes in variable scope constellations. Going into its status as derivational or inflectional any further is thus not important for the study at hand.

To summarize, the following division is suggested: modality comprises a conceptual domain which may take various types of linguistic expression, while mood pertains to the inflectional expression of a subpart of this semantic domain (Bybee 1985:169). That is, in case a language has no inflectional markers for modality, modality-like meanings are most likely expressed with markers under the umbrella of mood (if modality is expressed by verbal marking at all). Diachronically, inflections are expected to have broader meanings and present fewer contrasts than free grammatical morphemes, based on the fact that inflection develops from non-bound forms. As they are phonologically reduced, the nuance of their meaning is reduced as well (Bybee 1985). We can thus conclude that based on the blurry lines between the two categories, syncretism and ambiguities, as found in Hungarian, are not unexpected.

2.2. Epistemics: mood or modality?

A very prominent case of entanglement between the two categories seems to be that of epistemics. Going by the purely conceptual definition of mood and modality, markers expressing ability, desire and intention do not count as mood, but rather as 'agent-oriented modalities' (Bybee 1985:166). Along this line, epistemics, although usually regarded as modalities, are included in the definition of mood, since they 'signal the degree of commitment the speaker has to the truth of the proposition', which ranges from 'certainty to probability to possibility' (Bybee 1985:166). Even structurally, Cinque strikes a similar note with his observation that different

types of modals differ depending on what exactly they express, i.e. that the structural, hierarchical positions of different modals can vary substantially. It is to be noted that this division draws a line between epistemics and all other modalities. Root modals, although encompassing multiple expressions ranging from volition to permission, all appear to be strictly subject-oriented. On the other hand, epistemics are speaker-oriented and modify the entire proposition. It is therefore generally agreed upon that epistemics occupy a higher position than other modals, and are more similar to mood. The most fitting assertion is therefore the following: due to its high scope over the entire proposition, the epistemic category is more closely related to mood, even if it is morphologically expressed alike to root modals.

To put these considerations into more technical terms, Cinque (1999) comes up with a detailed hierarchy of projections based on cross-linguistic observations:

(5) $\text{Mood}_{\text{speech act}} \succ \text{Mood}_{\text{evaluative}} \succ \text{Mood}_{\text{evidential}} \succ \text{Mod}_{\text{epistemic}} \succ \text{T}_{\text{past}} \succ \text{T}_{\text{future}} \succ \text{Mood}_{\text{irrealis}} \succ \text{Asp}_{\text{habitual}} \succ \text{T}_{\text{anterior}} \succ \text{Asp}_{\text{perfect}} \succ \text{Asp}_{\text{retrospective}} \succ \text{Asp}_{\text{durative}} \succ \text{Asp}_{\text{progressive}} \succ \text{Asp}_{\text{prospective}}/\text{Mod}_{\text{root}} \succ \text{Voice} \succ \text{Asp}_{\text{celerative}} \succ \text{Asp}_{\text{completive}} \succ \text{Asp}_{\text{(semel)repetitive}} \succ \text{Asp}_{\text{iterative}}$
(Cinque 1999:76)

Notice that this hierarchy captures the distinct scope relations among the mood and modality types and depicts a very different perspective on the nature of these categories than the rigid morphological order of Hungarian may suggest. Epistemic modality is above tense and right below mood, while irrealis mood is below tense and above root modality, not delving into the various aspectual markers due to their absence in Hungarian. So, although there seems to be a general rule of thumb regarding the exact properties of mood and modality, they do not have to fit the picture uniformly. Depending on their value, they can have various (morphosyntactic) positions across languages.

Before I move on to what can be deduced from these cross-linguistic findings for the purposes of the study on Hungarian, some noteworthy interactions pointed out by Bybee (1985) shall be repeated. First, epistemic markers paired with past tense can yield an evidential reading, such as that of an unwitnessed event. Second, epistemic possibility very often coincides with the marking of commands. She further notes, beyond epistemics, that conditionals are often related to optatives. Importantly, it is also maintained that these markers are almost always mutually exclusive — that is, imperatives, subjunctives, epistemics and conditionals seem to form one grammatical category. Being aware of these interactions is useful not only to emphasize the flexibility of mood and modality, but going a step further, to show that the ambiguities witnessed in Hungarian are likely neither a matter of coincidence nor an exceptional phenomenon.

2.3. Implications for Hungarian

How do these observations carry over to the study of Hungarian inflectional categories? Epistemics fall under the umbrella of mood conceptually. They express a possibility or probability of the proposition stemming from the speaker's perspective. Notice also the mutual exclusivity of the categories counted as mood. This will become relevant further along in the current investigation. Discrepancies between the structural encoding and the conceptual definition of modality and mood appear to be widespread, and Hungarian seems to fall in line with this observation. I will follow the path of assuming a strong interwoven relationship between the categories mood

and modality, and postulate that the morphological form of a marker does not necessarily entail its conceptual category. This constitutes a basis for mismatches between form and meaning in the broad sense. The use of a marker to encode modality does not mean that all of the readings it can express likewise adhere to the conceptual definition of modality and vice versa, using a mood morpheme does not entail that the concept expressed by it must be one that takes scope over the entire proposition. Recall that Hungarian has a limited set of markers expressing at least two meanings each, hence it is reasonable to look for mismatches that may occur in the area of grammar dealing with meaning, i.e. Logical Form. The following simplified version of the hierarchy proposed by Cinque (1999) highlights the categories relevant for the Hungarian inflections:

(6) $\text{Mood}_{\text{evidential}} \succ \text{Mod}_{\text{epistemic}} \succ \text{T}_{\text{past}} \succ \text{Mood}_{\text{irrealis}} \succ \text{Mod}_{\text{root}}$

The fact that mood occupies the outermost position morphologically is reflected in the hierarchy presented here and it is also correctly reflected that epistemic modality occupies a higher position than tense in terms of scope. Root modals associated with the agent's perspective according to Bybee (1985) are located below tense. Crucially, what this hierarchy illustrates is that mood can also take low scope below tense (opposed to the three different moods all located far above it in (5)). The tendency of mood taking scope over the entire proposition is thus cross-linguistically well attested, while also acknowledging the fact that this might not be the case for all of its meanings. Likewise, with epistemic modality located above tense, its wide scope is captured, while placing root modals below tense. Cinque (1999) makes a clear case against the assumption that all types of moods and modals have a fixed position in terms of scope, and further, against the view that this is cross-linguistically unusual. What is actually unusual is the fact that Hungarian uses a single morpheme to express different meanings within a category rather than distinguishing them morphologically.

As shall be seen in the following section, Bartos (1999) draws upon this hierarchy as well, using the proposed heads as landing sites for syntactic movement. It is important to note that the evidence for this hierarchy of projections presented by Cinque is based on the morphological order of suffixes and their scope cross-linguistically. The crucial point about Hungarian, however, is that the morphological order of affixes does not represent their semantic scope, and further, that the morphophonological forms of the suffixes do not stand in a one-to-one mapping relation to the expressed concepts either. We are presented with a rigid surface order and ambiguities pertaining to scope and even beyond. Keep in mind that the observations presented in this section have been made under the assumption of standard cases where mismatches are the exception. Before the current analysis is introduced, I examine the empirical facts more exhaustively, followed by a sketch and evaluation of previous accounts rooted in morphosyntax and pragmatics.

3. Observations and previous approaches

3.1. Scope ambiguities in detail

The data presented in the introduction shall be examined more closely to tease apart the readings with regard to their scope, going through them one by one. Let us begin with the readings modality can exhibit:

(7) a. ROOT

Vár-hat.
wait-MOD
'She may wait.'

b. EPISTEMIC

Vár-hat.
wait-MOD
'She might wait.'

(8) a. ROOT+PAST

Vár-hat-ott.
wait-MOD-PST
'She was allowed to wait.'

b. EPISTEMIC+PAST

Vár-hat-ott.
wait-MOD-PST
'She might have waited.'

(9) a. ROOT+CONDITIONAL

Vár-hat-na.
wait-MOD-M
'She could wait.'

b. ROOT+OPTATIVE

Vár-hat-na.
wait-MOD-M
'It is desirable that she would wait.'

(10) a. ROOT+PAST+CONDITIONAL

Vár-hat-ott vol-na.
wait-MOD-PST EXPL-M
'She could have waited.'

b. ROOT+PAST+OPTATIVE

Vár-hat-ott vol-na.
wait-MOD-PST EXPL-M
'It is desirable that she would have waited.'

The pattern that we observe is that both the root and the epistemic reading is available if modality is the only category that is marked as in (7), or in combination with past tense, as in (8). This is fairly unsurprising — recall that Bybee (1985) assumes the epistemic reading to be a type of mood, and Cinque (1999) likewise notes that epistemic modality is located particularly high in the hierarchy of projections. Since the epistemic reading expresses a type of possibility, it must be above T to take scope over the entire proposition. In these examples, there is no category that might interfere with its position.

When the category of mood is added to the mix, as in (9) and (10), we observe that the epistemic reading becomes unavailable, trading places with an ambiguity of the mood morpheme. This is a type of root modality expressing the ability of the subject to wait. Besides the basic conditional mood, the 'wishful' reading appears optionally, as in (9b) and (10b). In both cases, the wish that is expressed is that of the speaker, in line with the assumption that mood takes scope over the entire proposition and that it expresses the speaker's attitude towards it. Hence, it will henceforth be called optative (Dobrushina et al. 2013). The fact that the epistemic reading is unavailable in the presence of mood suggests that the positions of mood and epistemic modality interact. This perfectly falls in line with the assumption made by Bybee (1985) that epistemic modals are conceptually to be categorized as moods, and that every member of this group is mutually exclusive of one another. The fact that the optative and the conditional are in competition with one another suggests that their positions are distinct, yet the observation that the presence of modality is necessary to enable the optative reading suggests that there may be an interaction with the (lower) projection of modality.

Let us now examine the behaviour of mood without modality. We observe that (11) and (12), despite bearing a striking similarity to the two readings that mood has in the presence of modality, yield yet another kind of ambiguity. The alternative reading is still one that expresses a wish, yet this time, it is the subject whose perspective is expressed, not the speaker's. Thus, this reading shall be labelled the desiderative (Haspelmath 2013).

(11) a. CONDITIONAL
Vár-na.
wait-M
'She would wait.'

b. DESIDERATIVE
Vár-na.
wait-M
'She wants to wait.'

(12) a. PAST+CONDITIONAL
Vár-t vol-na.
wait-PST EXPL-M
'She would have waited.'

b. DESIDERATIVE+PAST
Vár-t vol-na.
wait-PST EXPL-M
'She wanted to wait.'

In the words of Bybee and Cinque, it is an agent-oriented category that is expressed here, thus being conceptually a type of modality rather than mood. As will be discussed in the newly proposed analysis later, it has not been previously noted in the literature that the two types of 'wishful' moods, the desiderative and the optative, have their own systematicity and are to be distinguished. Before presenting the proposal, the following sections characterize the two previous approaches to the scope ambiguities in Hungarian.

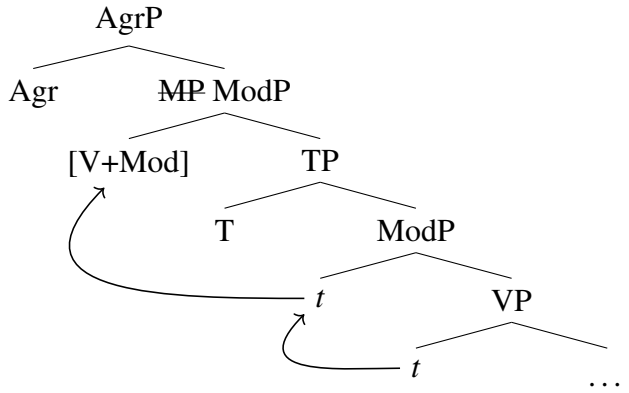
3.2. Morphosyntactic approach

The first attempt to analyze the patterns presented in (3) and (4) was made by Bartos (1999), claiming that the cause of the ambiguities is a timing issue between syntax and morphology. All in all, this morphosyntactic analysis has been pursued along the lines of the Mirror Principle, aiming to examine whether Hungarian obeys it or not:

(13) The Mirror Principle
Morphological derivations must directly reflect syntactic derivations (and vice versa).
(Baker 1985:375)

Assuming a post-syntactic morphological component as in Distributed Morphology (Halle & Marantz 1993), Bartos argues that the scope ambiguities are a result of proper syntactic movement. The essence of the approach can be summarized by examining the proposed derivation for data such as (4a), repeated here as (15) below. At the beginning, only the heads that are occupied are present in the hierarchy. In (14), MP is not present from the start, since mood is unmarked in this particular form, but is inserted for the purpose of providing an available landing position above T. In the first step, the V head moves to the Mod head, checking for its [+finite] feature. The remaining suffixes are cliticized via morphosyntactic merger, an operation chosen due to T (and the Agr heads) lacking any features that require checking. Thus, merging T and Agr with the newly formed [V + Mod] complex is not only the more economical, but also the necessary step in this derivation. This far the syntactic hierarchy corresponds to the order visible on the surface. To achieve the inverse scope, i.e. epistemic configuration, the [V + Mod] complex raises to MP, which is inserted as an empty proxy. Raising of the verbal complex to MP changes the category's features to that of its head, which is why instead of MP, the category above TP is likewise specified as ModP once these steps have been taken.

(14) Bartos' (1999) derivation of epistemic modality



(15) **MOD>T**

Vár-hat-ott.
wait-**MOD-PST**
'She may have waited.'

Crucially, it is argued that morphology tracks every individual step of the syntactic derivation and spells out the order of heads as they are built. According this logic, any movement taking place after the initial formation of the verbal complex (viz. after merging and movement induced by feature checking) should remain invisible on the surface. In the case of epistemic modality, [V + Mod + T + Agr] is shipped off to the morphological component right after the rightmost suffixes have cliticized, and importantly, before the verbal complex raises to MP. Since morphological operations can only target the edge of the form — i.e. only the outermost morpheme(s) can be accessed — reordering the inner modality and tense morphemes is impossible without also reordering the agreement morphemes. This is why the morpheme order corresponding to the final syntactic structure cannot be built, as seen in (15) based on the form-meaning mismatch.

The solution offered for ambiguities involving mood is a bit more abstract: supposedly, (11b) and (12b) denote modality syntactically due to their meaning, despite being expressed by a mood marker. In that sense, the data does not yield an ambiguity in terms of scope, but a regular T>MOD relation. It is argued that Hungarian lacks the adequate morphology to express this wishful reading, which is why mood is used as a representative category. Further, according to its meaning, the head is postulated to occupy ModP in the syntactic derivation. In the same spirit, the reading of (9b) is attributed to an expected M>MOD relation, and likewise this assumption applies to (10b). Thus, whenever this wishful reading is encountered, it is supposedly an expression of modality, due to its low scope and meaning. The difference between (12a) and (12b), as well as (10a) and (10b) is thus a matter of ambiguity between two types of modality, the derivation of which does not require movement at all.

Returning to the initial question, i.e. whether Hungarian verbal morphology obeys the Mirror Principle, the following conclusion is reached: the data supposedly constitute a violation of the principle, but only in one direction. Bartos (1999) argues that the mirroring relation between syntax and morphology should be distinguished based on its direction. Therefore, in Hungarian, syntax mirrors morphology at the point of the derivation where the output is shipped off. On the other hand, in the other direction, morphology does not mirror syntax because the syntactic derivation is incomplete at the point where morphology receives the input from it. This 'violation' is argued to follow naturally and to be inevitable based on the order of operations, and the Mirror Principle is concluded to hold nevertheless (Bartos 1999:90).

Some issues need to be pointed out regarding a morphosyntactic treatment of the scope

ambiguities. Let us begin by dissecting the theoretical prerequisites underlying the proposed derivation. Firstly, morphosyntactic merging is applied because there are no features that require V to raise further than ModP. At the same time, however, the verbal complex is moved to the higher position in MP, to achieve the intended scope. MP is inserted as an empty proxy based on the projectional hierarchy by Cinque (1999), discussed previously in section 2. With no feature checking or saturation involved, and with semantic considerations being irrelevant in syntax proper, this step appears to lack all formal motivation. In addition, it violates the Head Movement Constraint by skipping over T (Travis 1984), which is justified by a supposed necessity: movement to T is impossible due to the lack of features on T attracting the verbal complex, and therefore, moving straight to MP is necessary to inverse the scope relations. Regarding the targeted use of movement versus merging, the derivation appears to contradict Bartos' own foundation of how the structure is built, i.e. that morphosyntactic merging is a necessary step because movement is only justified when it is utilised for feature checking. However, if the verbal complex is eligible to raise into MP despite the lack of checkable or attracting features, morphosyntactic merging becomes superfluous. Without making this explicit, semantic interpretation on its own is taken to be a legitimate trigger of syntactic movement.

Secondly, a particularly crucial point concerns the source of the inverse scope reading of mood. In the morphosyntactic derivation presented by Bartos, the respective data express a type of modality, presumably. If this reading was truly attributed to modality in the morphosyntactic sense, it would not be entirely absent from the verb form only suffixed by modality (yet present in the counterpart marked with mood):

(16) a. Vár-na.
wait-M
'She would wait.'
'She would like to wait.'

b. Vár-hat.
wait-MOD
'She is allowed to wait.'
'She could wait.'

This entails that morphological form and semantic representation are mismatched, while necessarily assuming a fairly free arrangement of heads in syntax. While Bartos acknowledges this issue, the explanation that he provides does not necessarily make the picture any clearer. Recall that, supposedly, Hungarian lacks the morphology to express this type of modality. It remains unclear why this would be the case since ambiguities between distinct types of modalites and moods are the norm in Hungarian. If this reading would truly be indebted to a type of modality morphosyntactically, it would remain nebulous why it is not the respective marker that is used at spell out. Again, semantic information is taken to be available in syntax proper and is the key to determining the insertion or movement of elements.

A further problem tying into the analysis of the mood ambiguity is that some form of it persists in all examples that feature mood, which means that its presence cannot be dependent on the vacancy of ModP alone. Note that no division is drawn regarding the perspective, recall the difference between (9b) and (10b) compared to (12b). This, indeed, forces Bartos to postulate the existence of an additional ModP projection to which the morpheme can raise in order to achieve the intended scope while retaining the modality-like reading.

The option of proposing a derivation at LF is acknowledged, yet argued not to be restrictive enough to exclude impossible scope readings. The alternative that is proposed, however, appears to violate general principles of syntax. In that sense, as much as LF is argued to be lacking the necessary restrictions, syntax appears to have too many of them to carry this analysis. Despite the aforementioned problems concerning the technical details of the approach, Bartos (1999)

points out the importance of viewing the relationship between mood and modality in Hungarian as a complex interdependency. Further, he concludes that the availability of readings clearly depends on the presence of certain morphemes, or rather, the vacancy of distinct landing positions. Indeed, an approach postulating movement of some sort, and in particular, movement to positions that may not be originally designated for the exact category in question (at least in the syntactic representation) appears to be inevitable. I will rely on this crucial discovery, building the new strategy by drawing from these observations. Before moving on to the current approach, I briefly touch on a different account that is not based on structural restrictions at all.

3.3. Pragmatic approach

In Alberti, Dóla & Kleiber (2014), the authors develop a pragmatico-semantic account that supposedly predicts all scope relations and readings, particularly the ones that the morphosyntactic account claims to be absent from the hierarchy. The appearance of those readings is derived by assuming 'two different kinds of "semantic blending" between the contribution of mood and modality' (Alberti, Dóla & Kleiber 2014:174). Discourse Representation Theory is taken as the foundation to model the dynamic, while also considering observations from cognitive linguistics. The benefit of the approach is argued to be that the use of the language system is put into the context of human communication, i.e. that the subjective construal of the speaker's and hearer's roles and perspectives are integrated into the analysis.

The main focus of the analysis is the use and effect of particles, adjectives, adverbials, and also modal verbs that enforce a certain reading and manipulate the speaker's information state, that is, their perspective on the truth value of the proposition. The authors conclude that the alternative, non-conditional readings of the mood morpheme, in particular the optative, is only available in the presence of additional context such as an if-clause or an exclamation such as *bárcsak* 'if only'. Following from this, it is argued that the remaining permutations can be associated with meaning, and not with a structural alternation, although only in part. It is the relationship of the high scope, epistemic modality and mood where the above mentioned 'blending' takes place, since their semantic contribution blends when they are next to each other in the scope hierarchy.

Although there are no gross technical issues concerning this account, there are some empirical predictions that do not quite fit the picture. In particular, the desiderative and epistemic readings do not merely appear based on context (cf. Bartos 1999). A thorough discussion of how the pragmatic account overgeneralizes is provided in section 4.3. In the following, I argue for a discourse-independent, LF-based account — a semantic derivation completing the trinity of possible approaches to this phenomenon. I will show that the inherent properties of LF and the rules it follows (or rather, the ones it does not have to follow), without assuming additional heads or differences between heads in syntax and LF, constitutes the ideal ground for the scope ambiguities we observe.

4. Relocating to Logical Form
4.1. In favour of Affix Movement

In part, the morphosyntactic analysis posits that the Hungarian language does not have the inventory to express the different types of moods and modalities according to their underlying representation. At the same time, the language does have the capacity to express these concepts 'invisibly', which is why I argue that the respective scope relations are achieved at a point in the derivation where (i) the syntactic form has already solidified and (ii) no reference can be made to the morphological form, yielding no morphosyntactic mismatch. Luckily, the area of grammar that is responsible for form-meaning mismatches at sentence-level is one that follows the syntactic derivation and is entirely independent of the morphological component, i.e. Logical Form. Research concerned with affix order and the Mirror Principle seems to rely on the assumption that word- and sentence-level processes fundamentally differ from one another. I argue that this view remains unmotivated, and claim that essentially the same set of rules should apply to the word-internal reordering of affixes as to the reordering of words within a sentence. Multiple sources support such a view, as sketched below.

First, Pesetsky (1985) argues for the application of Affix Movement, akin to Quantifier Raising (or Rule) by May (1977). A number of bracketing paradoxes observed in English and Russian can be resolved by assuming two distinct levels of representation to every stem and its affixes. The relevant properties Pesetsky attributes to each of the levels are reproduced below in Table 1:

Level of representation 1	**Level of representation 2**
Prefix c-commands root and suffixes	Suffixes c-command root and prefix
Phonological restrictions satisfied	Phonological restrictions not satisfied
Phonological rules apply	Phonological rules do not apply
Logical scope not given by c-command	Logical scope given by c-command
Semantic compositionality may be violated	Satisfies semantic compositionality

Table 1. The two word-internal levels of representation and their properties (Pesetsky 1985:206–207).

In Minimalist terms, *Level of representation 1* would be the structure at Phonological Form (PF), while *Level of representation 2* corresponds to the structure at Logical Form (LF) — assuming a structure of grammar where the output of syntax proper is shipped off to PF and LF, respectively, which constitutes the necessary foundation for mismatches between the two modules.[1] What Pesetsky observes are precisely the considerations relevant to our issue at hand. The phonological restrictions, in our case comprised by the fixed order suffixes, cannot be satisfied while maintaining the correct logical scope in the inverse scope readings.

Returning to the aforementioned word- and sentence-level contrasts, Pesetsky (1985) puts forth the idea that words also have a logical representation entirely parallel to that of sentences. Support for this view comes from idiosyncratic readings of individual words. For example, the

[1] One may argue that the suffixes can appear in an order corresponding to their scope pattern in syntax proper, with phonological operations reordering the affixes to their respective order. This, as argued in the previous section assessing the morphosyntactic approach, does not account for the fact that semantic considerations alone do not motivate syntactic movement, and likewise, would only account for the reordering of affixes at the outermost edge of the form.

word *rarity* has a compositional reading, i.e. 'the fact that X is rare', but also an idiosyncratic one, as in 'something that is rare'. Within a word, the stem and the suffix must be sisters based on locality restrictions applying to sentence-level idioms (Chomsky 1965). In Pesetsky's model, affixes correspond to heads, and their movement leaves traces.

Julien (2002), more broadly speaking, argues that morphological constituents are also minimal elements of syntax and likewise assumes them to be syntactic heads. She points out that words are perceived rather than formed in the sense that there seems to be no solid grammatical word formation device (Julien 2002:36). Thus, the distinction between processes that apply within or between words supposedly only gain relevance at a late point in the derivation, but crucially not within morphosyntax. Therefore, it is undesirable to fundamentally distinguish between word- and sentence-level processes. Movement at LF should be applicable within forms, regardless of their phonological perception as a word or a larger unit.

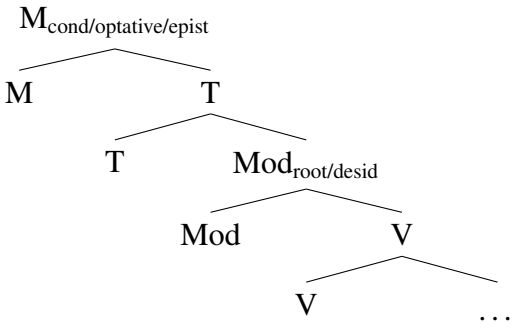
4.2. Deriving the structures

Taking into account the distinction of different moods and modalities by Cinque (1999), I propose that Hungarian only distinguishes the different types of mood and modality based on their position at LF. This module, constituting the representation of semantic meaning, could very well be the place where scope ambiguities are resolved, rather than the arguably restricted representation that is syntax proper. Cinque's hierarchy is based on cross-linguistic observations where the categories map to individual, distinguishable morphemes, while in Hungarian, one suffix expresses two, potentially three readings each. Based on morphological order, it is likely that there is only a single position for each of the categories in the syntactic representation, much like suggested for bracketing paradoxes by Pesetsky (1985).

Before we delve into the analysis, the assumptions made regarding the architecture of grammar need to be clarified. I assume that the output of syntax proper serves as the input for distinct levels of representation, both preceded by spell-out in the sense of Minimalism (Chomsky 1995). One of them is Phonological Form (PF), where phonological processes apply and shape the final form of the utterance; and the other one is Logical Form (LF), where the semantic properties of the structure are represented. Furthermore, I assume a postsyntactic morphological component that has no interface with LF, but follows spell-out and precedes PF, much in the sense of Distributed Morphology (Halle & Marantz 1993). This constitutes the Y-model — the 'root', if you will, is syntax, with the two 'branches' being the distinct levels of representation.

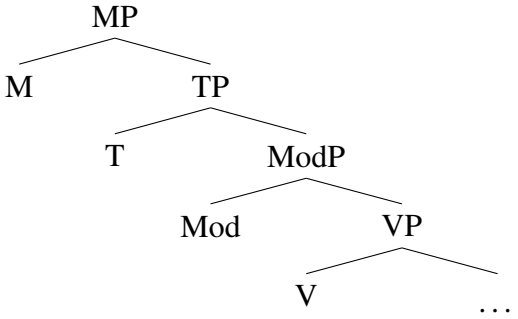
Let us now combine the ingredients presented in the previous sections. I rely on the ideas that (i) the available syntactic tools are insufficient to derive the scope ambiguities, (ii) only the logical representation at LF, in turn, is where movement takes place according to the intended scope relations, and that (iii) the derivation of word-level ambiguities is identical to the derivation of sentence-level ambiguities, based on the observation that words are not isolated units in the morphosyntactic sense. The logical representation itself does not differ from the syntactic one with respect to the order of heads. Due to the mutual exclusivity of the readings, I am assuming a single ModP and a single MP in the logical representation, too:

(17) Structure of Hungarian verbs at LF



The structure is headed by mood, which has the widest scope of all categories. It expresses the speaker's perspective on the proposition. As we have established, it does not merely make reference to the verb itself, but to all of the properties of the event expressed by the remaining categories, modality and tense. Tense stands between mood and modality without engaging in scope alternations in any way. The position closest to the verb is occupied by modality, which directly modifies the meaning of the verb with regards to the subject. Notice that I am making a distinction not based primarily on morphosyntactic encoding, but rather on the scope of each meaning. Recall the underlying representation of the heads in syntax proper, indicative of the order of morphemes observed on the surface:

(18) Structure of Hungarian verbs in syntax proper

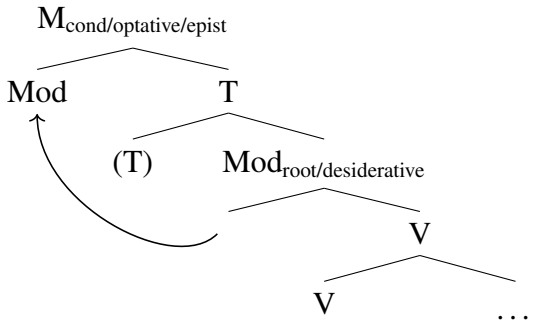


The regard in which the two structures actually differ from one another is the categories that can occupy each of the heads, or more precisely, the types of movement that are permitted. The key is that the mood suffix may occupy a position that is unusually low for its category, i.e. ModP, and that the modality suffix, by virtue of modifying the entire proposition from the speaker's perspective, occupies MP. Categorial specifications relevant for the surface form do not need to be adhered to at LF, since there is no interface between LF and the morphological component, nor LF and PF. The advantage gained from this is the option to postulate positions with regard to their conceptual and scopal properties, rather than morphosyntactic categories that entail morphophonological forms. As shall be seen in the remainder of this section, such a proposal receives empirical in addition to the theoretical support already provided.

In the case of regular scope readings, the order and c-command relation of the heads in syntax proper corresponds to the structure at LF without the need of movement. The conditional mood expressed by the morpheme in its default reading occupies M, and root modality likewise requires to be scoped over by other suffixes, occupying Mod. Thus, the above structure readily

accounts for the basic M>T>MOD reading. The more interesting cases follow when we consider the ability of the modality morpheme to express an epistemic reading besides its root root meaning. In that case, the suffix raises to M, occupying the position usually filled by the mood suffix:

(19) Epistemic modality



In a configuration where mood is not expressed, the modality suffix can freely move upwards to the mood projection. The presence or absence of tense marking makes no difference, as we do not need to adhere to syntactic constraints prohibiting movement beyond the closest landing position, nor does the presence of tense marking interfere with the intended landing position. In the case when mood is marked, i.e. when such an interference is given, the derivation correctly predicts that the epistemic reading becomes unavailable. Recall that mood and epistemic modality mutually exclude one another, because both of them express the perspective of the speaker:

(20) a. ROOT+MOOD

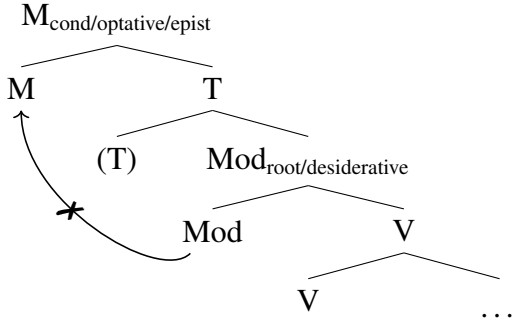
Vár-hat-na.
wait-MOD-M
'She could wait.'
'It is desirable that she can wait.'

b. *EPISTEMIC+MOOD

Vár-hat-na.
wait-MOD-M
*'It could be the case that she might wait.'
*'It is desirable that she might wait.'

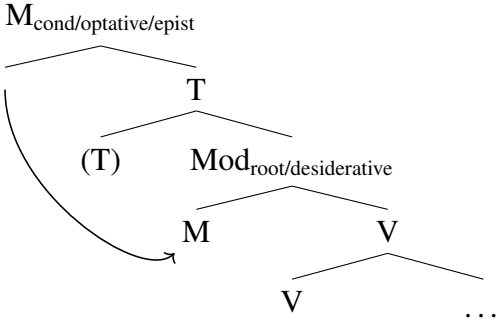
When both categories are marked, modality can only take the lower scope, scoping only over the verb, because its presence modifies the meaning in a subject-oriented manner. Raising to M becomes unavailable when mood is marked, which is predicted by the structure:

(21) Mutual exclusivity of epistemic modality and mood



The model thus depicts that epistemicity, in the semantic sense, is a type of mood, as postulated by Bybee (1985) and Cinque (1999). Nothing new is brought to the table by the model itself yet, apart from the advantage that syntactic restrictions on movement do not hold at LF. The innovative aspect of this derivation, that is, its benefits opposed to a morphosyntactic proposal, become more obvious when we examine the alternative readings of the mood suffix. Mood has two further readings that express a type of wish. Let us begin with the desiderative reading. It occurs only if modality remains unmarked, and appears to have a similarly special status among moods as the epistemic has among modalities. Although it is morphosyntactically encoded by a category with typically high scope, i.e. mood, it does not modify the entire proposition. The desiderative expresses the wish of the agent that the proposition be the case. I thus postulate that this type of mood is particularly low and close to the verb, occupying Mod:

(22) Desiderative mood



The derivation requires downward movement, or lowering, of the suffix into Mod. While unthinkable in the syntactic representation, Quantifier Lowering is indeed a viable operation at LF. It has received recent attention from Lasnik (2021), who revisits the ideas of May (1985) among others, and supports the existence of such a lowering mechanism to derive scope ambiguities in particular. Further independent motivation comes from Dawson & Deal (2019), showing that scope lowering is necessary to derive third readings of prolepsis in Tiwa.[2] Based on the observation that sentence-level operations should also be applicable word-internally, scope lowering on affix-level should be as valid of a step as affix raising is. Again, the presence or absence of tense marking makes no difference for the availability of readings. Analogous to the derivation

[2] The reviewer wonders whether the proposed operations have implications for ambiguities on sentence-level, i.e. in conditional clauses. Minimal cases can be construed where either reading of mood is available (focusing on true differences in scope, i.e. conditional vs. desiderative):

(i) *Örül-né-k, ha vár-na.*
be.happy-M-1SG if wait-M
'I would be happy if she would/wants to wait.'

Indeed, the desiderative reading can only be construed through the morpheme in this case, while omitting the morpheme yields the basic conditional reading induced by *ha*. In the case of modality, it is very difficult to get an epistemic reading, as we expect if the co-occurrence of (conditional) mood and epistemic modality are barred:

(ii) *Örül-ök, ha vár-hat.*
be.happy-1SG if wait-MOD
'I'm happy if she is allowed to wait/#might wait.'

A very specific context may be construed to enforce a marginal epistemic reading. Imagine a dialogue where, when discussing where person X is, person A says 'She might be waiting outside', and person B replies 'In that case I'm happy, if she might be waiting', yet this is very odd. Compare (27), where we have a similar situation.

of epistemic modality, the interfering category this time is modality. When both modality and mood are marked, the desiderative reading of mood becomes unavailable:

(23) a. MODALITY+CONDITIONAL

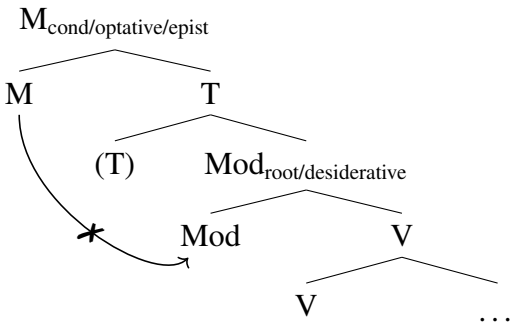
Vár-hat-na.
wait-MOD-M
'She could wait.'
'It is desirable that she can wait.'

b. *MODALITY+DESIDERATIVE

Vár-hat-na.
wait-MOD-M
*'She is allowed to want to wait.'
*'She wants to be allowed to wait.'

This is predicted under the assumption that desiderative mood and modality occupy the same position at LF, since the mood suffix cannot lower into Mod if the latter is already occupied:

(24) Mutual exclusivity of desiderative mood and modality



Now, recall that there exists a further reading of the mood suffix, which likewise expresses a type of wish, although that of the speaker (compare this to the desiderative reading which clearly expresses the wish of the agent). No further assumptions can be made about this optative reading in terms of logical representation due to it having the exact same scope as the conditional reading, and therefore not constituting a scope ambiguity in the sense that the other suffixes do. The properties of the optative do however deserve a thorough discussion, which is provided in the following section, most importantly because it will make clear the reason why pragmatic considerations may play a significant role after all.

The core benefit of relocating the source of ambiguity to LF is the fact that movement can be governed freely by the intended scope relations that the speaker wants to express. The proposed derivation circumvents assuming non-standard, costly syntactic operations. On the other hand, the freedom gained at LF is also adequately restricted as we have seen: the conceptually interwoven dependency of mood and modality is correctly depicted by the possible movements, while also accounting for the mutual exclusivity of low-scope mood and modality (in the case of the desiderative), as well as high-scope modality and mood (in the case of the epistemic). The analysis does not need to rely on additional projections, or an unclear relationship between syntax and semantics, and hence also offers a solution without arbitrary movement in the syntactic component. All these points constitute strong arguments for a semantic account and against a morphosyntactic one.

4.3. Ambiguity without scope

The optative, which expresses the speaker's wish that the proposition be the case, occupies the same position as conditional mood and epistemic modality in the previously presented LF-hierarchy. The structure of suffixes remains unchanged for its derivation, which predicts that the conditional and optative should be in direct competition. Note that the earlier morphosyntactic analysis by Bartos (1999) does not differentiate between what I have been calling the desiderative and the optative, it treats all expressions under this umbrella as expressions of modality and thus low-scope. On the other hand, my account presented here does not cover the observation that the conditional and the optative are indeed not in direct competition in all cases. The optative is notably absent from utterances unless modality is marked. We thus, again, observe a certain interaction between mood and modality — the optative, only available with modality, and the desiderative, only available without modality, stand in complementary distribution.

This distribution clearly causes issues for the current proposal. The shift from a desiderative to optative reading occurs when the desiderative becomes unavailable. Observe (12b) opposed to (9b) and (10b), repeated here as (25a), (25b) and (25c), respectively:

(25) a. T>M

Vár-t vol-na.
wait-**PST** EXPL-**M**
'She wanted to wait.'

b. M>MOD

Vár-hat-na.
wait-**MOD-M**
'It is desirable that she would wait.'

c. M>T>MOD

Vár-hat-ott vol-na.
wait-**MOD-PST** EXPL-**M**
'It is desirable that she would have waited.'

In the absence of modality, it is the subject of the clause that the modification applies to: it is her who wanted to wait (this can also be observed in (16a)). As soon as the verb is marked for modality, the perspective shifts, it is not the subject who wishes to wait, but the speaker who wishes that the subject may wait.[3] Although the desiderative and optative may seem strongly related in meaning, they differ with regard to their scope. In the absence of modality, the mood morpheme potentially stands closer to the verbal stem, thus modifying the meaning of it directly in an agent-oriented manner. If this lower projection is occupied by a root modal, the mood morpheme is forced to take scope over the entire proposition and therefore express the speaker's perspective. These are the facts that the current analysis straightforwardly accounts for. The problem is, however, that the optative is not predicted to be unavailable under any circumstances if it is treated entirely equal to the conditional reading. Hence, there must be a source of contrast for the two that is not predicted by purely structural accounts, but follows from a pragmatic analysis.

Suppose that my structural approach is incorrect. Suppose that the optative and desiderative are not to be distinguished in terms of scope, i.e. as a structural ambiguity, but assume that they both occupy the same position. Consider the following data:

[3] Note that the default conditional reading is likewise available in all of these examples regardless of the presence of modality.

(26) Bárcsak vár-na/vár-t vol-na!
if.only wait-M/wait-PST EXPL-M
'If only she would wait/would have waited!'

Although the desiderative should be available in this example because of the vacant ModP, one can add an exclamation to block it and instead enforce an optative reading that is unavailable otherwise, presumably for contextual reasons. I refrain from taking a stance on the exact technicalities of this blocking effect. They could be presuppositional in nature, as the reviewer suggests, but have yet to be formalized in future research. This would mean that the distribution of the two meanings is strongly context-dependent. However, the speaker's wish can merely be attributed to the presence of the exclamation *bárcsak* 'if only', since it is notably absent from the examples without it. This observation supports the pragmatic account by Alberti, Dóla & Kleiber (2014). The inflected mood most likely bears a default conditional reading, not an optative.

Such contextually enforced data may be deemed supportive to the idea that the difference between the two meanings is not necessarily structural. For all we know, there may be pragmatic reasons that simply make the desiderative a paradoxical reading not worth pursuing, comprising something along the lines of 'being allowed to want to wait'. While the intended meaning is indeed odd, this is not a particularly compelling argument. The optative versus desiderative distinction does very clearly align with the conceptual distinction between mood and modality rooted in scope and orientation that we adopted from Bybee (1985) and Cinque (1999). This view is supported by the observation that enforcing the reading that is predicted to be structurally, not merely contextually, unavailable, yields a much less well-formed expression. Observe the case of trying to enforce a desiderative reading upon a structurally optative (or conditional) form through context:

(27) #Nem ért-em, miért nem men-nek még haza, talán vár-hat-ná-nak?
not understand-1SG why not go-3PL yet home, maybe wait-MOD-M-3PL
I don't understand why they aren't going home yet, maybe they want to wait?
(Bartos 1999:78)

Interpreting the sentence in the way that it is intended is indeed quite difficult, as pointed out by Bartos (1999). The issue in (27) is that the formula for a desiderative reading is not simply 'conditional plus wish', it involves a real change in scope. On the other hand, such a formula could very well work for the optative reading, which has the same scope as the conditional. It appears reasonable to call into question whether the optative deserves to be treated as a seperate reading at all. Based on the observations presented here, it could much rather be that the conditional mood allows for an additional nuance to its meaning, rather than being in competition with an entirely different one. Due to the lack of difference in scope between the conditional and optative, it becomes clear that a purely structural account cannot derive this particular contrast. Bybee (1985) also notes that conditionals are often related to optatives, and this behaviour may very well be a manifestation of such a relation. The conditional-desiderative alternation is the only clear case of scope ambiguity regarding the category of mood, and is therefore entirely analogous to the alternation of root and epistemic modality. Epistemic modality is only available as long as mood remains unmarked, and in a parallel fashion, desiderative mood is only available if modality remains unmarked.

Alberti, Dóla & Kleiber (2014) thus undoubtedly shed light on the issue that the system is more complex than can be modeled by means of strictly hierarchical terms alone, which is reflected in the conclusion that the occurrence of the optative cannot be predicted purely based on structural properties. Of course, judgments from individual native speaker authors in support of their own theories, mine included, cannot and should not be the end of this debate. A future endeavor of testing the discourse (in-)dependence of the studied expressions is necessary to solidify the cases in which the respective readings are available.

I conclude that although lexical material, such as exclamations or a fitting context, may facilitate a certain reading, they do not have the power to override structural restrictions. This is based on the ubiquitous option to interpret the morpheme as a conditional and attribute additional meanings to context, which only seems to result in a well-formed utterance when the provided context is in line with the structurally permissible scope patterns. The availability of readings without context makes it clear that the root of the cause are indeed the verbal suffixes, and that additional material can merely support one reading over the other within the limits of what is viable structurally. In this sense, I argue that the presented approach does not suffer from its inability to accommodate the optative reading, since the optative reading is not a matter of structural ambiguity depicted at LF to begin with. The next section, wrapping up the study, discusses the relevancy of the Mirror Principle in light of the current investigation.

5. Discussion: a hall of mirrors?

I have argued that the inverse scope readings of Hungarian verbal suffixes cause problems both for a purely morphosyntactic derivation of affix order as well as a purely pragmatic account with no structural constraints. To return to the question that originally facilitated the investigation of this topic, the presented data does not constitute a violation of the Mirror Principle based on my assessment. Indeed, it has nothing to do with it because there is no compelling evidence for the assumption that the syntactic derivation differs from the morphological order of the suffixes.

Broadly speaking, the Mirror Principle as a whole is rooted in the assumption that mismatches between syntax and morphology are detectable through form-meaning mismatches. This becomes possible if the semantic component is entirely passive — it is shaped by the syntactic derivation and the syntactic derivation only, and it thus serves as a depiction of what operations have or have not taken place in the underlying structure. The observation that morphology and syntax do not always reflect one another is thus based on the implicit assumption that the syntactic and semantic representations of a structure always do. When looking at sentence-level scope ambiguities, however, it has been much less debated whether they comprise a semantic or morphosyntactic phenomenon, with research clearly favoring the former domain. My aim has been to show that we can easily circumvent the problems that scope ambiguities seem to cause for syntactic accounts by getting rid of the division between word and sentence-level operations, making it possible for affixes to move at LF like entire words would. Words are not morphosyntactic, but rather conceptual, phonological units, which contradicts the view that the mechanisms deriving sentence-level ambiguities are unavailable on a smaller scale (Pesetsky 1985; Julien 2002; Haspelmath 2011).

Let us suppose that the Mirror Principle extends to the semantic (and potentially, also the phonological) component of grammar, thus entailing that every single area of grammar needs to reflect one another, with individual modules constituting a hall of mirrors, if you will. In

that case, Hungarian would technically violate the principle after all. An inherent flaw of the Mirror Principle that becomes obvious once we move past the notion of wordhood as I am proposing here, is that there is no clear diagnostic that could reveal which area of grammar the ambiguity is located in. The mirroring relation between morphology and syntax only falls out if words are subject to a fundamentally different set of constraints than sentences regarding logical representation, for which, as I have argued in this paper, there is no evidence. As the reader will have noticed, no data has been presented that corroborates whether an ambiguity is derived in syntax and undone on the surface, or skipped over in syntax and spelled out at a point to which the surface form cannot make reference to. The different perspectives do not make different predictions that could be verified, they merely try to explain how the phenomena could arise. Although I have argued for a solution at LF (and, in some way, against the Mirror Principle as a whole because of its vagueness), my main line of reason has been that it is less costly and more likely within the the given theoretical framework. Future work should, on the one hand, identify how the predictions of a syntactic versus a semantic account differ to test the proposal, and on the other hand, provide experimental support for the availability of the proposed readings to clarify the role of pragmatics. One may raise the question how widespread such word-internal scope ambiguities are if they may be derived so easily at LF. The simplicity of the account predicts that similar alternations should be present all over the languages of the world. This prediction seems borne out, even if it comes in a number of different shapes. As pointed out by Bybee (1985), modality is rarely encoded as an inflectional category and often involves auxiliaries or adverbs, and therefore, such word-internal ambiguities can only be as frequent as the relevant categories' encoding as inflectional morphology is. For these cases, it is reasonable to expect some flexibility with regard to scope, as the morphosyntactic realization of a suffix does not always correspond to its conceptual properties. Beyond inflection, derivational affixes such as causatives, applicatives, reciprocals and passives in Bantu languages have been argued to violate the Mirror Principle, too, and have facilitated the proposal of fixed morphological templates (Hyman 2003). There seems to be evidence against a violation as recently proposed by Bruening (2021), however, who claims that the patterns have been misanalyzed. The ongoing debate shows that the mapping between form and meaning can be quite unclear. Hungarian likewise has an extensive set of verbal derivational morphology, although in that case, it very strictly adheres to the Mirror Principle — the surface order of suffixes varies based on scope (Sarvas & Rothert 2020).

Scope ambiguities are likely not as rare as one may be led to believe based on the alleged unavailability of word-internal movement at LF. Going through data from other languages is beyond the scope of this paper, though based on the observation that modality and mood are often entangled, the current analysis should be applicable cross-linguistically. The rigidity of morphological ordering stands in sharp contrast to the meanings that can be derived from the structures. This supports breaking down the borders between word- and sentence-level operations, enabling movement at LF. What this means for the Mirror Principle is that it must be extended to keep its relevance unless the nature of words as morphosyntactically solidified units can be proven compellingly. It further remains debatable whether it should be kept at all. Clearly separating (morpho-)syntactic from semantic proposals based on their predictions, as mentioned earlier, is also crucial to evaluate the importance of the Mirror Principle. Since the predictions may overlap, this could be achieved by comparing the ambiguities in Hungarian to phenomena known to operate either on LF or in syntax, and see which ones they pattern with — this account predicts them to be in line with LF phenomena.

6. Conclusion

This paper provides a study of the Hungarian mood and modality interactions in the verbal inflectional domain. The proposed structural derivation reflects that epistemicity is to be treated as a type of mood, and likewise, that the desiderative is much rather a type of modality conceptually, despite morphosyntactic properties suggesting otherwise. From a more general point of view, I have shown that resolving conflicts between form and meaning in the semantic component comes with many benefits, while also maintaining that true scope ambiguities are contextually independent. I have further argued that overcoming the practice of treating words and sentences as categorically distinct in nature enables us to use established technical tools to solve issues that would otherwise require tedious derivations. Based on the Hungarian data, it is desirable to shift perspectives and transfer established mechanisms to a smaller scale, gaining explanatory power by doing so.

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Abbreviations

1	first person	M	mood
2	second person	MOD	modality
3	third person	PL	plural
EXPL	expletive	PST	past
INDEF	indefinite	SG	singular

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Wh-exclamatives call for a question semantics
The view from Bangla

Kousani Banerjee

Exclamatives have been a subject of study since Elliott (1974), Grimshaw (1979), and others. Although languages have different types of exclamative clauses (cf. Rett 2008a, 2011), this paper mainly focuses on wh-exclamatives in Bangla (a.k.a. Bengali; Indo-Aryan (IA)). While analyzing wh-exclamatives in languages like Catalan (Miró 2006) and English (Rett 2008a, 2011), it has been established that they bear a degree denoting property in the domain, which caters to the surprising element of the clause. However, there is opposing cross-linguistic evidence. Languages like Turkish, Dutch, Russian, Hungarian (Nouwen & Chernilovskaya 2015); Telugu, Kannada (Balusu 2019) show a wide variety in their wh-exclamatives and cannot be analyzed along the lines of Miró (2006); Rett (2008a, 2011). Bangla is no exception. This paper provides a unified compositional analysis for wh-exclamatives in Bangla.

1. Introduction

A composite system for classification of sentence types includes statements, commands, questions and exclamations (Onions 2017). The uniqueness of exclamatives or exclamations was noticed by Elliott (1974). Elliott's account on exclamations includes sentences of the following structures which he terms as *absolute exclamations*:

(1) a. *What an attractive woman she is!*
b. *She is such an attractive woman!*
c. *How beautiful these flowers are!* (Elliott 1974:232)

Elliott's analysis of exclamations include transformational rules by which he explains the similarities in meanings between (1)-a & (1)-b.

Rett (2008a, 2011) distinguishes between structures like (1)-a and (1)-b, and notes the semantic differences between them. In Rett's classification, sentences that lack an overt wh-word as in (1)-b are termed *proposition exclamations*, and sentences that have an overt wh-word as

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in (1)-a and (1)-c are termed *exclamatives*. As argued by Rett (2008a), the illocutionary force involved in the former type is that of a proposition, whereas the latter one has a degree illocutionary force. Rett's study on exclamatives is quite different from that of D'Avis (2002) and Zanuttini & Portner (2003). D'Avis (2002), Zanuttini & Portner (2003) analyze exclamatives as having a question denotation *i.e.*, exclamatives denote a set of propositions just like questions. However, exclamatives diverge from questions in the sense that they are factive in nature (Zanuttini & Portner 2003).

In this paper I will analyze Bangla wh-exclamative structures and argue in favour of a question-based approach for exclamatives. Bangla allows a variety of wh-words in forming exclamatives and therefore qualifies for both degree and non-degree contexts in denoting exclamatives. Therefore, neither the degree-based approach (Rett 2008a, 2011) nor the existing question-based approaches like D'Avis (2002) or Zanuttini & Portner (2003) are sufficient to fully capture all the readings of Bangla wh-exclamatives. Though the analysis hugely banks upon the 'widening' account introduced in Zanuttini & Portner (2003), it accepts certain modifications made to the existing approach in Balusu (2019) for analyzing wh-exclamatives in Telugu and Kannada. Before proceeding, let us look at the structure of the paper.

§2 briefly reiterates the influential theories on wh-exclamatives. §3 presents a pan-optic view on Bangla wh-exclamative structures. This section also illustrates the limitations of the existing theories. §4 introduces a composite analysis for Bangla wh-exclamatives. Lastly, §5 concludes the paper.

2. Existing approaches

The existing literature on wh-exclamatives shows two very different approaches to analyzing them. One group of scholars analyze wh-exclamatives as having a question-based semantics (D'Avis 2002; Zanuttini & Portner 2003; Chernilovskaya 2010), popularly referred to as the *proposition-set approach*. The others analyze exclamatives as having a degree denoting property, known as the *degree approach* (Miró 2006; Rett 2008a,b, 2011).

2.1. The proposition-set approach

A distinguishing feature of wh-exclamatives is that they always carry an overt wh-operator. Because of this, proponents of the *proposition-set approach* view exclamatives as a reflection of wh-questions. D'Avis (2002) and later Chernilovskaya (2010) analyze wh-exclamatives using Heim's (1994) *two notions of answerhood*, whereas Zanuttini & Portner (2003) formalize a concept called *widening* to capture the essence of wh-exclamatives. However, these two ideas are very unlike each other in kind and character. §2.1.1 explains the former approach, while §2.1.2 explains the latter.

2.1.1. The Two-Notions of Answerhood Approach

In analyzing wh-exclamatives through question semantics, both D'Avis (2002) and Chernilovskaya (2010) base their analysis on the Karttunen-set (*i.e.*, questions denote a set of true answers (Karttunen 1977)). They argue that just like questions, Heim's answerhood

operator acts on the Karttunen-set in wh-exclamatives. The elements that distinguish wh-exclamatives from wh-questions are two felicity conditions proposed by D'Avis (2002). They are – (i) the speaker's expectations entail the negation of *answer*$_1(w)$, and (ii) the speaker knows *answer*$_2(w)$ (D'Avis 2002; Chernilovskaya 2010). D'Avis's main idea behind these conditions is that the speaker expresses surprise at a particular answer to the wh-clause while uttering an exclamative expression.

The German example in (2) explains a situation where the speaker expected Maria to invite John but to the speaker's surprise, Maria invited Bill as well. Following D'Avis (2002) and Chernilovskaya (2010), (2) will then have the denotation outlined in (3).

(2) *Wen Maria eingeladen hat!*
whom Maria invited has!
'Whom has Maria invited!' (Chernilovskaya 2010:2)

(3) $[\![\text{wh-clause}]\!](w) = \{p : \exists x[p = \lambda w'.[\![\text{invited}]\!](w')(m)(x) \wedge [\![\text{invited}]\!](w)(m)(x))]\}$
$= \{\lambda w'.[\![\text{invited}]\!](w')(j)(m), \lambda w'.[\![\text{invited}]\!](w')(b)(m)\}$ (*ibid.*)

Applying Heim's notion of answerhood to (3), the corresponding *answer*$_1$ and *answer*$_2$ in (4)-a and (4)-b are gotten, respectively. The *answer*$_1$ denotes the weak exhaustive answer, and *answer*$_2$ is the strong exhaustive answer.

(4) a. $[\![\textit{answer}_1]\!](w) = \bigcap[\![\text{wh-clause}]\!](w)$
$= \{w' : [\![\text{invited}]\!](w')(j)(m) \wedge [\![\text{invited}]\!](w')(b)(m)\}$
b. $[\![\textit{answer}_2]\!](w) = \{w' : \textit{answer}_1(w') = \textit{answer}_1(w)\}$
$= \{w' : [\![\text{invited}]\!](w')(j)(m) \wedge [\![\text{invited}]\!](w')(b)(m) \wedge \forall x \notin \{j, m\} \neg [\![\text{invited}]\!](w')(x)(m)\}$
(*ibid.*)

Following the felicity conditions, (2) is considered to be an exclamative because the utterer did not expect Maria to invite Bill, and the speaker knows *answer*$_2$ *i.e.*, who exactly was invited by Maria.

Although D'Avis's approach perfectly captures the exclamatives that are inherently non-degree in nature, it cannot comply with the degree interpretation of exclamatives (5).

(5) *How tall John is!* (*ibid.*)

(5) is uttered in a situation where John appears to be taller than what the speaker expected him to be. Here Chernilovskaya (2010) extended D'Avis's analysis on wh-exclamatives, and accommodated the degree or gradable instances. She proposed that the presence of the gradable predicate *tall*[1] in (5) induces a downward monotone relation such that, $\forall w, x, d, d'(d' < d \wedge [\![\text{tall}]\!](w)(d)(x) \rightarrow [\![\text{tall}]\!](w)(d')(x))$. Therefore, (5) can be felicitously uttered in a context where the speaker, for instance, did not expect John to be not more than 5 feet tall but to their surprise, John appears to be 6 feet tall. Building up *answer*$_1$ in this context will include a set of worlds where John is at least 6 feet tall. Therefore, the speaker's expectation now entails the $\neg$*answer*$_1(w)$, and the speaker knows *answer*$_2(w)$, *i.e.*, John is exactly 6 feet tall.

This paper deals with an expectation to this study where exclamatives are used as compliments (cf. Zanuttini & Portner 2003) *i.e.*, cases where the expectation of the speaker is not

[1] Chernilovskaya's analysis also works for absolute gradable adjectives (like *dry* in '*How dry the cake was!*' (Kennedy 2007)). She suggested to reinterpret the adjective *dry* as a relative adjective.

negated. For example, in a scenario where the speaker expected a house to be as nice as it is, uttering '*what a nice house!*' will not negate the speaker's expectation. To address the issue the concept of two types of *Expectation Set* is introduced (cf. Rett & Murray 2013; Badan & Cheng 2015; Balusu 2019) in §4.

2.1.2. The Widening Approach

In recent times, the most influential theory used in analyzing wh-exclamatives is Zanuttini & Portner's (2003) approach. According to Zanuttini & Portner (2003), wh-exclamatives are inherently scalar and they express surprise. Their view suggests that the wh-operator generates a set of alternatives (alike questions), and they are factive in nature. The central notion of their theory is the concept of *widening*.[2] They claim that widening captures the essence of 'surprise', 'noteworthiness' or 'unexpectedness' of an exclamative proposition. Widening is not present in a physical form in the syntax of exclamatives, rather it is obtained via pragmatic reasoning. Every clause type must be defined in terms of two forces *viz.* sentential force which can be defined in terms of the convention associated with a sentence's form (Chierchia & McConnell-Ginet 1990), and illocutionary force which can be defined in terms of the speaker's intention with an utterance (Searle 1969). The illocutionary force of exclamatives is that of exclaiming, whereas the sentential force of exclamatives is claimed to be widening (Zanuttini & Portner 2003). Although any clause type may be associated with the illocutionary force of exclaiming, the sentential force of widening, however, is exclusively reserved for exclamatives. They assert that exclamatives widen the domain of quantification denoted by the wh-operator.

The Zanuttini & Portner (2003) outlook on wh-exclamatives also carries on with the Karttunen (1977) denotation for wh-questions, *i.e.*, set of true answers, though they keep the option open for using other proposition-set denotations such as, Hamblin's (1973) and Groenendijk & Stokhof's (1984) denotations for questions. With the help of the following example in Paduan (6), let us briefly consider the framework of widening.

(6) *che roba che l magna!*
what stuff that he eats
'The things he eats!' (Zanuttini & Portner 2003:12)

(6) expresses the speaker's surprise in a context where, say, John eats very spicy peppers. In such a context, the initial domain D_1 denoted by the wh-operator indicates a set of spicy peppers (like poblanos, serranos, jalapeños). The entities of this set are ordered in an increasing scale of spiciness. Now, $R_{widening}$ widens D_1 to a new widened set D_2 such that, D_2 additionally includes a very spicy pepper (say, habanero) that John eats. Recall, the widened D_2 set also includes the elements of D_1 in it, implying that eating the peppers in D_1 is more likely than eating the pepper in D_2. For example 'he eats jalapeños' is more likely ($\prec_{likelihood}$) than 'he eats habaneros'. Therefore with respect to (6), it is seen that the propositions in $[\![S]\!]_{w,D_2,\prec} - [\![S]\!]_{w,D_1,\prec}$ are ordered on a *likelihood* scale.[3] Zanuttini & Portner (2003) assert that this domain widening is one of the

[2] Zanuttini & Portner (2003) follow Sadock & Zwicky's (1985) idea in defining the concept of widening. Sadock & Zwicky (1985) interpret a clause type as a combination of grammatical form and conversational use. Zanuttini & Portner argue that the latter is represented in the concept of widening. This concept is somewhat equivalent to the idea of a force in a proposition or sentence.

[3] Similarly, the propositions are ordered in a degree scale when it is a gradable or degree context like (5).

main meaning components of exclamatives, and is only possible when an element is added in a way that is extreme on the relative scale. Let us now define the concept of widening.

(7) *Widening* = For any clause *S* containing $R_{widening}$, widens the initial domain of quantification for $R_{widening}$, D_1, to a new domain D_2, such that:

a. $[\![S]\!]_{w,D_2,\prec} - [\![S]\!]_{w,D_1,\prec} \neq \emptyset$

b. $\forall x \forall y[(x \in D_1 \ \& \ y \in (D_2 - D_1)) \rightarrow x \prec y]$ (Zanuttini & Portner 2003:15)

Another important component of exclamatives is that they are factive. In the context of (6), 'John eats habanero' is a factive presupposition entailed by the notion of *Common Ground* (Stalnaker 1978). Zanuttini & Portner (2003) define factivity in terms of the following:

(8) *Factivity* = For any clause *S* containing $R_{factivity}$ in addition to $R_{widening}$, every $p \in [\![S]\!]_{w,D_2,\prec} - [\![S]\!]_{w,D_1,\prec}$ is presupposed to be true. (*ibid.*:17)

Although the Zanuttini & Portner's (2003) outlook on wh-exclamatives looks very compact, it faces certain limitations in analyzing some data in Bangla. I will discuss this in §3.2 and the modifications required for uniformly analyzing Bangla wh-exclamative structures are defined in §4. Before doing so, I will briefly explain the other influential approach *i.e.*, the degree based approach for analyzing exclamatives.

2.2. The Degree Approach

The degree approach claims that exclamatives denote a degree higher than the contextually determined standard. Following Austin's (1962) speech act theory, Rett claims that exclamatives are performative speech acts, and she formalizes the notion of DEGREE-E-FORCE as the illocutionary force operator of an exclamative clause. The foundation of the DEGREE-E-FORCE is explained in (9).

(9) DEGREE E-FORCE($\mathscr{D}_{<d,<s,t>>}$) is expressively correct in context *C* iff $\mathscr{D}$ is salient in *C* and $\exists d, d{>}s$ [the speaker in *C* is surprised that $\lambda w.\mathscr{D}(d)(w)$] (Rett 2008a,b, 2011)

(9) states that the domain of an exclamative expression is a degree. An exclamative is expressively correct if the DEGREE E-FORCE holds in a context *C*, of a degree (d) that exceeds the standard s, and the speaker expresses surprise about it.

Apart from formalizing the concept of DEGREE-E-FORCE, Rett proposes two semantic restrictions *viz. The Degree Restriction* and *The Evaluativity Restriction* on exclamatives.The Degree Restriction on exclamatives strongly rejects the view that exclamatives can have non-degree readings and asserts that exclamatives will always get a degree reading. On the other side, The Evaluativity Restriction on exclamatives suggests that exclamatives are evaluative and hence, it will refer to a degree that surpasses a standard. Let us look at one example from Rett (2008a:604), to understand the concept a bit more.

(10) *(My,) what languages Mimi Speaks!*

As per Rett (2008a), the English utterance in (10) has an *amount* reading in a scenario where Mimi speaks, say, 11 languages and the speaker did not expect Mimi to speak so many lan-

guages. Although (10) lacks an overt degree morphology in terms of denoting the number, Rett asserts that it still has a degree interpretation based on the context. To reason it semantically, she follows Cresswell's (1976) work and proposes a null QUANTITY operator, as in (11). This QUANTITY operator gives *what*-exclamatives in English a degree reading. Based on this, (10) will have the following semantic denotation in (12).

(11) $[\![\text{QUANTITY}]\!] = \lambda P \lambda d \lambda Q \exists X[P(X) \wedge Q(X) \wedge \mu(X) = d]$ where,
QUANTITY associates plural individuals with degree arguments corresponding to their quantity and μ measures the size of a plural individual X. (Rett 2008a:604)

(12) $\exists X$[languages$(X) \wedge$ Speaks(Mimi, $X) \wedge |X| = d > s$] where s denotes standard.

(10) can also get a gradable interpretation where the speaker expected Mimi to speak only English as she has been born and brought up in England. But, surprisingly the speaker learns that Mimi can speak Urdu and/or Swahili. Rett forms her arguments in saying that the languages Mimi speaks are exotic to a degree d such that it exceeds the standard scale. In arguing for the lack of the overt gradable morphology in (10), Rett deploys a covert gradable predicate $\mathbb{P}$ that gets its value from the context.

Apart from the above instances of English *what*-exclamatives, Rett also explains the instances of English *how*-exclamative structures. It is known that 'how' in English can range both over manners as well as evaluatives. Rett (2008a) strictly proposes that 'how' in exclamative use will only range over evaluatives, thereby giving a degree reading. Therefore, a sentence like (13) can only be uttered to describe a situation where Buck rode his horse beautifully, dangerously *etc.*, but never in situations where Buck rode his horse bare-backed. As for the lack of a gradable adverb in (13), Rett again uses the same mechanism; she postulates a null gradable adverb *viz.* ADV to reinstate the degree reading on *how*-exclamative structures.

(13) *How Buck rode his horse!* (Rett 2008a:607)

However, this approach discards the idea of exclamatives getting an *individual reading*; Rett rejects the idea that (10) can also be uttered in a context where the speaker is surprised about the very fact (or event) that Mimi can speak a certain language (say, French).

Although Rett's approach seizes the instances of English exclamative structure perfectly, it fails to fully capture the non-degree instances of exclamatives in other languages including Bangla. The next section reviews the types of exclamative structures available across languages. In doing so, we will see that Rett's understanding on exclamatives are challenged by such diverse data on wh-exclamatives available cross-linguistically.

2.3. The type 1/2 distinction

Nouwen & Chernilovskaya's (2015) analysis sheds light on the types of exclamative readings found cross-linguistically. English wh-exclamative structures are restricted to *what*/*what-a* and *how* constructions, languages from diverse language families (*e.g.* German, Russian, Hungarian, Dutch, Turkish (Nouwen & Chernilovskaya 2015); Telugu, Kannada (Balusu 2019)) use wh-words like *who*, *which*, *whom etc.* in their exclamative structures. Exclamatives with these wh-words show non-scalarity in their nature, and are unable to receive a degree interpretation. Some of these languages also allow the individual reading of exclamative structures. Consider

the following English exclamative in (14).

(14) *What a book John wrote!* (Nouwen & Chernilovskaya 2015:6)

(14) can be uttered in a context where John wrote a beautiful or long book and the speaker is surprised about it. Nouwen & Chernilovskaya (2015) call this category of exclamatives *i*-level exclamatives. Exclamatives that express surprise at the individual singled out by the wh-phrase are termed *Type 1* (or *i*-level) exclamatives. However, in languages like Bangla, Telugu *etc.* (14) can also be uttered in a situation where the speaker is surprised at the very event that John wrote a book. In this context, the speaker is not surprised at how good or bad the book is, rather the surprise is at the instance that John wrote a book. This category of exclamatives are what Nouwen & Chernilovskaya (2015) have termed *e*-level exclamatives. Exclamatives that express surprise at the event that the wh-referent takes part in are termed *Type 2* (or *e*-level) exclamatives. As pointed out in the previous section, Rett's analysis on exclamatives rules out the possibility of *Type 2* or *individual readings* of exclamatives.

In the following section we will see that Bangla has both *Type 1* and *Type 2* instances in its exclamative structures. We will also introduce the modifications to the 'widening' account required to analyze certain Bangla data. While analyzing the Bangla data I will also provide instances where the degree-approach is inadequate in capturing the exclamative readings.

3. An outline of Bangla k-exclamatives

Unlike English, Bangla is flexible in using wh-words like *where*, *who*, *whom*, the manner interpretations of *how*[4] *etc.* in wh-exclamatives. Therefore, both type 1 (degree/gradable) and type 2 (non-degree/non-gradable) readings are available in Bangla wh-exclamative clauses. An important point to mention here is that all wh-words in Bangla start with a k-morpheme, and hence, while referring Bangla wh-exclamatives, I will resort to the term k-exclamatives hereafter.

3.1. Type 1 k-exclamatives

The type 1 or gradable reading of k-exclamatives are achieved in contexts where *ki*[5] 'what' and *koto* 'how' are being used. Let us define some of these contexts.

The utterances in (15) are made under a situation where the speaker did not expect Rishi to be tall, but to their surprise Rishi surpasses the average scale of tallness. A point to notice here is that one can use both the modifier *ki* 'what' and the modifier *koto* 'how' in the same context without changing the meaning of the proposition. In (15), both *ki* and *koto* have a scalar

[4] *How* ranges over manner, evaluation and gradable degrees. Consider the examples below.

a. 'How did Buck ride his horse?
Manner: bare-backed, saddled
Evaluation: beautifully, dangerously, clumsily (Rett 2008a:607)

b. **Gradable degrees:** 'How short you are!' (*ibid.*)

[5] Bangla shows two types of *ki*-s 'what' in its exclamative structures (See §3.3 for a detailed discussion). The use of *ki* in type 1 context is acting like a modifier. Hence, we refer to it as the 'modifier *ki*'. Apart from *ki*, the regular modifier *koto* 'how' is also used in Bangla type 1 exclamatives.

interpretation and hence are likely to get a gradable or type 1 denotation.

(15) *Context: Rishi is more than 6ft. tall, and the speaker is surprised about Rishi's height.*
   a. *Rishi ki lomba!*
      Rishi what tall
      'How tall Rishi is!'
   b. *Rishi koto lomba!*
      Rishi how tall
      'How tall Rishi is!'

However, this is not always the case. Consider the sentence in (16). (16) is uttered in a context where Rishi runs really fast and the speaker is surprised at the speed.

(16) *Rishi ki/#koto douray!*
   Rishi what/how run.PRS.3
   'How fast Rishi runs!'

Although *ki* reads as the scalar formation 'how' in (16), the default lexical form of 'how' *i.e.*, *koto* cannot communicate the same meaning in (16). To convey the above reading, *koto* requires the presence of an overt gradable adverb *jore* 'fast' to modify it, as in (17). One can also use *jore* with *ki*, also seen in (17), and it will express the same meaning as (16).

(17) *Rishi ki/koto jore douray!*
   Rishi what/how fast run.PRS.3
   'How fast Rishi runs!'

However in a context where Rishi runs for 6 kilometers daily, and the speaker expresses surprise about the amount of distance Rishi covers while running, one can use both *ki* and *koto* (18). Therefore, it is evident that *ki* is flexible in all gradable contexts.

(18) *Rishi ki/koto douray!*
   Rishi what/how run.PRS.3
   'How much distance Rishi covers by running!'

Both *ki* and *koto* receive a gradable or type 1 reading in the above contexts, however in (16) *koto* is inappropriate. I argue that when there is no overt gradable predicate present in the construction, *koto* by default becomes the sentential modifier and an amount reading of exclamatives surfaces. As opposed to that, the modifier *ki* needs to modify an overt or a covert gradable predicate. In (16) and (18), it is covert, while in (17) the gradable predicate is overtly realized. On the other hand, as the context in (18) indicates an amount reading (of running) it felicitously allows the use of *koto* in the structure. However, in (16) the use of *koto* is inappropriate because the sense of what the overt gradable predicate *fast* conveys cannot be covertly supplied.

3.2. Type 2 k-exclamatives

Type 2 k-exclamative structures are diverse. Bangla type 2 exclamatives include k-words like *ki* 'what', *kibhabe/kemon kore* the manner interpretation of 'how', *kothay* 'where', *kake* 'whom (sg.)', *kader* 'whom (pl.)', *etc.* Let us now define the contexts under which these k-words take

type 2 or non-gradable exclamative readings.

The utterer of (19) expresses surprise over an event where Rishi is eating wasp crackers. Wasp crackers are a quite popular delicacy in many places in the world, but suppose that the speaker is not aware of this, and hence expresses surprise. It should be noted that the speaker here is not surprised at the wh-referent, *i.e.*, wasp crackers, rather they are amazed at the whole event of Rishi eating it. Similarly, in a context where running backwards is not a regular thing, the speaker is surprised to see that Rishi is running like that. Therefore, by uttering the proposition in (20) the speaker expresses surprise at the whole event of Rishi running backwards.

(19) *Rishi ki khacche!*
Rishi what eat.PROG.PRS.3
'What Rishi is eating!'

(20) *Rishi kibhabe/ kemon kore douracche!*
Rishi how-manner/ how do.PFV run.PROG.PRS.3
'How Rishi is running!'

Rett's degree approach rejects the possibility of a manner interpretation of 'how' in exclamative contexts. Since 'how-manner' does not receive a degree interpretation, Rett's degree restriction will block sentences like (20) from getting an exclamative reading. Apart from this, in the following data I show k-words such as *kothay* 'where' (21), *kake* 'whom (sg.)' (22) *etc.* that form well-structured exclamative sentences in non-scalar contexts in Bangla.

(21) *Rishi kothay gache!*
Rishi where go.PRF.PRS.3
'*Where Rishi has gone!'

(22) *Rishi kake biye koreche!*
Rishi whom marry do.PRF.PRS.3
'*Whom Rishi married!'

(21) is uttered in a context where the speaker did not expect Rishi to go anywhere, since Rishi suffers from altitude sickness, but to the speaker's surprise, Rishi went to the Himalayan foothills. As for (22), it can be uttered in a context to express surprise where the speaker expected Rishi to marry Kavya (because Rishi loved Kavya), but he is seen to have married someone else (say, Mira). Although, one might argue that some underlying degree attributes are there in (21) and (22) such as Himalayan foothills being an usually rough place, or the person Rishi married being tall, or short. However, this is not the case in Bangla type 2 readings. All the above type 2 exclamatives in Bangla receive readings where the speaker expresses surprise about the whole events, and not about the wh-referents.

As Rett's degree approach does not consider anything to be exclamatives that does not have a degree component in its domain, it certainly cannot work uniformly in a language like Bangla where non-degree or type 2 exclamative readings are quite regular, as in (21) and (22) where both the wh-words are themselves non-scalar in nature and therefore do not have any underlying degree component. On the other hand, the existing approach of Zanuttini & Portner (2003) is also incompatible with data like (22). As pointed out by Balusu (2019), Zanuttini & Portner's (2003) widening approach is based on Karttunen's set of true answer(s). Therefore, for an example like (22), the initial domain D_1 will already include the true answer (*i.e.*, Mira). Hence, with respect to (22) the widened D_2 set cannot include the true answer anymore (considering

the scenario to take place in a monogamous society). Therefore, it violets the first condition of $R_{widening}$. The second problem of their approach is in building the D_1 from the wh-referents. Recall that in (6) the initial domain or D_1 is formed on a scale of spiciness. However, in contexts like (21), (22) the use of k-words are non-scalar in nature[6] (since there are no underlying degree attributes attached to them). Therefore, forming the initial domain D_1 in such contexts will be tricky, as there is no scale to order the alternatives in the domain. The domain of widening, thus, needs to be changed.

With the foundation of data laid out above for Bangla k-exclamatives, it is clearly evident that direct application of the widening account (Zanuttini & Portner 2003) to analyze Bangla k-exclamatives is not possible, and certain modifications are required. Before I propose a formal analysis of k-exclamatives, in the next section I will explain why Bangla has two *ki*-exclamative structures that are used in two very different circumstances.

3.3. Dissociative identities of ***ki*** *in k-exclamatives*

As we saw in §3.1 and §3.2 there are two types of *ki* 'what' evident in Bangla k-exclamatives (see also Guha & Bhattacharya 2020). The type 1 *ki*[7] exclusively occurs in exclamatives, and not in questions (23), whereas the type 2 *ki*, along with all other k-words (including type 1 *koto* 'how') can occur both in questions (24)-(28) as well as in exclamative clauses (shown above).

(23) **Rishi ki lomba?*
Rishi what tall
Int: 'How tall is Rishi?'

(24) *Rishi koto lomba?*
Rishi how tall
'How tall is Rishi?'

(25) *Rishi ki khacche?*
Rishi what eat.PROG.PRS.3
'What is Rishi eating?'

(26) *Rishi kibhabe/ kemon kore*
Rishi how-manner/ how do.PFV
douracche?
run.PROG.PRS.3
'How is Rishi is running?'

(27) *Rishi kothay gache?*
Rishi where go.PRF.PRS.3
'Where has Rishi gone?'

(28) *Rishi kake biye koreche?*
Rishi whom marry do.PRF.PRS.3
'Whom did Rishi marry?'

While the type 1 *ki* acts like a modifier (cf. §3.1), leading to a degree reading, type 2 *ki* in (19) acts like a thematic one.[8] In (19), the type 2 *ki* behaves as an object argument of the transitive

[6] The data in (19) and (20) are uttered in a scalar context where one can form the likelihood scale for D_1 based on exotic food items (for (19)) or the likely way of walking (for (20)). Even though, following Zanuttini & Portner (2003), D_1 for (19) can be formed by ascribing a degree denotation in terms of exoticism on the wh-referent, the D_1 for (20) cannot be formed along the same lines because, in case of (20) the scale does not concern the wh-phrase itself, but instead the set of eventualities. For example, if a car moves in a backward direction (for parking purposes) it is not surprising to anyone, but it will definitely surprise someone if a person runs backward since it is not usual to run in a backward direction. This is the reason why Balusu (2019) proposed to deploy widening over the set of propositions, instead of the set of alternatives picked up by wh-phrases. This point will be more clear when discussing the notion of Expectation Set in §4.

[7] Here, I am not referring to the Bangla polar question particle *ki*. I am only mentioning the instances of thematic *ki* and modifier *ki*. I show that the former occurs both in questions and exclamatives, while the latter does not go with questions.

[8] Here I am not claiming that the thematic *ki* cannot have any underlying degree attributes ever. For example,

verb *khacche* 'eating'. An interesting fact to be noted is that the following sentence without any context mentioned is ambiguous:

(29) *Rishi ki khacche!*
Rishi what eat.PROG.PRS.3S

(29) can be interpreted quite differently in different contexts. In a context where Rishi is eating more than what the utterer expected Rishi to eat, it can refer to a quantity/amount reading (type 1 reading). I argue that in such cases *ki* modifies a null gradable predicate, and has an underlying structure like the following: [*ki* $\varnothing_{gr}$]. Again in another context like (19), it can convey the amazement at Rishi eating wasp crackers (type 2 reading). This type of ambiguity with *ki*, I argue, arises when the verb is a transitive one like *eat*, *read*, *etc.* When the main verb is an intransitive one, no ambiguity is expected to surface because *ki* there can never gain a thematic position. This is why sentences like *Rishi ki douray!* can never get a type 2 reading. Such sentences always have to denote a degree or amount/quantity reading (see (16), (18)).

Therefore, it is evident that Bangla has two types of *ki*. It is also noteworthy that Bangla has two k-modifiers. The regular modifier *koto* can occur both in questions and in exclamatives, whereas the modifier *ki* can only occur in exclamative clauses. Therefore, I resort to the term *exclamatory modifier* while denoting the type 1 *ki*. The featural distinction shown between these two types of modifiers shows how they are stored in our mental lexicon. While both are k-words and therefore have a [*u*Q] feature, the exclamatory *ki* additionally carries a [*u*Excl] feature because it uniquely occurs in exclamative clauses. Table 1 captures the core idea of this section.

***k*-modifiers**	**Clause type**	
	?	**!**
ki 'what'	✗	✓
koto 'how'	✓	✓

Table 1. Two types of Bangla *k*-modifiers: Exclamatory & Regular

With these observations, I now proceed to the compositional analysis.

4. Semantic profile of Bangla k-exclamatives

As mentioned in §3.2, some modifications are needed in the widening account to analyze Bangla k-exclamatives. I follow Balusu's (2019) alternations in analyzing them. To speak on the first problem in domain widening, he suggested to follow Hamblin's (1973) alternatives *i.e.*, questions denote a set of possible answers (instead of Karttunen's (1977) alternatives). Doing so,

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the following can be uttered in a context where the speaker was mesmerized by a beautiful sunrise:
i. (*Uff,*) *ki dekhlam!*
(Wow), what saw.PST.1S
'(Wow), what I saw!'
I am only stating the possibility that thematic *ki* can be totally non-scalar in nature, while the modifier *ki* is exclusively type 1.

widening from D_1 to D_2 will work for data like (23). Now, D_1 will only contain possible answers, and the widened domain D_2 will include the true surprising answer. Working on the second problem, Balusu (2019) suggested to execute $R_{widening}$ over the set of propositions instead of the set of wh-alternatives. This set of propositions is called the *Expectation Set* (ES) (Rett 2011; Rett & Murray 2013) where the speaker's expectations are encoded as sets of possible worlds. Now the ordering will occur between propositions, and not on the alternatives generated by the wh-operator. Therefore, in a context like (22) now the ordering in D_1 and in D_2 can take place as in, 'Rishi married Mira' is less likely than 'Rishi married Kavya'. For type 1 exclamatives, the propositions are ordered in a degree scale, and for type 2 exclamatives, they are ordered in a likelihood scale. These orderings are triggered by the context (similar to the analysis of 'even'). With these modifications in hand, let us re-explain the concept of $R_{widening}$ once more (Balusu 2019:pp. 121).

(30) For any clause *S* containing an exclamative operator, widen the initial domain ES to a new domain D_2 such that:

a. $[\![S]\!]_{w,D_2 \prec_{\text{likelihood/degree}}} - [\![S]\!]_{w,D_{\text{ES}} \prec_{\text{likelihood/degree}}} \neq 0$

b. $\forall x \forall y[(x \in D_{\text{ES}} \,\&\, y \in (D_2 - D_{\text{ES}})) \rightarrow x \prec_{\text{likelihood/degree}} y]$ and;

c. $\exists p \in [\![S]\!]_{w,D_2 \prec_{\text{likelihood/degree}}} - [\![S]\!]_{w,D_{\text{ES}} \prec_{\text{likelihood/degree}}}$ is presupposed to be true.

The concept of $\text{ES}_{\text{SPKR/NORM}}$ suggests that not every exclamative expresses surprise (see Badan & Cheng (2015) for non-surprising exclamatives in Mandarin). An expression like the one in (31) represents that the curry is on a higher scale of hotness but does not exceed the speaker's expectations (may be because in a restaurant it is supposed to be served hot). In such cases where the expression is not denoting a surprise, the ES is based on a normative set *i.e.*, ES_{NORM}.

(31) *It is not surprising, how very hot the curry is!* (Balusu 2019:122)

However, the context under which (19) is uttered expresses surprise from the speaker *i.e.*, (19) is uttered in a context where Rishi eating wasp crackers is surprising to the speaker, because they are not aware that eating wasp crackers is a common delicacy in Omachi, Japan. Therefore, in (19) the scale on the ES is based on the speaker *i.e.*, ES_{SPKR}.

4.1. Analyzing type 1 readings in k-exclamatives

Before heading off towards the formal analysis of type 1 k-exclamatives, let us repeat (15), for the reader's convenience.

(15) *Context: Rishi is more than 6ft. tall, and the speaker is surprised about Rishi's height.*

a. *Rishi ki lomba!*
Rishi what tall
'How tall Rishi is!'

b. *Rishi koto lomba!*
Rishi how tall
'How tall Rishi is!'

(15)-a and (15)-b can be uttered in a context where the speaker expresses surprise at Rishi's height, and both *ki lomba* 'what tall (lit.)' and *koto lomba* 'how tall' convey the same reading

in the exclamative context. The only distinguishing feature between them is that the former is expressively correct only in an exclamative sense, whereas the latter can be used in asking a question about Rishi's height. In this context, however, the focus is only on the exclamative reading.

To analyze the type 1 readings of (15), let us assume a scale of tallness shown below in Figure 1. The exclamatory *ki* will denote a set of degrees that are already placed high on a contextually relevant scale. In contrast, the regular modifier *koto* 'how' will denote a set of degrees that are in the normal scale of tallness, thereby capturing the set of alternates for its interrogative counterpart. Based on the scale drawn in figure 1, let us define the set for *ki lomba* 'what tall' and *koto lomba* 'how tall' in (32) and (33), respectively.

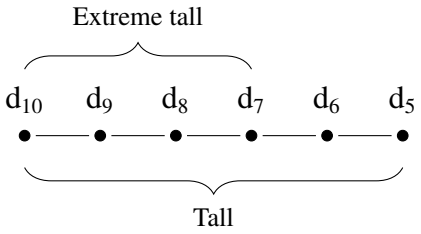


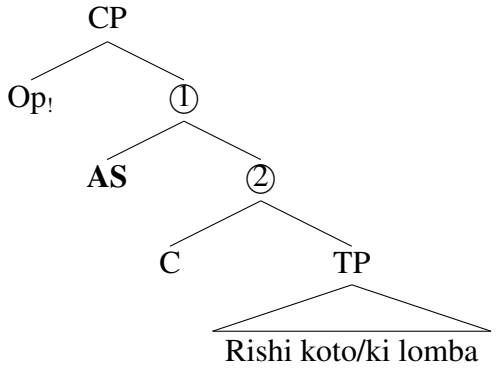
Figure 1. Scale of tallness

(32) $[\![$*ki lomba*$]\!]^f = \{d : d$ is a degree of tallness $\wedge\ d > s\}$ where s denotes the maximum expected standard.; $[\![$*ki lomba*$]\!]^o =$ undefined

(33) $[\![$*koto lomba*$]\!]^f = \{d : d$ is a normal degree of tallness$\}$; $[\![$*koto lomba*$]\!]^o =$ undefined

In Figure 1, d_5 to d_{10} represent degrees of tallness, and d_7 to d_{10} refer to the extreme degrees. With reference to this scale, (32) will therefore denote the set, $\{d_7$-tall, d_8-tall, d_9-tall, d_{10}-tall$\}$ and (33), $\{d_5$-tall, d_6-tall$\}$. Now for the compositional part, I propose the following compositional structure for type 1 k-exclamatives.

(34)



Since Bangla is a wh-*in situ* language, I follow a Hamblin-style semantics for Bangla k-exclamatives, and therefore no movement of the wh-clause is required. The **AS** operator[9](Kotek 2018) introduced on the clausal spine is responsible for the question semantics. The semantics of the ALTSHIFT *operator* is given below.

[9] I extend the Kotek-style analysis for Bangla wh-exclamatives to accommodate the pair-list readings available for multiple wh-exclamatives in Bangla.

(35) a. $[\![\text{ALTSHIFT } \alpha_\sigma]\!]^o = [\![\alpha]\!]^f$
b. $[\![\text{ALTSHIFT } \alpha_\sigma]\!]^f = \{[\![\text{ALTSHIFT}\alpha_\sigma]\!]^o\}$
$(\sigma \in \{\langle st,t\rangle, \langle\langle st,t\rangle,t\rangle, ...\})$ (Kotek 2018:32)

The complementizer C remains semantically vacuous in Kotek's system, and (34) supports the claim that wh-exclamatives have a question semantics. My question-based analysis of Bangla k-exclamatives is supported cross-linguistically too. The following data from Meeteilon (Tibeto-Burman) shows that the wh-exclamatives in that language bear the question particle *-no*:

(36) *Kari isei ta-ri-no!*
What song hear-PROG-Q
'What a song you are listening to!' (Bhattacharya et al. 2020)

I argue that this question particle *-no* is the lexical realization of Kotek's (2018) **AS** operator. This is a strong foothold to claim that not only in Bangla, but in languages from different families wh-exclamatives can be analyzed from the viewpoint of a question-based semantics that I have argued for in this paper.

Now, we get back to our Bangla analysis. The [*u*Excl] feature on *ki* forces the exclamative operator $\text{Op}_!$ to sit on top.[10] This $\text{Op}_!$ takes ① as its complement, giving the semantics of exclamatives. Let us now look at the step-by-step semantic compositions of (15)-a.

(37) a.$[\![\text{VP}]\!]^f = \{\lambda x \lambda w.x \text{ is } d\text{-tall in } w : d \in (32)\}$ (via PFA)
b.$[\![\text{TP}]\!]^f = \{\lambda w.\text{Rishi is } d\text{-tall in } w : d \in (32)\}$ (via PFA)
c.$[\![\textbf{AS } ②]\!]^o = [\![②]\!]^f$; $[\![\textbf{AS } ②]\!]^f = \{[\![\textbf{AS } ②]\!]^o\}$

As the C is semantically vacuous the interpretation of the node TP remains the same until node ②. The **AS** operator takes the focus value and returns the ordinary value of it as a result in ①. The $\text{Op}_!$ now acts on the ordinary value of ①. Before I define the semantics of $\text{Op}_!$, the answerhood operator which will extract the true informative answer needs an introduction. As I am following Kotek (2018), I will adopt the *recursive generalized* ANS (38) in forming the semantics of $\text{OP}_!$.

(38) *A recursive definition for generalized* ANS
a. $[\![\text{ANS}]\!](P_{\langle st,t\rangle}) = \lambda w.\text{Max}_{\text{inf}}(P)(w)$
where $\text{Max}_{\text{inf}}(P)(w) = \iota p \in P$, such that $w \in p$ and $\forall q \in P(w \in q \rightarrow p \subseteq q)$
b. $[\![\text{ANS}]\!](K_{\langle\sigma,t\rangle}) = \lambda w. \bigcap P_\sigma \in K([\![\text{ANS}]\!](P)(w))$
[i.e., $\lambda w.\lambda w'.\forall P_\sigma \in K([\![\text{ANS}]\!](P)(w)(w'))$]
$(\sigma \in \{\langle st,t\rangle, \langle\langle st,t\rangle,t\rangle, ...\})$ (Kotek 2018:38)

However, the Max_{inf} operator in (38) may overgeneralize in certain contexts. Consider the following:

(39) *Context: Maya suffers from altitude sickness, therefore she never visits any hilly region. In a recent vacation, Maya took a trip to the Maldives, the Himalayan region and the Trans-Himalayan region. The speaker is expressing her surprise to one of her friends about Maya visiting those mountain regions, in spite of having altitude sickness.*

[10] In case of *koto*, the $\text{Op}_!$ is optional, as *koto* can occur both in questions as well as in exclamatives.

Maldives-er kotha char, altitude sickness thaka shotteo Maya kothay kothay
Maldives.GEN talk leave, altitude sickness being in spite of Maya where where
gache!
go.PRF.PRS.3

'I am not concerned about Maya's Maldives trip. But, I am surprised at her visiting those high altitude zones despite having altitude sickness.'

(39) is a construction that is perfectly okay in Bangla, and it has a type 2 reading as can be attested.[11] In (39), the speaker expresses surprise about the fact that despite suffering from altitude sickness Maya visited two hilly regions *i.e.,* the Trans-Himalayan and the Himalayan region. Following the analysis, the maximally true informative answer here will be 'Maya visited the Maldives+the Trans-Himalayan regions+The Himalayan region'.[12] However, this will be a wrong prediction, since the speaker does not express surprise about Maya visiting the Maldives. The speaker is surprised that Maya visited the Trans-Himalayan and Himalayan regions, and therefore, the true informative answer at which the speaker is surprised in this context would be 'Maya visited the Trans-Himalayan region+the Himalayan region'. To restrict the over-generalization there is a need to establish a pragmatic constraint. Here I follow Grice's (1975) maxim of quantity which suggests not to contribute more information than is needed in a context. I argue that the over-generating nature of the Max_{inf} operator must be curbed by some restriction on informativity relative to the need of the current discourse topic. In other words, the idea is to extract the maximally true informative answer which does not contain any surplus information relative to the requirement of the current discourse topic. I follow Roberts (2011) in viewing discourse topic as Question Under Discussion (QUD). QUD is a semantic question corresponding to the current discourse topic (Roberts 1996/2012; Simons et al. 2010). QUDs can be overt questions or they can remain implicit in discourse. A QUD can be addressed by complete or partial answers or by another question which entails the complete or partial answer to it. I propose that while dealing with exclamative clauses, there will always be an implicit QUD, *i.e.*, QUD_{Excl} which is defined as the following:

(40) QUD_{Excl}: What surpasses the norm or speaker's expectation?

I argue that only the maximally true informative answer will be picked, which is not more informative than is needed for answering the QUD_{Excl}. Hence, a modification with a pragmatic solution is required in the Max_{inf} which I propose as the following:

(41) $$\text{Max}_{\text{inf}^{\text{QUD}_{\text{Excl}}}}(Q)(w) = \begin{cases} \iota p[p(w) = 1 \wedge p \text{ is not more informative than is needed for answering } \text{QUD}_{\text{Excl}} \wedge \forall q \in Q\,[[q(w) = 1 \wedge q \leq_{\text{inf}} p \text{ for answering the } \text{QUD}_{\text{Excl}}] \rightarrow p \subseteq q]] & \text{if there is at least one } p \in Q \text{ informative for answering the } \text{QUD}_{\text{Excl}} \\ W & \text{otherwise} \end{cases}$$

[11] Reduplication of the wh-words in k-exclamatives is a common phenomenon in Bangla and, given the domain is set of entities, it refers to plurality.

[12] Here the *sum* operation (+) (after Link 2002) is used to denote plurality.

Now this pragmatically restricted answerhood operator will pick the answer 'Maya visited the Trans-Himalayan region+the Himalayan region' requirement of the current discourse topic in (39) because the information about Maya's visiting the Maldives is not at all needed for the current discourse requirement, though the information is true. Thus, the answer 'Maya visited Maldives+Trans-Himalayan region+the Himalayan region' gets ruled out since it is more informative than is needed for addressing the QUD_{Excl} in question. To answer the QUD_{Excl}, the two pieces of information about Maya's visiting the Trans-Himalayan region or the Himalayan region are obviously less informative than the information about her visiting both the regions. The bigger piece of information will undoubtedly entail those two smaller information pieces.

Now, I modify the generalized ANS relative to QUD_{Excl}, in the following way:

(42) **Generalized ANS relative to QUD_{Excl} ($\text{ANS}^{\text{QUD}_{\text{Excl}}}$):**

a. $[\![\text{ANS}^{\text{QUD}_{\text{Excl}}}]\!](P_{\langle st,t\rangle}) = \lambda w.\text{Max}_{\text{inf}^{\text{QUD}_{\text{Excl}}}}(P)(w)$

b. $[\![\text{ANS}^{\text{QUD}_{\text{Excl}}}]\!](K_{\langle \sigma,t\rangle}) = \lambda w.\bigcap\{p : \forall P_\sigma \in K([\![\text{ANS}^{\text{QUD}_{\text{Excl}}}]\!](P)(w)) = p\}$
$(\sigma \in \{\langle st,t\rangle, \langle\langle st,t\rangle,t\rangle, ...\})$

With this definition at hand, I finally propose the semantics for $\text{Op}_!$, as in (43).

(43) $[\![\text{Op}_!]\!]^w = \lambda Q_{\langle\langle s,t\rangle,t\rangle} : \exists p \in ([\![Q]\!]_{w,D_2,\prec} - [\![Q]\!]_{w,D_{ES_{\text{SPKR/NORM}}},\prec})[p(w) = 1].\{p : p = \text{ANS}^{\text{QUD}_{\text{Excl}}}([\![Q]\!]_{w,D_2,\prec}) \wedge p \notin [\![Q]\!]_{w,D_{ES_{\text{SPKR/NORM}}},\prec}\}$

$\text{Op}_!$ presupposes that there is only one true maximally true informative answer relevant to the current discourse topic in the widened set but not in the 'normal' set, which is picked up by the $\text{ANS}^{\text{QUD}_{\text{Excl}}}$ operator. The $\prec$ denotes the ordering on the alternative propositions (degree for type 1, and likelihood for type 2). The presuppositional content in (43) advocates for the factivity component of exclamatives.

Now, referring to Figure 1, the ES and the widened D_2 set with respect to (15)-a will be the following:

(44) $[\![Q]\!]_{w,D_2,\prec_{degree}} = \{\text{Rishi is } d_{10}\text{-tall, ..., Rishi is } d_7\text{-tall}\}$

(45) $[\![Q]\!]_{w,D_{\text{ES}},\prec_{degree}} = \varnothing$

(45) denotes an empty set only in case of the exclamatory *ki lomba*, since it already denotes a set higher than the expected maximum. In contrast, the ES in case of the regular modifier *koto lomba* will denote a set such as $\{\text{Rishi is } d_5\text{-tall, Rishi is } d_6\text{-tall}\}$. Based on this, for (15)-a say the true answer is 'Rishi is d_8 tall', the $\text{ANS}^{\text{QUD}_{\text{Excl}}}$ will pick up the maximally true informative answer *i.e.*, 'Rishi is d_8-tall' from the widened set, as per the requirement of the current discourse. Therefore, CP will have the following denotation in w with respect to (15)-a:

(46) $[\![\text{CP}]\!]^w = \{\text{Rishi is } d_8\text{-tall}\}$, given $\exists!p[p = \text{Rishi is } d_8\text{-tall} \wedge \text{Rishi is } d_8\text{-tall} \notin [\![\{\lambda w.\text{Rishi is d-tall in } w : d \in (32)\}]\!]_{w,D_{\text{ES}_{\text{SPKR}}},\prec} \wedge \text{Rishi is } d_8\text{-tall in } w]$

The denotation in CP indicates that the maximally true informative answer relevant to the discourse topic is not in the expectation set of the speaker, and hence it is surprising to the speaker that Rishi is d_8 tall in the world of evaluation, w. It would take the normative expectation set into consideration in cases where the surprise is not on the speaker's end. In the cases of (15)-b, the compositional procedure should be same, only (33) instead of (32) will then be used as the

$D_{\text{ES}_{\text{SPKR}}}$. I will now proceed to the type 2 readings of Bangla k-exclamatives. The compositional analysis will remain the same.

4.2. Analyzing type 2 readings in k-exclamatives

Recall the data in (21) which is repeated below for the reader's convenience.

(21) *Context: Rishi visited the Himalayan foothills.*
Rishi kothay gache!
Rishi where go.PRF.PRS.3S
'*Where Rishi has gone!'

Here the speaker is surprised at the fact that Rishi visited the Himalayan foothills. Notably, the speaker is not amazed at the Himalayan foothills. Rather, they are surprised at the event of Rishi visiting the Himalayan foothills, maybe because Rishi suffers from altitude sickness. Hence, this is purely an event-level exclamative.

As per native speaker's judgements, data like (21) cannot be used where Rishi visited more than one place.

(47) *Context: Rishi visited Himalayan foothills and K2.*
#Rishi kothay gache!
Rishi where go.PRF.PRS.3

Thus, the relevant k-word refers to strict singularity in that context. Following the ontology of individuals where the domain of discourse can include both singular and plural entities (Srivastav 1991b,a; Sharvy 1980; Dayal 1996; Link 2002), the set of normal answers will be as in (48).

(48) {Rishi visited Kolkata, Rishi visited Chota Nagpur Plateau}

This is the ordinary set on which $\text{Op}_!$ acts, widening it and giving us the maximally true informative answer relevant to the current discourse topic (*i.e.*, 'Rishi visited the Himalayan foothills') from the widened set, which was not in the expectation set of the speaker. The ordering on the widened set is then based on likelihood, where Rishi visiting the Himalayan foothills is less likely than him visiting plateaus and plainlands.

Exclamatives with all other individual-denoting k-words such as *ke* 'who', *kake* 'whom', *etc.* will have the exact same line of analysis, except for *kibhabe* 'how-manner' because *kibhabe* does not denote a set of e-type individuals, but a set of sets of eventualities, of type $\langle\langle v, t\rangle, t\rangle$. Unlike previous k-words, *kibhabe* can be uttered in a context where it can denote more than one manner in exclamatives. Therefore, the following proposition can be uttered in a context where Rishi is running both backwards and naked.

(49) *Rishi kibhabe/ kemon kore douracche!*
Rishi how-manner/ how do.PFV run.PROG.PRS.3
'How Rishi is running!'

In (49), given a contextually relevant set of $\langle v, t\rangle$-type running manners – $\{\lambda e.\text{looking-ahead}(e), \lambda e.\text{bouncing}(e)\}$, *kibhabe* 'how-manner' denotes the following:

(50) $\{\bigcap Y | Y \subseteq \{\lambda e.\text{looking-ahead}(e), \lambda e.\text{bouncing}(e)\} \wedge Y \neq \varnothing\}$
= $\{\lambda e.\text{looking-ahead}(e), \lambda e.\text{bouncing}(e), \lambda e.\text{looking-ahead}(e) \wedge \text{bouncing}(e)\}$

The manner adverbial, as in (50), conjoins with the neo-Davidsonian denotation of the VP via the rule of Point-wise Predicate Conjunction (PPC). Following the insights of Hamblin (1973), Rooth (1985, 1992) for lifting an ordinary semantics into one with alternatives, this rule can be defined as follows:

(51) **Point-wise Predicate Conjunction (PPC):**
If $\{\alpha, \beta\}$ is the set of γ's daughter nodes, and $[\![\alpha]\!] \subseteq D_{\langle\sigma,\tau\rangle}$ and $[\![\beta]\!] \subseteq D_{\langle\sigma,\tau\rangle}$, then $[\![\gamma]\!] = \{a \cap b \mid a \in [\![\alpha]\!] \wedge b \in [\![\beta]\!]\} \subseteq D_{\langle\sigma,\tau\rangle}$

Thereafter, the agent of the event is introduced and the event variable is existentially closed off in a point-wise manner. Eventually, the ordinary set on which the $\text{Op}_!$ will act on is as follows:

(52) {Rishi is running looking ahead, Rishi is running bouncing, Rishi is running looking ahead and bouncing}

I am assuming, in (52), that running in a bouncing manner is less likely than running looking ahead. Also, running looking ahead while bouncing is less likely than running looking ahead. Now, when the $\text{Op}_!$ acts on it, it widens the domain, resulting in the following bigger set:

(53) {Rishi is running looking ahead, Rishi is running bouncing, Rishi is running looking ahead and bouncing, Rishi is running backwards, Rishi is running naked, ..., Rishi is running backwards and naked, ...}

This widened domain also has ordering on a likelihood scale. For instance, running backwards and naked is less likely than either of running backwards or running naked. Here the maximally true informative answer relevant to the discourse topic in (49) would be 'Rishi is running backwards and naked' which is not in the expectation set of the speaker. Thus, the speaker's surprise comes to the fore regarding Rishi's way of running.

5. Conclusion

In this paper, I analyze Bangla matrix k-exclamatives that show both degree and non-degree readings, depending on the context. Bangla also shows two types of *ki* 'what' in its exclamative structures. The exclamatory modifier *ki* exclusively occurs in exclamatives and, I argue, has an underlying [*u*Excl] feature, whereas the type 2 *ki* occurs both in exclamatives and in questions. I base my analysis on the question approach and precisely follow the modified version of the widening account (Zanuttini & Portner 2003; Balusu 2019), and argue in favor of a question-style semantics along the line of Kotek (2018). I introduce a pragmatic modification to Kotek's (2018) answer operator to restrict its use in exclamative contexts. Lastly, I introduce an exclamative operator $\text{Op}_!$ that is responsible for the exclamative semantics.

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Abbreviations

ES_{NORM}	normative expectation set	PROG	progressive
ES_{SPKR}	expectation set of speaker	PRS	present
$Op_{!}$	exclamative operator	PST	past
PFV	perfective	Q	question particle
PPC	point-wise predicate conjunction	1	first person
PRF	perfect	3	third person

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Honorificity in the nominal spine

A DP-internal account

Preeti Kumari

The nominal structure proposed in Ritter & Wiltschko (2021), Wiltschko (2021) and McDonald et al. (in prep) divides languages with honorificity into two types – type I languages that recycle their phi-features to encode honorificity and type II languages that lack phi-features and instead have dedicated (non)-honorific pronouns, called *paranouns*. This paper claims that this typology is not exhaustive and adds a third type considering the honorificity pattern in Maithili, an Eastern Indo-Aryan language. I propose that this third type of language encodes honorificity inside the DP layer, as opposed to the other two types that encode it outside the DP. I also show that other languages in the Indo-Aryan family show the same pattern, at least partially, as Maithili.

1. Introduction

Ritter & Wiltschko (2021), Wiltschko (2021) and McDonald et al. (in prep.) have developed a typology of languages with formality/honorificity distinction.[1] According to this typology, there are two types of languages:

(1) Typology of formality:

(i) **Type I –** Languages that recycle a phi-feature to use as formality/honorificity, such as French and German.
(ii) **Type II –** Languages that have dedicated pronouns for formality/honorificity, such as Japanese and Korean.

To elaborate, the formal/honorific pronouns in type I languages are always homophonous with some other pronoun. For instance, the German 2nd person formal/honorific pronoun *Sie* is

[1]Although these works use the term 'formality', the term 'honorificity' is also used for describing nominal and verbal politeness (Harada 1976). For the purposes of this paper, any differences between the two terms do not matter and I use the terms interchangeably.

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homophonous with the 3rd person plural pronoun, see Table 1. Similarly, the French 2nd person formal/honorific pronoun *vous* is homophonous with the 2nd person plural pronoun, see Table 2. These tables are taken from Ritter & Wiltschko (2021).

Person	**Singular**	**Plural**	**Formal**
1st	ich	wir	
2nd	du	ihr	**Sie**
3rd	er/sie/es	**sie**	

Table 1. German pronouns

Person	**Singular**	**Plural**	**Formal**
1st	je	nous	
2nd	tu	**vous**	**vous**
3rd	il/elle	ils/elles	

Table 2. French pronouns

Table 1 shows that the 2nd person honorific pronoun in German is recycled from the 3rd person plural pronoun. Similarly, Table 2 shows that the 2nd person honorific pronoun in French is recycled from the 2nd person plural pronoun. Crucially, this recycling is only semantic and not syntactic as the honorific singular subject fails to trigger singular agreement on the verb. Consider the German example in (2a) which shows that a singular 2nd person honorific pronoun triggers the same agreement as the 3rd person plural pronoun. In fact, a singular agreement on the verb when the subject is 2nd person honorific singular becomes ungrammatical (2b). Similarly, in French, a 2nd person honorific singular subject triggers plural verbal agreement, see (3a), instead of singular agreement, see (3b).

(2) a. *Sie* *haben* *recht*
3PL/you.FRML have.3PL right
'They/You (formal) are right.'

b. **Sie* *hast* *recht*
2.FRML have.2SG right
Intended: 'You (formal) are right.' (Ritter & Wiltschko 2021:5)

(3) a. *Vous* *avez* *raison*
2PL/2.FRML have.2PL right
'You all/You (formal) are right.'

b. **Vous* *as* *raison*
2.FRML have.2SG right
Intended: 'You (formal) are right.' (Ritter & Wiltschko 2021:6)

In contrast, type II languages lack phi-features that can be recycled into honorific pronouns. These languages, such as Japanese and Korean, have dedicated pronouns that encode

honorificity. For instance, consider the Japanese pronouns presented in Table 3 (data taken from McDonald et al. (in prep.), Table 2, and Kaur & Yamada (2021, forthcoming), Table 1).

	Singular
1P	*watakusi, watasi, wasi, wai, ware, warawa, wate, wagahai, atakusi, atasi, assi, atai, ore, ora, oira, kotti, kotira, boku, uti, sessya, soregasi, tin, mii, ...*
2P	*kimi, kiden, soti, sonata, soti, sotti, sotira, sonohou, anata, kimi, anta, omae, temee, kisama, ...*
3P	*kare (m.), kanozyo (f.), yatu, aitu,…*

Table 3. Japanese pronouns

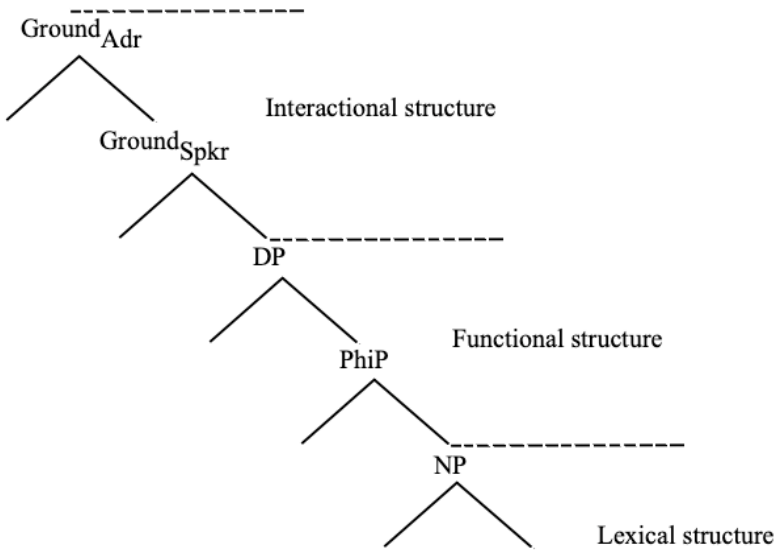
The Japanese pronouns shown above differ from French and German pronouns in two crucial ways. The first difference is that Japanese lacks phi-features. For instance, there is no inflectional number feature in Japanese as the language uses an associative plural *-tachi* which attaches to pronouns and nouns to form plurals. Additionally, unlike French and German, Japanese does not have inflectional person or gender features either. Thus, due to the lack of phi-features, the recycling strategy is unavailable to the type II languages. Instead, these languages have dedicated pronouns that encode various layers of honorificity. The second crucial difference is that honorificity in type II languages does not show a minimal contrast between the multiple layers. Honorificity in languages such as Japanese encodes much broader socio-pragmatic information than in type I languages. For instance, consider the following description of the 2nd person pronouns in Japanese, taken from Kaiser et al. (2013) and noted in McDonald et al. (in prep.):

> *"kimi* is an intimate sounding form of address for males or females by older men, or by boyfriends towards girlfriends. *omae* is quite informal, used between men who grew up or went to school together. It is also used by parents to their sons. *kisama,* also common in comics, is used in such male bastions as the army, sportsteams etc., to subordinates or equals; in ordinary life, if you address someone with *kisama,* it signals that you're trying to pick a fight! [...] [*anata*] is taught to foreigners as equivalent to 'you', simply because it is the most neutral of the lot. However, Westerners are renowned in Japan for overusing *anata,* which still has strong connotations, namely: [...] *anata* is used when the speaker/writer does not know what the social level of the person/s addressed is. [...] Woman to husband: *anata* is also typically used by a woman to her husband or lover (although less so by the younger generation)."

The two types of honorificity explained above raises the question: why is honorificity realised in these two very different ways when all these languages (Japanese, German and French) encode politeness? Wiltschko & Heim (2016), Ritter & Wiltschko (2018, 2019, 2021) and Wiltschko (2021) find an answer to this question in the nominal structure. These works propose, following the neo-performative hypothesis developed in Speas & Tenny (2003), Tenny (2006),

Hill (2007a, b), Haegeman & Hill (2013), Haegeman (2014) and Zu (2013, 2018), that each clause has a layer that encodes various pragmatic information such as the interaction between the speaker and the hearer. This layer is called the 'interactional structure', present at the top of the clausal as well as the nominal spine.[2] The interactional structure has multiple subparts, out of which the functional layer called the 'Ground Phrase (GroundP)', encodes honorificity. The GroundP layer captures the common ground, or the contextual information shared between the speaker and addressee. As such, it is divided into two parts- Ground Speaker Phrase ($Ground_{Spkr}P$) and Ground Addressee Phrase ($Ground_{Addr}P$). Since the honorific or non-honorific relation between the speaker and the addressee is dependent on the common social ground between the discourse participants, honorificity is claimed to be encoded in the GroundP layer. Unlike honorificity, the phi-features do not encode properties that depend on the interaction between the speaker and the addressee. As a result, the phi-features are claimed to be encoded in the DP or the functional layer. The lexical component is encoded in the NP or the lexical layer. This nominal structure is shown schematically in (4). The following image is taken from McDonald et al. (in prep).

(4)



The differences between honorificity in the type I and type II languages emerge from the nominal structure shown in (4). Pronouns in languages such as French and German, that have phi-features, generate in the DP layer where these phi-features are encoded. These pronouns then move to the interactional layer where a semantic reinterpretation of the phi-features into honorificity takes place. In German, this reinterpretation involves the person as well as the number feature and in French, this reinterpretation involves just number.

On the other hand, in a language like Japanese, which does not have phi-features, the pronouns are claimed to be generated in the interactional layer directly. As a result, Japanese pronouns encode a wide range of interaction between the speaker and the hearer that does not form a minimally contrastive paradigm. These kinds of pronouns are termed as *paranouns* in

[2] The idea that the nominal structure also has a functional layer that encodes socio-pragmatic information comes from the 'Universal Spine Hypothesis', which states that the nominal structure is parallel to the clausal structure (Wiltschko 2014).

Ritter & Wiltschko (2021), Wiltschko (2021) and McDonald et al. (in prep.). The different structural position of the pronouns vs. the paranouns gives rise to the two different strategies of encoding honorificity.

The two kinds of honorificity in type I and type II languages, however, also have something in common. According to (4), honorificity is encoded above the DP layer, in the interactional structure, in both types of language. So, whether the phi-feature carrying pronouns are recycled into honorific pronouns in the interactional structure or whether the paranouns directly generate in the interactional structure, honorificity is always a DP external phenomenon.[3]

In contrast to this claim, I show that honorificity is a DP internal phenomenon, a feature in fact, in Maithili, an Eastern Indo-Aryan (EIA) language. Maithili has an elaborate pattern of honorificity in both the nominal as well as the verbal domain. Focusing mostly on the nominal domain, I show that although the pronouns of Maithili behave like the pronouns of type I languages, they do not encode honorificity in the same way. Maithili, despite encoding the person feature, does not recycle it into honorificity. Interestingly, Maithili also does not encode honorificity like the type II languages as Maithili pronouns do not behave like paranouns. Since neither type of honorificity captures the honorificity pattern in Maithili, I propose an addition to the typology presented in (1), in the form of a third type of languages:

(5) **Type III:** languages that encode honorificity inside the DP in the form of a feature, on par with phi-features.

I claim that type III languages encode honorificity inside the DP layer, in the form of HonP, following the syntactic accounts of the extended DP layer in Szabolsci (1987), Abney (1987), Picallo (1991), Carstens (1991) and Ritter (1993), among others. In support of a DP internal HonP, I present evidence from intervention effects caused by the D head. I also provide cross-linguistic support for the existence of type III languages from other EIA languages that show the same pattern, such as Bangla and Magahi.

The organisation of the paper is as follows: section 2 presents the nominal honorificity pattern of Maithili and shows that it does not use a recycling strategy of encoding honorificity. Section 3 shows that despite not using the recycling strategy, Maithili pronouns behave like type I pronouns and not like the paranouns. Section 4 presents an analysis for honorificity in Maithili. Section 5 offers cross-linguistic support for type III languages. Section 6 concludes the paper.

2. Honorificity in Maithili pronouns

This section describes honorificity in the nominal domain of Maithili. Maithili encodes honorificity distinctions in the 2nd and 3rd person but not in the 1st person. In the 2nd person, there are five layers of honorificity: non-honorific (NH), mid-honorific (MH), honorific (H), high-honorific (HH) and honorific-distant (HD). The 3rd person pronoun encodes two layers of honorificity: non-honorific and honorific.[4] I show these pronouns in Table 4.

[3] This idea goes against a substantial body of work that claims honorificity to be equivalent to a phi-feature, encoded DP internally (Boeckx & Niinuma 2004; Baker & Alok 2019; Alok 2020, 2021; Kaur 2019, 2020; Kaur & Yamada 2021, forthcoming, among others).

[4] Note that some pronominal forms in Table 4 are homophonous. Both the 2nd person non-honorific and mid-honorific pronoun are *tõ*. Similarly, both the 3rd person non-honorific and honorific pronouns are *i/o*. However, these pronouns trigger distinct verbal agreement, showing the difference in their honorificity level. See section 2.1. for examples illustrating this difference.

Person	Singular	Plural
1P	*həm*	*həm səb*
2P NH	*tõ*	*tõ səb*
2P MH	*tõ*	*tõ səb*
2P H	*əhã*	*əhã səb*
2P HH	*əpne*	*əpne səb*
2P HD	*i*	*i səb*
3P NH	*i (proximal)* *o (distal)*	*i səb* *o səb*
3P H	*i (proximal)* *o (distal)*	*i səb* *o səb*

Table 4. Maithili pronouns

Let us look at the social context that dictates these pronominal forms in the 2nd and 3rd person. The 2nd person non-honorific form is used for an addressee who is socially inferior or equal to the speaker, such as a younger sibling or a friend. The mid-honorific pronoun is used for an addressee who is socially inferior but a grown-up. For instance, an uncle can use the non-honorific pronoun for his nephew when he is a child. However, when the same nephew grows up and becomes an adult or gets married, then the uncle would address him using a mid-honorific pronoun. As for the honorific pronoun, it is used for an addressee who is socially superior to the speaker, and they share an intimate relation; for example, when a child addresses their parents or someone who is a close family member. The high-honorific pronoun is used when the relationship between the speaker and the addressee is formal such as between a student and a teacher. It is also used for addressing members of the extended family, such as the in-laws of one's sons or daughters.[5] Finally, the honorific-distant pronoun is a special kind of pronoun that is restricted for use between in-laws. Only people who share an 'in-law' relationship with each other may use the honorific-distant pronoun. Unlike the other four pronouns, there is no superior-inferior divide guiding the use of this pronoun. For instance, both the mother-in-law and the daughter-in-law address each other using the honorific-distant pronoun; the age difference between the two does not warrant the use of an honorific pronoun by the daughter-in-law for the mother-in-law or a non-honorific pronoun by the mother-in-law for the daughter-in-law. The only information that the honorific-distant pronoun encodes is the in-law relationship between two people, which is always considered slightly formal, and not their age or any other difference. In the previous literature on Maithili pronouns, only four levels of honorificity has been reported: NH, MH, H and HH (Yadav 1996; Stump & Yadav 1998; Bickel & Yadav 1999). I use the term 'honorific-distant' for this fifth type of pronoun because it denotes an honorific relation between those addressees in the family who are not part of the same bloodline and have married into the family.

The 3rd person does not encode as elaborate an honorificity distinction as the 2nd person. It encodes only two layers of honorificity – non-honorific and honorific. The non-honorific

[5] It should be noted that the relation between the respective parents of a married couple does not fall under the 'in-law' relation. The in-law relation is separate from such extended family relations.

pronoun is used for someone subordinate, just as the 2nd person non-honorific pronoun. The honorific pronoun is used for all honorific relations, whether it is within a close family, distant family, or formal relations.

We now need to figure out where Maithili fits in Ritter & Wiltschko's proposed typology, presented in (1). The following section shows that honorificity is not recycled from another phi-feature in Maithili.

2.1. No recycling in Maithili

This section shows that honorificity is not recycled from any phi-features in Maithili. To begin with, none of the honorific pronouns in Maithili are recycled from the plural pronouns as the language does not have an inflectional plural. Instead, Maithili encodes plurality through an associative plural marker *-səb*, shown in Table 4. In addition to number, person recycling is also not seen in Maithili in the 2nd person mid-honorific, honorific and high-honorific pronouns as these are not homophonous with 3rd person pronouns.[6] No such recycling of the person feature can be seen in the 3rd person either, as the pronouns are not homophonous with other person values. The fact that no recycling takes place can be seen in the verbal agreement as well. The various 2nd and 3rd person pronouns trigger distinct agreement on the verb, see (6) and (7), respectively.

(6) a. *tõ* *sut-əl* *chh-əl-**œ***
2.NH sleep-PRF be-PST-2.NH

b. *tõ* *sut-əl* *chh-əl-**əh***
2.MH sleep-PRF be-PST-2.MH

c. *əhã* *sut-əl* *chh-əl-**əũh***
2.H sleep-PRF be-PST-2.H

d. *əpne* *sut-əl* *chh- əl-**əũh***
2.HH sleep-PRF be-PST-2.HH
'You/s/he had slept'

(7) a. *i/o* *sut-əl* *chh-əl-**əi***
3.NH.PROX/DIST sleep-PRF be-PST-3.NH

b. *i* *sut-əl* *chh- əl-**əth***
3.H.PROX sleep-PRF be-PST-3.H.PROX

[6] Note that there are some homophonous pronouns within the 2nd and 3rd person. The 2nd person non-honorific and mid-honorific pronouns are homophonous, and the 3rd person non-honorific and honorific pronouns are homophonous. However, these instances of pronominal homophony are not the same as the German pronouns shown in Table 1 because these homophonous pronouns belong to the same person value. This essentially means that not all instances of pronominal homophony can be equated with recycling. In addition, as examples (6) and (7) show, these homophonous pronouns trigger distinct agreement on the verb which clearly shows an absence of recycling.

c. *o* *sut-əl* *chh-əl-**khinh***
3.H.DIST sleep-PRF be-PST-3.H.DIST
'S/he slept'

There is one puzzle that is left to be solved. The 2nd person honorific-distant pronoun *i* is homophonous with both the 3rd person non-honorific as well as the 3rd person honorific proximate pronoun *i*. The verbal agreement, however, shows that the 2nd person honorific-distant agreement is syncretic to only the 3rd person honorific proximate agreement, shown in (7b) above. Consider (8), which shows that the 2nd person honorific-distant pronoun triggers the same agreement as the 3rd person honorific proximate pronoun.

(8) *i* *sut-əl* *chh- əl-**əth***
2.HD/3.H.PROX sleep-PRF be-PST-2.HD/3.H.PROX
'You/s/he had slept'

There are two possible ways of explaining the syncretism in (8). One, the 2nd person honorific-distant pronoun is recycled from the 3rd person honorific proximate pronoun. Since both these pronouns are honorific, we cannot be sure of what gets recycled into what. Recall that in the case of German, the unmarked 3rd person non-honorific plural was syncretic to the marked 2nd person honorific singular. Due to this marked-unmarked difference, it is clear that the former gets recycled into the latter. In Maithili, on the other hand, since both the 2nd person honorific-distant and the 3rd person honorific pronoun falls under the category 'honorific', we can never be sure of the direction of recycling. The second way of explaining the syncretism in (8) could be that the person difference between the 2nd person and the 3rd person goes away when the former is honorific-distant, and the latter is honorific proximate. This makes a true case of person-syncretism rather than recycling. While an elaborate analysis of such person syncretism will take us far from the focal point of this paper, a possible explanation could be formed along the lines suggested by Ackema & Neeleman (2013).

Ackema & Neeleman (2013) propose that syncretism between 2nd and 3rd person arises due to their featural composition. In their work, 2nd and 3rd person is composed of two sub-features – [PROX] and [DIST].[7] When both the 2nd and 3rd person share the feature [DIST], and there is no spell-out rule in a language for the feature [PROX], it gives rise to syncretism between 2nd and 3rd person. Thus, the feature [DIST] is at the core of deriving 2nd-3rd syncretism. Coming back to Maithili, we can now see why it is only the 2nd person honorific-distant pronoun that shows syncretism with the 3rd person pronoun. As explained already, the pragmatic information encoded by the 2nd person honorific-distant is restricted to those addressees who are family members but do not share the same bloodline. Thus, even the 2nd person encodes the idea of 'distance' in a way. And since 3rd person is always distant, it is not surprising that there is syncretism between 2nd person honorific-distant and 3rd person honorific.

To summarise this section, I have shown that Maithili pronouns encode honorificity without using the recycling strategy. The obvious conclusion to draw at this point will be that if there is no recycling, then the honorific pronouns in Maithili must be like the pronouns of type II

[7] In Ackema & Neeleman's work, the features [PROX] and [DIST] denote elements that are 'proximate' and 'distal', respectively, to the conversational context. To elaborate, the 1st and 2nd person, being discourse participants, are always proximate to the context. The 3rd person, being a non-discourse participant, is distal. This idea of proximate and distal is different from the same divide within the 3rd person, as shown in Table 4. All 3rd person elements, irrespective of their proximate or distal features, are distal for the conversation context. The proximate and distal divide within the 3rd person is only relative.

languages, i.e., paranouns. However, the next section shows that Maithili does not show the properties of paranouns. In fact, Maithili pronouns, despite not using the recycling strategy, are like typical pronouns of type I languages.

3. Pronouns or paranouns in Maithili?

As mentioned in section 1, owing to the different structural positions in the nominal spine, languages either have pronouns or paranouns. While pronouns emerge in the DP and use a recycling strategy for encoding honorificity, paranouns generate directly in the interactional structure and encode interactional honorificity. Apart from differences in the kind of honorificity encoded by these two languages, they differ on multiple other grounds too. McDonald et al. (in prep) propose a few diagnostics that differentiate pronouns from paranouns. These diagnostics show that although Maithili lacks a recycling strategy, its pronouns behave like pronouns of type I languages and not like the paranouns of type II languages. Based on these diagnostics, I claim that Maithili honorificity is DP-internal, on par with the phi-features. I present the diagnostics below.

(i) Paranouns can be used interchangeably with kinship terms, whereas pronouns fail to do so.

Since paranouns generate in the interactional structure, they behave like other nominals that also encode interactional properties, such as kinship terms and titles. As a result, paranouns can be used interchangeably with kinship terms and titles. McDonald et al. (in prep.) mention that type II languages like Japanese and Korean allow kinship terms and titles to be used in place of the 2nd person pronouns (Kaiser et al. 2001). This is not the case for type I languages as their pronouns cannot be replaced by kinship terms or titles.

Maithili pronouns behave like pronouns of type I languages and do not get replaced with kinship terms. For instance, the term *sarkar* literally means ‘government’, but it is also used as a term of address for someone honorific. However, when used as a term of addressee, it cannot replace the 2nd person honorific pronoun (9a) and trigger 2nd person verbal agreement. It can only trigger 3rd person honorific agreement, as shown in (9b).

(9) a. *əhã/***sarkar*** *hum-ra* *dekh-n-əũh*
2.H/*sarkar* 1-ACC see-PST-2.H
‘You saw me’

b. ***sarkar*** *hum-ra* *dekh-əl-khinh*
sarkar 1-ACC see-PST -3.H
‘Sarkar saw me’

(ii) Paranouns are open class elements whereas pronouns are closed class.

As we have seen, Japanese paranouns encode a wide range of pragmatic information due to which they do not contrast minimally across different person values. McDonald et al. note that owing to this property of Japanese paranouns, different grammars of Japanese often list different numbers of 1st, 2nd, and 3rd person paranouns. As a result, Japanese paranouns have often been termed to be open-class elements. On the other hand, as section 1 has shown, pronouns in type I languages can be neatly categorised using binary phi-features.

Although Maithili pronouns seem to be encoding more pragmatic information than German or French, they are still nothing like Japanese. For instance, Maithili pronouns do not go beyond what is shown in Table 4, meaning they are a restricted set. In addition, there is a fixed social context that defines the use of these pronouns: the superior and sub-ordinate relation or the in-law relation. These pronouns can be used by anyone if these social norms are respected. On the other hand, the use of Japanese paranouns is restricted by more than one socio-pragmatic factor such as profession or gender etc. (see the quoted text from Kaiser et al. (2013) in section 1). Thus, the second diagnostic also shows that Maithili has pronouns like type I languages.

(iii) Paranouns do not have an inflectional number feature, while pronouns do.

section 1 mentions that paranouns, due to emerging in the interactional structure, lack grammatical features such as number. This is true for Japanese, which uses an associative plural marker *-tachi* with the paranouns. Consider (10a), which shows the absence of plural agreement on the verb.

(10) a. *watasi-ga* *nanika-o* *katta*
1-NOM something-ACC buy
'I bought something.'

b. *watasi-**tati**-ga* *nanika-o* *katta*
1-ASSOC-NOM something-ACC buy
'We bought something.' (McDonald et al. in prep:11)

Unlike Japanese, languages like French and German have inflectional plural because their pronouns generate in the DP layer where phi-features are encoded. For instance, see the number agreement in French in (11).

(11) a. *vous* *avez* *raison*
2PL have.2PL right
'You all are right.'

b. *tu* *as* *raison*
2SG have.2SG right
'You are right.' (McDonald et al. in prep:21)

Maithili displays a somewhat surprising pattern here as the synchronic variety of the language does not have inflectional plural.[8] Instead, it uses an associative plural marker for non-discreet plurality and a numeral-classifier to encode discreet plurality, as shown in (12).

(12) a. *aadmi* *aadmi-sab*
man man-all

[8] The older varieties of Maithili, however, did encode inflectional plural, as mentioned in Chatterji (1926). As the language developed from the Old Maithili era (1300 AD onwards), it started losing number and developed a numeral-classifier system instead.

b. *ek-ta aadmi* *chair-ta aadmi*
one-CL man four-CL man
'One man' 'Four men'

Thus, as far as this diagnostic is concerned, Maithili seems to be behaving like a paranoun and not a pronoun. However, as I show towards the end of this section, the result of this diagnostic becomes unsubstantial because Maithili encodes other phi-features such as person and sometimes gender.

(iv) Paranouns do not trigger gender agreement whereas pronouns do so.

Since paranouns do not have any phi-features, they also fail to encode inflectional gender. This is true for Japanese. In (13), the adjective *sutenika* fails to agree with the masculine pronoun *kare*, used for boyfriends, or the feminine pronoun *kanojo*, used for girlfriends.

(13) *watasi-no* *sutekina* *kare/kanojo*
1-GEN wonderful boyfriend(=he)/girlfriend(=she)
'my wonderful boyfriend/girlfriend' (McDonald et al. in prep:13)

On the other hand, languages such as German and French are well known for inflectional gender. For instance, in French, the indefinite article takes the feminine gender in (14a) and the masculine gender in (14b).

(14) a. *une* *femme*
INDEF.F woman
'a woman'

b. *un* *homme*
INDEF.M man
'a man'

Gender agreement in Maithili, just like number agreement, weakened substantially as the language developed from Old Maithili (1300 AD) to Mid-Maithili (1500 AD – 1800 AD) and Modern-Maithili (1800 AD – present), as noted in Chatterji (1926). While verbal gender agreement is entirely lost in most dialects of the language, there are remnants of it still present in the Darbhanga and Madhubani variety, spoken in Bihar, India and the Janakpur variety, spoken in Nepal. Gender agreement in these varieties is restricted to honorific 3rd person subjects. For instance, consider the sentence in (15a), where the masculine honorific noun *raja* 'king' triggers masculine agreement on the verb. In (15b), on the other hand, the verb takes a feminine marker due to the feminine honorific subject *rani* 'queen'.

(15) a. *raja* *ae-l-ah*
king come-PST-3H.M
'The king came.' (Yadav 1996:480)

b. *rani* *ae-l-ih*
queen come-PST-3H.M
'The queen came.' (Yadav 1996:481)

As opposed to the verbal domain, nominal gender agreement is found in all varieties of Maithili. Consider the examples in (16) where the definite article takes the masculine and the feminine marker, respectively.

(16) a. *mot-ka* *marad*
fat-DEF.M man
'the fat man' (Yadav 1996:328)

b. *mot-ki* *janana*
fat-DEF.F woman
'the fat woman' (Yadav 1996:(335))

(v) Paranouns do not have 1st person inclusive while pronouns do.

The next diagnostic concerns clusivity distinction in the 1st person. As Ritter & Wiltschko (2021) and McDonald et al. (in prep) propose, paranouns have no phi-features, including the grammatical person feature, of the form [±1, ±2], that corresponds to the speaker and the addressee. As a result, these languages fail to have inclusive pronouns as they are of the form [+1, +2]. Therefore, languages that do not have the grammatical person feature cannot have an inclusive pronoun either. This is true for Japanese, as the language has no exclusive-inclusive distinction.[9]

Maithili 1st person pronouns, unlike Japanese, have a clusivity distinction, as shown in (17).

(17) a. 1st exclusive *həm* 'I'
b. 1st person inclusive *əpne*[10] 'I and you'

(vi) Paranouns lack person agreement, while verbs show person agreement with pronouns.

Following the absence of grammatical person features, languages with paranouns also lack person agreement. Japanese is a case in point, as shown in (18). The 1st person and the 3rd person subjects trigger syncretic agreement in Japanese.

(18) a. *Watasi-ga* *otya-o* *non-da*
I-NOM tea-ACC drink-PST
'I drank tea.'

b. *Kanojo-ga* *otya-o* *non-da*
She-NOM tea-ACC drink-PST
'She drank tea.' (McDonald et al. in prep:16)

[9] Interestingly, French and German, despite being pronouns, also do not have an inclusive/exclusive distinction which remains unexplained by McDonald et al. (in prep). Irrespective of this fact, it should not be taken as evidence for the absence of grammatical person feature because these languages trigger person agreement.

[10] The 1st person exclusive pronoun *əpne* is homophonous with the 2nd person high-honorific pronoun. However, there is no honorificity in the exclusive or inclusive 1st person pronouns.

Pronouns, as expected, have grammatical person and trigger person agreement on the verbs, as shown for German in (19).

(19) a. *ich* *mach-e*
1SG.NOM do-PRS.1SG
'I do'

b. *du* *mach-st*
2SG.NOM do-PRS.2SG
'You do'

c. *er/sie/est* *mach-t*
3SG.NOM do-PRS.3SG
'S/he does'

Maithili, like type I languages, triggers person agreement, as I have already shown in section 2. This a crucial piece of evidence that equates Maithili and German pronouns because despite Maithili's loss of number agreement and weakening gender agreement, the language still has strong person agreement.

(vii) Languages with paranouns have discourse licensed pro-drop.

The final diagnostic that follows from the lack of phi-features in paranouns is the phenomenon of pro-drop. Japanese allows subject/object pro-drop. Since it is not an inflectionally rich language, the information about the dropped subject cannot be retrieved from the verb, the way it is done in agreement-rich languages. Instead, Japanese allows the dropped subject to be retrieved from the discourse; hence pro-drop in languages like Japanese is known as 'discourse licensed pro-drop'. For instance, consider the context given in (20). In the following sentences, the dropped subject and the object are represented as Ø.

(20) a. Context: I saw Mika yesterday.
Kanojo-ga/Ø *Marika-o* *paatii-ni* *yon-da*
she-NOM Marika-ACC party-LOC invite-PST
'She (=Mika) invited Marika to her party.'

b. Context: I saw Marika yesterday.
Mika-ga *kanojo-o/Ø* *paatii-ni* *yon-da*
Mika-NOM she-ACC party-LOC invite-PST
'Mika invited her (=Marika) to the party.' (McDonald et al. in prep:18)

Languages that are rich in person agreement, such as Maithili, do not need discourse pro-drop as the information about the dropped subject can easily be retrieved from the verbal agreement, as shown in (21).

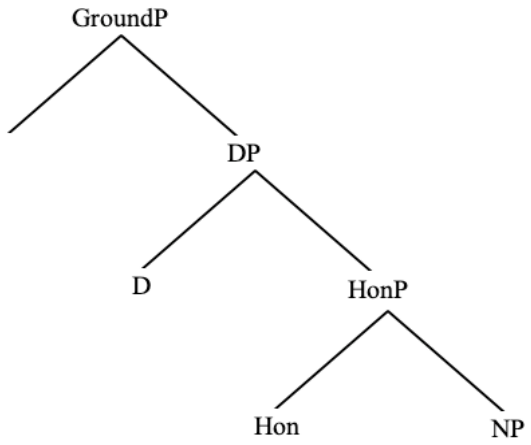
(21) *həm/Ø* *sut-əl-iəi*
1 sleep-PST-1
'I slept'

To summarise this section, I have shown that Maithili pronouns do not show similarities with paranouns. This means that they do not generate directly in the interactional structure. As a result, honorificity in Maithili can also not be encoded in the same way as it does in Japanese. Instead, Maithili pronouns behave like pronouns of type I languages. From this, I conclude that Maithili pronouns must generate inside the DP layer where at least the person feature can be encoded. This finding leaves us with an interesting question: if Maithili does not encode honorificity by recycling a phi-feature, as shown in section 2, despite encoding phi-features, then how does Maithili encode honorificity? I answer this question in section 4.

4. DP-internal Hon and Hon-licensing

I have shown in section 2 that Maithili honorificity is inflectional. This property of Maithili honorificity can be equated with other inflectional features such as person, number, and gender. Additionally, section 3 has also shown that Maithili pronouns behave like type I pronouns, indicating the presence of a DP layer in the nominal structure. In the syntactic literature, it has been proposed that the DP layer has a more complex and elaborate structure where each phi-feature projects to a phrasal category – DP for person (Szabolcsi 1987; Abney 1987), NumP for number (Ritter 1991; Carstens 1991) and GenP for gender (Picallo 1991 among others). Following these accounts, I propose that honorificity in a language like Maithili also projects to HonP and acquires a DP-internal position, as shown in (22).

(22)



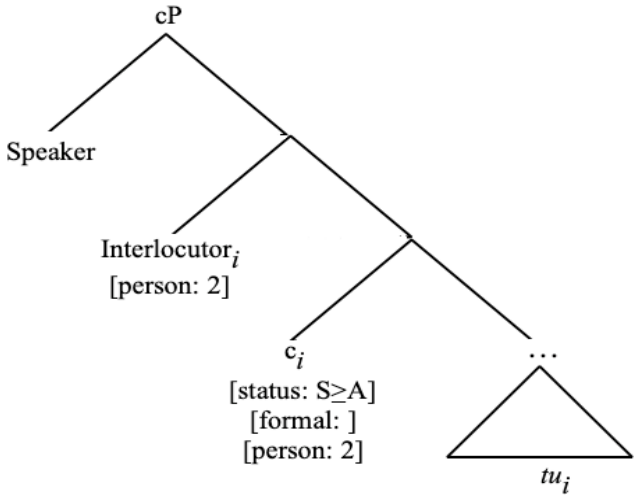
The structure in (22) places honorificity on par with other phi-features. However, there is one crucial difference between honorificity and phi-features: honorificity encodes politeness, a pragmatic notion which is dependent on context, whereas, phi-features, at least number and gender, encode properties of the noun which are independent of the context.[11] As also

[11]Although person, number and gender fall under the umbrella term phi-features, it is well noted in the literature that person behaves differently from number and gender. This difference is semantic as well as syntactic. Semantically, the person values are contingent on the role of speaker, addressee and topic or theme of a conversational context. The speaker is 1st person, the addressee is 2nd person, and the topic/theme is 3rd person. Syntactically, person feature results into constraints like the 'Person Case Constraint' PCC, which is captured more generally in terms of the Person Licensing Condition or PLC (Baker 2008). However, for the simple reason that I want to focus on honorificity, I take all the three features person, number, and gender, to exist as valued features on the nouns in the lexicon.

mentioned by McDonald et al. (in prep.), honorificity is dependent on the point of view of the speaker. These points of view encode nothing but the relation between two entities. If Hon is a syntactic feature, the syntactic mechanisms must be able to take care of the relational aspect of Hon.

In the syntactic literature, there are, at present, two proposals that account for the relational nature of the honorificity feature – Portner et al. (2019) and Alok (2020, 2021). Portner et al. (2019) propose a discourse layer, 'context phrase/cP' that acts as an interface between the syntactic and the pragmatic component. This discourse layer captures (im)politeness in the form of the 'status' feature on the (c)ontext head that has values capturing the hierarchy between the speaker and the addressee (23).

(23)



In this proposal, the honorificity value of a 1st and 2nd person pronoun in a sentence is captured upon binding by the speaker and the addressee/interlocutor operator, respectively (following Baker 2008). Further, following Kratzer (2009), Portner et al. propose that in the case of binding, the binders are not only the speaker and interlocutor operators but also the c head. As a result of this binding, the 'status' feature on the c head is transferred to the DPs, giving them various honorificity values. For Portner et al., not just feature valuation, but also honorificity agreement is a result of operator-variable binding. Once the DPs in the clause get bound, the values of the status feature are transmitted not only on the DP but also on the functional head in the clause (T/v) that agrees with the phi-features of the DP.

Although Portner et al. account for the relational aspect of Hon, they do so only for the 1st and 2nd person pronouns. Their system cannot account for honorificity values of the 3rd person (pro)nouns. This issue has been taken up by Alok (2020, 2021) who captures the relational nature of honorificity for nouns and pronouns of all person values. Alok views Hon as a feature variable such that it does not come into the computation as a valued feature on the DPs. Although interpretable, its value depends on the context. Alok proposes a 'predicative relational semantics' of feature [iHON], which establishes a relation between the DP, that Hon attaches to, and the speaker of the sentence (24).

(24) [[iHON]] = λx. [[S]] ≺ x,
where '≺' is an unspecified variable over the ordering (hierarchical) relation (<, <<, ≥)
(Alok 2020:(36))

Thus, the Hon feature on the DPs (1st, 2nd, and 3rd person) requires two arguments: the DP itself and the speaker. The relation between these two arguments then provides the right value of the honorificity feature. I adopt this account of honorificity licensing because it explains honorificity in the 3rd person pronouns as well.[12]

Evidence in favour of Honorificity occupying a DP internal position and getting bound by a higher argument comes from intervention caused by the D head. Note that in the schema in (22), the D head is a possible intervenor for Hon-binding. I predict that if this position is occupied, then the Hon feature should not get bound by the speaker and it should get an unmarked non-honorific value. This prediction is met in Maithili.

Maithili has a definite marker *-ba*, which obligatorily gives a non-honorific meaning. For instance, consider the noun 'teacher', which always gets an honorific interpretation. However, when the definite marker *-ba* attaches to teacher, it becomes non-honorific (25).

(25) a. *master*
teacher

b. *master-ba*
teacher-DEF.NH
'The teacher'

The non-honorific meaning in (25b) shows that when the D head in the nominal structure is occupied with something, it does not allow the speaker in the left periphery to bind the Hon feature in the nominal structure. As a result, the Hon feature gets a default unmarked value, which is non-honorific. This intervention shows that Hon occupies a position below D, and it also needs to be bound by the speaker for honorific values.

5. Cross-linguistic evidence

This section shows that other EIA languages, such as Bangla and Magahi, also have honorific pronouns that are not recycled from any other feature. Bangla, Magahi and Maithili are descendants of the same parent language, namely New Indo-Aryan. Since these are genealogically related languages, we expect to see similar behaviour as Maithili in Bangla and Magahi. This prediction is met, as I show below.

Bangla, like Maithili, encodes honorificity in the 2nd and 3rd person; there is no honorificity distinction in the 1st person. In the 2nd person, Bangla encodes three layers of honorificity – non-honorific, mid-honorific, and honorific. The language encodes the same three layers of honorificity in the 3rd person. These pronominal forms are presented in Table 5.

Person	**Singular**	**Plural**
1	*ami*	*amra*
2 NH	*tui*	*tora*

[12] Alok (2020, 2021) considers the speaker to be present in the clausal left periphery, not in the nominal left periphery. For the purposes of this paper, differentiating between a clausal and a nominal left periphery is not important.

2 MH	*tumi*	*tomra*
2 H	*aapni*	*aapnara*
3 NH	*o (proximal)* *e (distal)*	*ora (proximal)* *era (distal)*
3 MH	*she*	*tara*
3 H	*ini (proximal)* *uni (distal)*	*enara (proximal)* *onara (distal)*

Table 5. Bangla pronouns

The pronouns in Table 5 show that the singular and the plural forms of the pronoun are very similar. The 2nd person mid-honorific singular pronoun is *tumi*, whereas its plural form in *tom-ra*, *ra* being the plural classifier in Bangla (Biswas 2013). Similarly, the 2nd person honorific pronoun is *aapni*, and its plural form is *aapna-ra*. Despite the pronouns being very similar, honorificity cannot be recycled from number as Bangla, like Maithili, lacks inflectional plural. Consider the verbal agreement triggered by Bangla pronouns given in (26-28).

(26) *ami/am-ra jachhi*
1/1-PL go.PROG.1
'I/we am/are going'

(27) a. *tui/to-ra ja-chh-**is***
2.NH/2.NH-PL go-PROG-2.NH

b. *tumi/tom-ra ja-chh-**o***
2.MH/2.MH-PL go-PROG-2.MH

c. *aapni/aapna-ra ja-chh-**en***
2.H/2.H-PL go-PROG-2.H
'You/you all are eating'

(28) a. *o/o-ra ja-chh-**e***
3.NH/3.NH-PL go-PROG-3.NH

b. *she/ta-ra ja-chh-e*
3.MH/3.MH-PL go-PROG-3.MH

c. *uni/ona-ra ja-chh-**en***
3.H/3.H-PL go-PROG-3.H
'(s)he/they is/are going'

The above examples show that Bangla does not have inflectional plural. Therefore, plural cannot be recycled into honorificity in the language. As for person recycling, we see that there is some syncretism in the verbal agreement paradigm. Note that the 2nd and 3rd person honorific subjects trigger the same agreement (see 27c and 28c). However, since both these agreements involve honorific pronouns, we cannot say if this is a case of person recycling into honorificity. This kind

of agreement pattern can simply be explained as person syncretism between 2nd and 3rd person honorific pronouns. In addition, the absence of any syncretism between 2nd person and 3rd person mid-honorific pronouns clearly shows that there is no recycling of any person value into honorificity.[13]

Another EIA language, Magahi, also shows the same pronominal and agreement pattern as Bangla. The pronouns in Magahi encode honorificity in the 2nd and 3rd person. The 2nd person has three layers of honorificity, while the 3rd person has two layers of honorificity, as shown in Table 6.

Person	**Singular**	**Plural**
1	*hum*	*humnii*
2 NH	*tũ*	*tohnii*
2 MH	*tũ*	*tohnii*
2 H	*apne*	*apne-log*
3 NH	*u*	*okhnii*
3 H	*u*	*okhnii*

Table 6. Magahi pronouns

Magahi pronominal forms show similarity to Maithili as the 2nd person non-honorific and mid-honorific pronouns are homophonous. In addition, the 3rd person non-honorific and mid-honorific pronouns are also homophonous. However, these pronouns trigger distinct verbal agreement, as shown in (29-31).

(31) *ham/hamanii dauR-l-i/iai*
1.M/F/1PL.M/F run-PRF-1
'I/We ran'

[13] An anonymous reviewer pointed out the agreement pattern of Bangla in the future tense, which shows that the 2nd and 3rd person mid-honorific agreement is syncretic to the 3rd person non-honorific agreement, as shown in (i) and (ii).

(i) a. *tui* *ashbi*
2.NH come.FUT.2
b. *tumi* *ashbe*
2.MH come.FUT.2
c. *aapni* *ashben*
2.H come.FUT.2
'You will come'

(ii) a. *o* *ashbe*
3.NH come.FUT.3
b. *she* *ashbe*
s/he.MH come.FUT.3
c. *uni* *ashben*
s/he.H come.FUT.3
's/he will come'

Since the 3rd person non-honorific agreement is seen on verbs with 2nd and 3rd person mid-honorific subjects, we can say that this is a case like German, where the unmarked form is being used in the marked case. Thus, the future tense presents a puzzle which points to the possibility that maybe there are instances of person recycling into honorificity in Bangla. However, there is also a possibility that the 3rd person non-honorific and mid-honorific gap is collapsing into one in Bangla and the syncretism between 2nd person mid-honorific and 3rd person non/mid-honorific is simply a case of person syncretism. I leave this question for further research.

(32) a. *tu/tohanii* *dauR-l-eN*
2SG.M/F.NH/2PL.M/F.NH run-PRF-2.NH

b. *tu/tohanii* *dauR-l-a*
2SG.M/F.MH/2PL.M/F.H run-PRF-2.MH

c. *apne/apne-sab* *dauR-la-thi(n)*
2SG.M/F.H/2.M/F-PL run-PRF-2.H
'You ran'

(33) a. *u/okhanii* *dauR-l-ai*
3SG.NH/3PL.M/F.NH run-PRF-3.NH

b. *u/okhanii* *dauR-la-thi(n)*
3SG.H/3PL.M/F.H run-PRF-3.H
'(S)he /They ran' (Alok 2021:5–7)

The above-presented agreement pattern shows that just like Maithili and Bangla, Magahi also lacks number agreement. Therefore, we can say that number cannot be recycled into honorificity in Magahi. With respect to person agreement, we see that Magahi shows the same pattern as Bangla, where the only case of syncretism is noted between 2nd and 3rd person honorific. Since the unmarked (non-honorific) and marked (mid-honorific/honorific) 2nd and 3rd person agreement is non-syncretic, we cannot say that a particular person value is getting recycled into honorificity.

In Bangla and Magahi, just like in Maithili, honorificity is not a result of recycling of number or person. Therefore, these languages cannot be type I. In addition, both Bangla and Magahi are strong person agreement languages, which tells us that they cannot be type II languages either. Thus, Bangla and Magahi must also be type III languages like Maithili, which encode phi-features and yet do not recycle honorificity.

6. Conclusion

To recapitulate, I have shown that pronouns in Maithili behave like pronouns of type I languages, i.e., pronouns with phi-features. I have also shown that despite possessing phi-features, there is no recycling of the features to encode honorificity. As a result, I have looked for an alternative position for honorificity in the Maithili DP. Since honorificity is an inflectional feature, it must be encoded inside the DP. To account for its relational aspect, I adopt Alok's (2020, 2021) mechanism of Hon binding. Evidence in favour of a DP-internal location for Hon and its need for licensing comes from the intervention caused by the D head. This kind of encoding of honorificity seems to be a general EIA property as other EIA languages such as Bangla and Magahi behave similarly to Maithili.

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Abbreviations

1	1st person	HH	high-honorific
2	2nd person	INDEF	indefinite
3	3rd person	LOC	locative
ACC	accusative	M	masculine
ASSOC	associative	MH	mid-honorific
CL	classifier	NH	non-honorific
DAT	dative	NOM	nominative
DEF	definite	PL	plural
DIST	distal	PRF	perfective
F	feminine	PROG	progressive
FRML	formal	PROX	proximate
FUT	future	PRS	present
GEN	genitive	PST	past
H	honorific	SG	singular
HD	honorific-distant		

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Contrast and the pronominal use of the demonstratives *der* and *dieser* in German

Robert Voigt

In this paper, I report the results of a forced choice experiment in which I empirically investigated whether the linguistic factor contrast between several discourse referents affects people's choice to use the German pronominal demonstrative *der* or *dieser* to anaphorically pick up the contrasted referent. The main hypothesis was according to Bisle-Müller (1991) and Ahrenholz (2007) that *dieser* is able to express contrast and therefore should be preferred in the contrastive cases. However, the results do not support the hypothesis. Instead, they are in line with Bosch & Hinterwimmer (2016), who claim that *der* can express a contrast as well.

1. Introduction

German has several demonstratives. Two of the most frequently used forms are from the *der/die/das* and *dieser/diese/dieses* paradigms. These forms can be used adnominally (as in (1)) or pronominally (as in (2)).[1] In the adnominal use, the demonstratives appear together with a noun and function like a determiner. The pronominally used demonstratives appear instead of a noun and fulfill the functions of a pronoun.

(1) Der/dieser Hund ist schön
DEM.M.NOM dog be.PRS.3SG beautiful.
'The dog is beautiful.'

(German)

(2) Ich habe einen Hund. Der/Dieser ist schön.
1SG.NOM have.1SG INDEF.SG.M.ACC dog DEM.3SG.M be.PRS.3SG beautiful.
'I have a dog. It is beautiful.'

(German)

[1] For other uses of demonstratives see Himmelmann (1997); Diessel (1999), Diessel (2019); Doran & Ward (2019), and König (2020).

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In this paper, I focus on the anaphoric pronominal use of demonstratives. As shown in example (2), both *der* and *dieser*[2] can be used to anaphorically pick up a referent in the discourse. The conditions under which speakers decide to use *der* to anaphorically pick up a referent have often been studied in comparison to the personal pronoun *er* (see Abraham 2002; Bosch et al. 2003; Schumacher et al. 2015; Hinterwimmer & Brocher 2018; Hinterwimmer et al. 2020). A substantial body of research suggests factors affecting peoples' choice to refer to a referent with *der* or *er*. According to Fuchs & Schumacher (2020), the demonstrative *der* prefers referents that are less prominent, while *er* prefers to pick up more prominent referents.[3]

In contrast to that, it is still not well understood which linguistic factors influence the choice of pronominal *der* or *dieser* to refer to a certain entity in discourse. Although there is some recent work directly comparing the pronominal–anaphoric use of these two demonstratives (see Fuchs & Schumacher 2020; Patil et al. 2020), it remains unclear under which linguistic conditions people prefer to use the pronominal *der* or *dieser*. A factor that has been discussed in the literature but has not been empirically tested yet is the factor contrast. Bisle-Müller (1991) and Ahrenholz (2007) formulate the hypothesis that *dieser* might be able to express a contrast between the referent it appears together with or anaphorically picks up and other referents in discourse, while *der* is not able to express this sort of contrast.

This has been claimed in the literature but to my knowledge it has never been tested empirically. To test whether theoretical claims made in the previous research can account for concrete language usage and thus to add new experimental evidence to the theoretical discussion about the uses of *der* and *dieser*, I conducted a forced-choice experiment to test this hypothesis. In a within-subjects and within-items design, I compared conditions with a contrast between the referent picked up by the demonstrative to conditions without such a contrast. People had to decide which demonstrative they prefer to pick up the referent. Based on the theoretical literature, the experiment was supposed to test two hypotheses.

(H1): *Dieser* is able to express a contrast between its referent and other referents.

(H2): The ability to express this contrast is a difference between *dieser* and *der*. In contexts with contrast, *dieser* should be preferred.

If (H1) is correct, I predict people should be able to use *dieser* at least as often in the contrast conditions as in the conditions without contrast. If (H2) is correct, I predict that people choose *dieser* significantly more often in the contrast-conditions than in the conditions without contrast.

The remainder of the paper is structured as follows: In section 2, I review the theoretical literature about contrast and the use of demonstratives. Section 3 deals with other factors affecting peoples' preferences for *der* and *dieser*. The design, results, and discussion of the experiment can be found in section 4. The paper closes with a conclusion in section 5.

[2] I use the masculine form of the demonstrative pronouns to avoid case syncretism, e.g. *die* could be feminine nominative or accusative singular, or nominative or accusative plural.

[3] They follow the definition of *discourse prominence* proposed by von Heusinger & Schumacher (2019). According to this definition, prominence is a relational principle that singles out certain linguistic elements in comparison to other, similar elements. Following Fuchs & Schumacher (2020), subjects, agents, topics, and perspectival centers are more prominent than objects, patients, non-topics, and non-perspectival centers. Therefore, these more prominent referents are picked up by a personal pronoun, whereas the less prominent referents are more likely to be picked up by a demonstrative. For a related definition of prominence see Himmelmann & Primus (2015).

2. Contrast and the use of German demonstratives

In this section, I discuss important aspects of the theoretical literature regarding the linguistic factor contrast and its relationship to the use of demonstratives in general, and especially to the use of the German demonstratives *der* and *dieser*.

An essential prerequisite for the ability of demonstratives to express a contrast is their function as a device for attention orientation. According to Diessel (2006a, 2019), demonstratives have a basic communicative function to direct the attention of interlocutors. Because of their tight etymological relationship to deictic gestures (especially pointing gestures), they are able to create a new joint focus of attention between the speaker and the listener. Following Diessel (2006a), the use of a demonstrative enables the speaker to shift the joint attention from one referent to another referent in the discourse. In addition to that, Diessel (2006a) thinks that the use of a demonstrative as a referential expression enables the hearer to distinguish between the referent meant by the speaker and other referents. This basic function appears in the spoken and written modalities of language and plays an important role in discourse organization.

Since demonstratives are able to shift the joint attention from one referent to another, according to Diessel (2006a:477–478), they are especially well suited to initiate a topic shift or a contrast between several referents. A similar idea is formulated in Zifonun et al. (1997:559–560) who also assume that anaphorically used demonstratives can create a new focus of attention. They further assume that *dieser*-demonstratives are very well suited to highlight an object contrastively. This hypothesis is also supported by theoretical work of Bosch & Hinterwimmer (2016:208). They argue that the use of a demonstrative to pick up a referent that is already in the focus of joint attention might be felicitous when the referent is contrasted to another referent.

To sum up, the function of demonstratives as an attention orienting device is an essential prerequisite for their ability to contrast one referent with other ones. The sort of contrast I try to empirically investigate is a contrast where a demonstrative is used to anaphorically pick up a discourse referent and thereby is expressing a contrast between this referent and potential other, similar referents. However, there is another type of contrast typically discussed when it comes to the use of demonstratives. This contrast is based on the local distance of the referents towards the speaker with one demonstrative being used in connection with the closer referent, while the other demonstrative is used together with the referent further away. An example for German is given in (3). I do not think that this type of contrast is useful for this study, but I will mention it and explain why I think it is not suited to explain differences in the use of *der* and *dieser*.

(3) Dieser Junge und jener Mann.
this.M.NOM boy and that.M.NOM man.
'This boy and that man.'

(German)

In this form of contrast, the demonstratives are organized as contrastive pairs and a contrast is expressed between the referents that appear together with the two demonstratives (see Diessel 2006b, Diessel 2019; König 2020). This sort of contrast has been discussed for the use of the German demonstratives *dieser* and *jener*. Authors like Himmelmann (1997:49–50) and Bisle-Müller (1991:69) have discussed that in contrastive pairs like (3), the demonstrative *dieser*

might be used to refer to a closer referent, while the demonstrative *jener* might refer to a referent further away.

Even though this concept has been widely discussed in the literature, I think there are at least two reasons why this type of contrast cannot account for differences between *der* and *dieser*. Firstly, even though the theoretical literature sometimes assumes a locality constraint for *dieser*, usually *der* is assumed to be neutral regarding distance. Thus, even if *dieser* would have a semantic component expressing closeness of a referent, it would not make sense to build a contrastive pair based on locality with *dieser* and *der*, because *der* is most likely neutral to distance (Ahrenholz 2007:128–129). Secondly, the hypothesis that *dieser* and *jener* are a pair expressing a contrast with regards to distance might not be true. Ahrenholz (2007) conducted a large corpus study investigating the use of *dieser* and *der* in spoken German.[4] One result of the study was that Ahrenholz (2007:207–208) could not find a contrast like (3) between *dieser* and *jener* in the corpus. Therefore, he concluded that the hypothesis that *dieser* and *jener* express a distance-based contrast is not true, at least for the spoken language modality. These results question whether *dieser* is restricted to nearer referents at all. Since *der* is neutral to distance anyway and *dieser* might be as well, I do not believe one can build a contrastive pair with these two demonstratives to express a distance-based contrast.

(4) Ich kenne einen Mathe-lehrer und einen
1SG.NOM know.PRS.1SG INDEF.SG.M.ACC math-teacher and INDEF.SG.M.ACC
Deutsch-lehrer. Im Gegensatz zu dem Mathelehrer war
German-teacher In contrast to DEF.SG.M.DAT math-teacher. be.PST.3SG
dieser sehr nett.
DEM.3SG.M very nice.
'I knew a math teacher and a German teacher. Unlike the math teacher, he was really nice.'

(German)

The sort of contrast I am investigating is an alternative-based contrast as in (4). Unlike in the distance-based contrast in (3), there is no paradigmatic pair of demonstratives expressing contrast between their referents. In the alternative-based contrast as in (4), there is only one demonstrative. This demonstrative anaphorically picks up a referent (the German- teacher) that is contrasted to other referent(s) (the math-teacher). The different referents are similar in several aspects. The referents from example (4) are both teachers. However, they must differ in a relevant way, so a contrast can be expressed. The difference between the two teachers from the example is that one of them is nice and the other one is not.

The idea that this sort of contrast might affect the use of the German demonstratives *der* and *dieser* mainly goes back to Bisle-Müller (1991). The author investigates the adnominal use of German demonstratives. Based on the concept of *indexicality markers* by Auer (1981, 1984)[5] and theories by Clark et al. (1983) on the shared knowledge by the speaker and hearer, Bisle-Müller (1991) concludes that a difference between the adnominal use of *der* and *dieser* might

[4] More details about the corpus study are discussed later in this section.

[5] According to Auer (1981, 1984), indexicality markers are expressions signaling possible difficulties in the resolution of a referent based on the linguistic utterance alone and the need of additional contextual information, shared knowledge or world knowledge to do so. Auer (1984:636–639) assumes the adnominal *dieser* to be the most important indexicality marker in German, because it explicitly marks that one might need extra information from outside the utterance to identify the referent. In contrast to that, he assumes the adnominal *der* signals that the linguistic utterance is sufficient to identify the referent and no additional information is needed.

be their ability to express a contrast. According to Auer (1981, 1984), *dieser* is an *indexicality marker*. This means that it can be used by the speaker to signal possible upcoming differences in reference resolution, because there are several potential antecedents for one referential expression. Therefore, the hearer needs contextual information to identify the correct referent. Bisle-Müller (1991) combines this concept with the idea by Clark et al. (1983) that certain referents are more present in the mental representation of the speaker and hearer than other ones. Based on these ideas, he formulates the hypothesis that the German adnominally used *dieser* expresses a contrast between several possible referents that are similar in a certain way (indexicality marking) in the direction of the referent that is most present in the discourse, because it significantly differs from the other potential referents. Therefore, people choose *dieser* to appear together with this contrasted referent.

Furthermore, Bisle-Müller (1991) assumes that only the demonstrative *dieser* is able to express this type of contrast. According to him, this is a difference between the adnominal *der* and *dieser*. He claims that only *dieser* is able to express a contrast between the referent it appears together with and other potential referents, while *der* is not able to do this. In his opinion, *der* will only be used in cases where only one referent is contextually available in the discourse.

This theoretical concept only applies for the adnominal use of demonstratives. In addition to that, Bisle-Müller (1991) does not explicitly distinguishes between the adnominally used demonstrative *der* and the regular definite article in German.[6] Still, it has been highly influential with regard to the discussion about contrast and the (pronominal) use of demonstratives. His concept of contrast is discussed in several empirical studies about differences in the pronominal use of *der* and *dieser*, even though it is usually rather a side topic in these investigations (see Bader et al. 2020, Fuchs & Schumacher 2020). In addition to that, it inspired the contrast concept by Ahrenholz (2007) that explicitly deals with the pronominal use of the two demonstratives.

Ahrenholz (2007) builds on theoretical work of Bisle-Müller (1991) among others[7] and formulates the hypothesis that the pronominal *dieser* can be used to identify a referent and at the same time differentiate it from several other possible referents (Ahrenholz 2007:68–75). He adopts the view of Diessel (1999) that *dieser* has an internal component that expresses a contrast. Unlike Diessel (1999), he does not think it is a pragmatic but rather a semantic quality of the demonstrative. According to Ahrenholz (2007), this semantic quality is a difference between *dieser* and *der*. In his view, only *dieser* has a semantic component that enables it to express identification and contrast. Unlike *dieser*, the demonstrative *der* only has a semantic quality to express identification. If one wants to express a contrast via the use of *der*, one has to use additional prosodic cues (for example a heavier stress). Since the contrastive use of *dieser* is based on a semantic quality of the demonstrative, it holds for the adnominal and pronominal use of the demonstrative (Ahrenholz 2007:37–38, 68–75, 129).

To test this and other claims about German demonstratives, Ahrenholz (2007) conducted a corpus study with several corpora of spoken German. One result of this corpus study was that Ahrenholz (2007) was indeed able to find pronominal uses of *dieser* where a contrast is expressed between its referent and other potential referents in the discourse and the utterance

[6] Demonstratives of the *der*/*die*/*das*-paradigm have a similar morphological form as the German definite article. Hence, it is difficult to distinguish adnominally used *der*-demonstratives from regular definite articles. In the literature, it is often assumed that the adnominal *der* carries a full stress, whereas the definite article has a wekar stress. However, this distinction might be problematic as well (Gunkel 2017).

[7] Other important works to Ahrenholz (2007) are Pause (1991) and Diessel (1999).

situation. Therefore, he concludes that his results support the hypothesis that *dieser* has a semantic component expressing a contrast (Ahrenholz 2007:204–213).

Bisle-Müller (1991) and Ahrenholz (2007) assume that a potential difference between *der* and *dieser* is that *dieser* is able to express a contrast between the referent it appears together with or anaphorically picks up and other referents that are similar but differ from it in a significant way. However, there are also other positions on the influence of contrast regarding speakers' choice to use *der* and *dieser*: Bosch & Hinterwimmer (2016) investigate potential differences between the personal pronoun *er* and the demonstrative *der*. They claim personal pronouns preferreably pick up topics, while demonstratives are ill-suited to do so, because they are expressions that reorient the interlocutors' attention. However, they assume that a reference to a topical entity via the use of a demonstrative might be felicitous when there is a contrast between this referent and other referents. Unlike Bisle-Müller (1991) and Ahrenholz (2007), they therefore assume *der* to be able to express a contrast between the referent and other potential referents. Furthermore, they hypothesize that this might be a difference between the anaphoric demonstrative *der* and personal pronouns like *er*. This hypothesis is not based on empirical data but on personal judgements by the authors (Bosch & Hinterwimmer 2016:206–209).[8]

3. Other factors affecting the pronominal use of German demonstratives

In this section, I deal with other factors discussed in the theoretical and empirical literature affecting the pronominal use of *der* and *dieser*. The factors discussed in this section only affect the backward-looking functions of the two demonstratives, since the forward-looking functions are not investigated in this paper. For more information regarding the forward-looking functions, see Fuchs & Schumacher (2020). The factors discussed in this section are last-mentioned preference, register, modality, and percpectival center. Since most experimental research about pronominal demonstratives in German has been conducted in contexts with no more than two referents, most results of the research discussed here can only be applied to those contexts. One exception to this trend is the study by Patterson & Schumacher (2021) who investigate the behavior of *er*, *der*, and *dieser* in contexts with three antecedents. The results of their study will be discussed in the last subsection.

3.1. Last-mentioned preference

The first factor I want to discuss here is a so-called last-mentioned-preference of the demonstrative *dieser*. Zifonun et al. (1997) argue that the linear order of the potential antecedents is the most important factor in determining whether a referent will be picked up by *der* or *dieser*. According to them, the anaphoric demonstrative *dieser* is only able to pick up the referent of the preceding sentence which has the smallest linear distance to the referential expression in the following sentence. If *dieser* cannot pick this referent up, because of a gender mismatch or other semantic constraints, it is not or only hardly able to pick up another referent of the preceding sentence. However, the demonstrative *der* only has a weaker locality constraint. It is able to refer to the last mentioned referent but it can also refer to an entity that is further away (Zifonun et al. 1997:555–559).

[8] See Voigt (2021) for a more in-depth theoretical discussion of the linguistic concept of contrast and the use of demonstratives.

(4) Peter will einen Benz kaufen. Der/*Dieser
Peter want.PRS.3SG INDEF.SG.M.ACC Benz buy.INF DEM.3SG.M
hat wohl zu viel Geld
have.PRS.3SG probably too much money
'Peter wants to buy a Mercedes Benz. He must have too much money.'
(German; Zifonun et al. 1997:558–559)

Zifonun et al. (1997:558–559) discuss how in a context like (4), the demonstrative *dieser* is not able to refer to the referent *Peter*, since the linear distance between the potential antecedent and the referential expression is too long. *Der*, on the other hand, seems to be able to refer to the referent further away.

These ideas have been highly prominent in research about the referential preferences of *der* and *dieser* and are discussed in several recent empirical investigations (see Bader et al. 2020; Fuchs & Schumacher 2020; Patil et al. 2020). However, they have a major issue: empirical research has only partly been able to confirm this hypothesis. Patil et al. (2020) conducted a forced choice experiment in which they empirically investigated whether *dieser* indeed has a last-mentioned preference or whether the pattern observed by Zifonun et al. (1997) is rather due to the fact that the last-mentioned entity in canonical word order typically is a less prominent object. In order to test these two claims, they presented sentences in canonical and non-canonical word order containing two referents each to participants followed by a sentence containing an ambiguous *dieser* as a pronoun. The task for the test persons was to answer a question, which led them to resolve the ambiguous pronoun towards one of the referents. The results showed that in both word orders, people preferred *dieser* (just as research has repeatedly shown for *der*) to pick up the object of the sentence, irrespective of its linear position. Therefore, the authors concluded that the factor last-mentioned preference only has a marginal effect on the pronominal use of *dieser*.

For my experimental study, it is important to note that a last-mentioned preference might have a small effect on the pronominal use of *dieser*. However, this effect does not seem to be very strong, since it can be overridden by the factor grammatical role with respect to that *dieser* and *der* pattern alike. Taken this into consideration, a last-mentioned preference does not seem to be able to explain all differences in the pronominal use of *der* and *dieser*.

3.2. Register

Another line of research suggests that register might be a factor affecting the pronominal use of *der* and *dieser*. The basic idea behind this concept is that *dieser* might be preferred in more formal language, while people tend to use *der* more often in an informal language register.

Patil et al (2020) conducted two forced-choice experiments to investigate the behavior of *der*, *dieser*, and the third person personal pronoun *er*. They chose a between-participants design, so the items in experiment 1a were written in formal language, and the items in experiment 1b were written in a rather informal language. Participants had to decide which pronoun they preferred to pick up the referents in the different sentences. The results showed that the three referential expressions behaved similarly in both language registers regarding their chosen referents. However, the demonstrative *dieser* was used significantly more often in the formal register than in the informal register, whereas the demonstrative *der* was chosen more often in the informal register (Patil et al. 2020:4–18).

The results of this study clearly support the hypothesis that the language register strongly affects participants' choice of *der* or *dieser*. Still, there are a couple of hints this is not the only factor affecting the pronominal use of these demonstratives. Patil et al. (2020) themselves suggest that the modality of the language could also have affected the use of the demonstratives, since *der* appeared more often in the informal register but still appeared relatively few times across all registers. One explanation for this observation could be that *der* might be dispreferred in the written modality. In addition to that, there are many factors influencing the degree of formality a text has. All of these factors could also influence the use of the two demonstratives in these texts (Patil et al. 2020:15–18).

Another counterargument comes from Weinert (2007). In a corpus research, she investigated the use of personal pronouns and *der*-demonstratives in informal and formal conversations. Her corpus data clearly show that *der* often appears in the formal conversations. Based on these results, she concludes that the use of *der* does not seem to be bound to the informal language register (Weinert 2007:1–6). Another example for the appearance of *der* in a written formal register comes from Bader et al. (2020). They present an example of the prestigious German magazine *Der Spiegel* where a pronominal *der* appears and argue that *der* can also be used in formal language (Bader et al. 2020:17–18).

This small discussion shows that even if language register does have an effect on the pronominal use of *der* and *dieser*, it does not solely explain all differences in the use of these two demonstratives.

3.3. Language modality

In the previous subsection, I already mentioned that language modality could also be a factor that influences peoples' choice to use *der* or *dieser* to refer to a discourse referent. It is often assumed that *dieser* will be preferred in the written modality and *der* in the spoken modality. In her research about the scientific article, Graefen (1997) concludes that adnominal and pronominal *dieser*-demonstratives are the most commonly used deictic forms in scientific articles. She explains this with the tight connection of the *der*-demonstratives to the speech situation. Since the *der*-demonstratives have more or less the same morphological form as definite articles and relative pronouns in German, she argues, one needs prosodic cues to distinguish these forms from each other. This, of course, is not possible in the written modality and therefore they are dispreferred in written texts (Graefen 1997:217 –225).

These thoughts are in a line with corpu -research by Weinert (2011), who claims that *der*-demonstratives appear in spoken German as often as personal pronouns while this is not the case for written German. Especially interesting here is that she explicitly states that she does not see this difference between formal and informal conversation. Instead, this difference seems to be due to the language modality (Weinert 2011:71).

Portele & Bader (2016) conducted a corpus study and an experiment to investigate which factors affect the pronominal use of *der* demonstratives and personal pronouns in the production of written language. They could show that in written language, the personal pronouns were also preferred in linguistic context in which one would expect the use of a demonstrative. Therefore, they conclude that *der* appears more often in the spoken than in the written modality.

Is written modality the linguistic factor determining the choice between *der* and *dieser*? As with register, there are also some arguments against this hypothesis. As mentioned in the last subsection, it is often hard to disentangle the factors modality and language register. Therefore,

the results of Graefen (1997) could also be due to language register, since scientific articles are usually written in a highly formal register. And Weinert (2011) explicitly writes about formal written language as well. In addition to that, Portele & Bader (2016) themselves argue that it is not sufficient to just compare the two different modalities, because the use of demonstratives can vary between different subtypes of the written language. Texts in social media contexts are often closer to the oral language than to written language and therefore the use of anaphoric expressions in these texts resembles the use in the spoken modality (Portele & Bader 2016:36–37).

To sum up, even though there are results showing that *der* appears less often in the written modality than in the spoken modality, while *dieser* often appears in written texts, it is unclear whether this observed pattern can be solely explained by the language modality.

3.4. Perpectival center

The last factor discussed here is highly connected to the perspective of a speaker. According to Kaiser & Fedele (2019:311), current research suggests that perspective could be a factor influencing the choice of antecedents for personal pronouns and demonstratives in several languages.

For German, relevant studies regarding the effect of perspective on the use of personal pronouns and demonstratives have been conducted by Hinterwimmer & Bosch (2018) and Hinterwimmer et al. (2020). The main hypothesis of these studies is that *der*-demonstratives are not able to anaphorically pick up so-called perspectival centers. Discourse referents are perspectival centers if the rest of the sentence can be interpreted as expressing their thoughts, utterance or perception (see Hinterwimmer & Bosch 2018). In a sentence like *Peter thinks the weather is nice,* the referent *Peter* functions as the perspectival center of the rest of the sentence. The authors empirically investigated this hypothesis in Hinterwimmer et al. (2020) with two offline-rating tasks. They interpret their results to mean that *der* indeed does not seem to be able to pick up the discourse referent that is the perspectival center and that the most-prominent topical referent automatically functions as perspectival center if there is no clear center in the utterance. Therefore, they conclude, *der*-demonstratives typically avoid to pick up perspectival centers or topics in their absence.

Patil et al. (2020) hypothesize a difference between *der* and *dieser* might lie in their ability to pick up perspectival centers. They suggest that *der* avoids picking up the perspectival centers as antecedents, whereas *dieser* avoids the most prominent referents irrespective of their role as perspectival centers (see Patil et al. 2020:17–18).

This theoretical concept is highly interesting and would be able to explain cases where *der* and *dieser* cannot be interchangeably used. However, at present it has not been empirically tested. Therefore, we need to wait for an empirical validation of this hypothesis.

3.5. More than two antecedents

Most studies investigating these factors have been conducted with maximally two potential antecedents for the demonstratives. Therefore, the results of these studies and the conclusions regarding the single factors can only account for linguistic contexts with these numbers of po-

tentially available referents. According to Patterson & Schumacher (2021), this might be problematic because the limitation to two potential antecedents could mask differences between *der* and *dieser* which maybe only come to light in contexts with more possible referents (see Patterson & Schumacher 2021:1432).

To overcome this methodological limitation, they conducted three acceptability judgement studies with ditransitive constructions that always contained three referents which were ordered by their relative prominence according to their semantic roles. Building on Primus (1999), the authors assumed the agent to be more prominent than the recipient and the recipient to be more prominent than the patient. Their items consisted of two sentences each. The first sentence contained the three referents and the second sentence always included a pronoun of the type *er, der,* or *dieser* unambiguously referring to one of these referents. Participants had to give acceptability ratings for the sentences. The authors conducted this experiment to find potential differences between the two demonstratives masked in contexts with two referents and to further explore the nature of the linguistic concept of discourse prominence (see Patterson & Schumacher 2021:1427–1453).

The results of the experiments show a high sensibility of both demonstratives for the relative prominence of the potential antecedents. Both demonstratives preferred the less prominent patient and recipient referents. In addition to that, an effect of linear order occurred. In experiment 1a and 1b, the least-prominent patient referent was also the last-mentioned referent of the first sentence. Participants gave the highest ratings for continuations where the demonstratives referred to this referent. However, in experiment 2, the middle-prominent recipient was in the sentence-final position. In this subexperiment, the participants gave the best ratings for continuations where the two demonstratives picked up the recipient. Therefore, the authors concluded that in contexts with three potential antecedents, the semantic role and the linear order are the most important factors affecting peoples' choices to refer to a referent with the two demonstratives. Even though the experiments were able to show some interesting choice patterns for the two demonstratives with regards to the factors discussed here, no significant differences between *der* and *dieser* could be found in contexts with three antecedents either (see Patterson & Schumacher 2021:1445–1456).

The section discussed different factors that are currently debated to have an effect on peoples' choice to use *der* or *dieser* to refer to a certain referent in discourse. While the discussion could show that some of these factors indeed have a minor influence on the choice between these two demonstratives, it also became quite clear that no factor alone is strong enough to explain all the differences in the use of *der* and *dieser*. Therefore, one can assume there must be other factors at work as well. In the following section, I discuss a forced-choice experiment I conducted to test whether contrast might be one of these further factors.

4. Experiment

In the first section of this article, I formulated the hypothesis that a potential difference between the German pronominal demonstratives *der* and *dieser* might lie in their ability to express a contrast between several discourse referents. Based on Bisle-Müller (1991) and Ahrenholz (2007), I assume that *dieser* is able to express a contrast between the referent it picks up and other referents in the discourse that share similar properties but differ from it in a crucial way, while *der* is not able to express this sort of contrast. Furthermore, I hypothesized that the ability to express this sort of contrast leads to differences in the use of these two demonstratives. This

section reports a forced-choice experiment I conducted to test these claims. In the following subsections, I present the design (4.1), the experimental procedure (4.2), the results (4.3), and the discussion of the experiment (4.4).

4.1. Design

I conducted a forced-choice experiment to test whether the linguistic factor contrast affects the choice between the two demonstratives *der* and *dieser* in German. The independent variable was an alternative-based contrast. It had two levels: contrast and no-contrast. The dependent variable was the participants' pronoun choice between *der* and *dieser*. A prototypical experimental item is shown in (5).

(5) a. Für die Renovierung meines Hauses habe ich einen Dachdecker, einen Fliesenleger und einen Elektriker kommen lassen. Ich fand den Dachdecker am besten. Im Gegensatz zu dem Fliesenleger und dem Elektriker war **dieser**/**der** extrem fleißig. *For the renovation of my house, I had a roofer, a tiler and an electrician come. I found the roofer the best. Unlike the tiler and the electrician,* ***he*** *was extremely hardworking.*

b. Für die teure Renovierung meines sehr baufälligen Hauses im Vorort der Stadt habe ich einen Dachdecker kommen lassen. Ich fand den Dachdecker sehr gut. Im Rahmen der Renovierungsarbeiten am Haus war **dieser**/**der** extrem fleißig. *For the expensive renovation of my very dilapidated house in the suburbs of the city, I had a roofer come. I found the roofer to be very good. During the renovation work on the house,* ***he*** *was extremely hardworking.*

(5a) is a prototypical item with contrast. In the first sentence, three referents are introduced via indefinite DPs. All of them have one feature in common. In this case, all are handymen. After the first sentence, only one of them is mentioned again in the second sentence via a definite DP. The third sentence is the critical sentence. It expresses a contrast between the two referents and the first one which is picked up by a pronominally used demonstrative. Participants saw a gap at the position of the demonstrative and were asked to choose *der* or *dieser* depending on which one they thought fits better. (5b) is a prototypical item without contrast. The structure and length are similar to (5a). However, there is only one referent and no contrast is expressed. Similar to (5a), participants saw a blank at the place of the demonstrative and had to decide whether they prefered *der* or *dieser* to pick up the referent. The items were supposed to test (H1) and (H2) of the introduction (repeated here for convenience).

(H1): *Dieser* is able to express a contrast between its referent and other referents.

(H2): The ability to express this contrast is a difference between *dieser* and *der*. In contexts with contrast, *dieser* should be preferred.

My predictions were as follows: If (H1) is correct, people should be able to use *dieser* at least as often or more often in the contrast conditions (5a) than in the conditions without contrast (5b). If (H2) is correct as well, people should choose *dieser* significantly more often in the contrast-conditions (5a) than in the conditions without contrast (5b).

Section 3 discussed several other factors that might affect peoples' choice to use one or the other demonstrative. The items of my experiment were carefully controlled for these factors: I kept the factors modality and perspectival center constant across all conditions and items. Therefore, potential differences across the conditions could not be due to these factors. I tried to keep all items in a register that is not to formal and not to informal, so no register effects should affect the dependent variable. As can be seen in (5a), in the contrast-conditions with three referents, the demonstrative always refers to the first-mentioned referent to avoid effects of a last-mentioned preference. In the conditions without contrast, there is only one referent and therefore no effects of linear order can emerge. In sum, no differences measured in the dependent variable can be caused by one of those factors.

4.2. Procedure

To test (H1) and (H2), I constructed 20 items with two levels each. This led to a total number of 20 mini-discourses with contrast (as (5a)) and 20 mini-discourses without contrast (as (5b)). The fillers[9] consisted of 18 items with three levels each. In total, I had 54 filler-items and 40 critical items.

For my experiment, I used a within-subjects and within-items design. Every participant saw items of each condition (contrast and no-contrast), but not more than one condition of each item. Using the latin-squares design, I equally distributed the items on two lists (list A and list B). I used the same method to equally distribute the fillers on three lists (list i, list ii, list iii). After that, I distributed the three lists containing the fillers onto the two lists containing the items which led to a total number of six lists (list Ai, list Aii, list Aiii, list Bi, list Bii, list Biii).

I pseudo-randomized the order of the items and implemented them on *Google Forms*. This platform was chosen, because I expected many participants to be familiar with it through private contexts or their working experiences. In addition to answering the items, participants were asked to provide information regarding their age, gender, and L1.

Before the start of the study, every participant had to sign a data privacy statement. After that, they could see the instructions. In these instructions, they were informed that they were about to see sentences with gaps instead of pronouns and that their task was to pick one of the two presented pronouns which seemed intuitively more fitting. The order of presentation of the pronouns was randomly varied between the items.

57 people participated in the experiment. All of them had German as L1. The age range of the participants was between 13 and 64. No participants were excluded from the statistical analysis.

4.3. Results

Figure 1 shows the pronoun choice of the participants across the two conditions of the items. On the y-axis, one can see the number of answers in percent. On the x-axis, one can see the two conditions (contrast and no-contrast). The boxes show how many times *der* and *dieser* were chosen across the two conditions in percent.

[9] The fillers served as a pretest for another experiment on pronominal demonstratives in German.

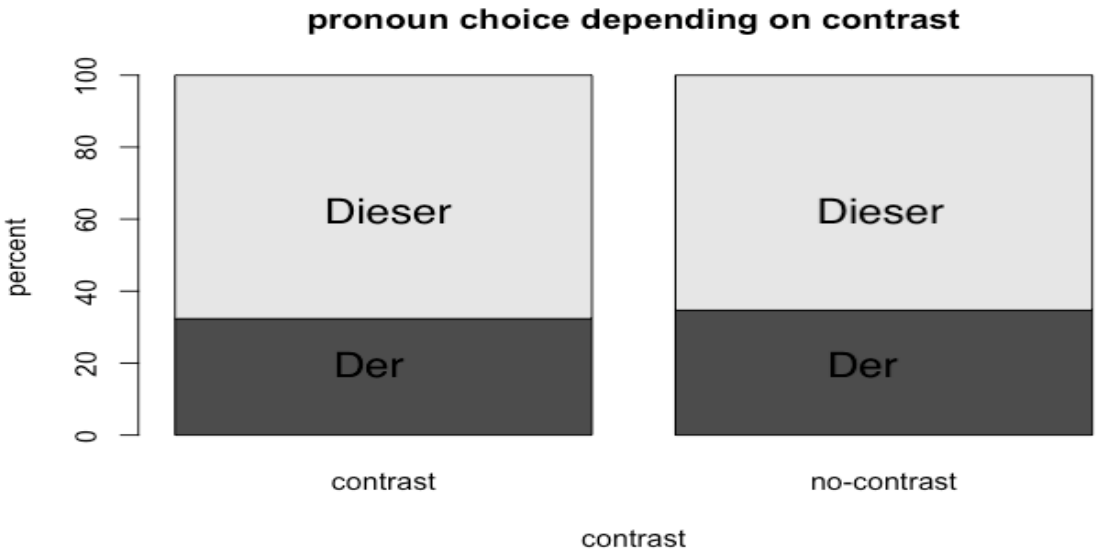

Figure 1. Percentage of *der/dieser* chosen for both the contrast and no-contrast condition. *Dieser* was chosen the majority of the time in both conditions, with only a marginal difference between conditions.

As can be seen in Figure 1, *dieser* was used immensely more often in both conditions. In the contrast-condition, participants chose *der* 183 times and *dieser* 383 times. In the condition without contrast, participants chose *der* 197 times and *dieser* 371 times. The results show that people used the pronominal demonstrative *dieser* slightly more often in the condition with contrast than in the condition without contrast. However, this difference is only marginal.

In order to test whether this small difference in the pronoun choice between the two conditions is statistically significant, I ran a generalized linear mixed effects regression model (glmer) using the lme4 package (Bates et al. 2015) in R (R Core Team 2021). The independent variable of the model was the factor contrast with its two levels contrast and no-contrast, which I coded as *kon* (for contrast) and *norm* (for normal), as independent variable for the statistical model. The dependent variable were the answers which I coded binary (*der*=0 and *dieser*=1) for the statistical analysis. The items and participants were included as random effects (random intercepts and random slopes each for items and participants) in the model. However, to make the model converge, I had to exclude the random slopes for the items.

In the calculation with this reduced model with *kon* as reference level, the estimate was -0.1657. This value shows that *dieser* indeed was used less often than *der* in the condition without contrast. However, since the p-value was 0.626, this small effect is insignificant. To sum up, the results of the descriptive statistics and the results of the inferential statistics show that there is a small contrast effect that affects peoples' pronoun choice in the direction of *dieser*, but this small effect is not statistically significant.

4.4. Discussion

Based on theoretical literature about contrast and the use of *der* and *dieser*, the experiment was supposed to test the following two hypotheses (H1) and (H2). The results of the experiment

could be interpreted as speaking in favour of (H1). *Dieser* seems to be compatible with contexts including a contrast between the discourse referent it anaphorically picks up and other referents in discourse. Otherwise, it would have been used less often in the contrast-condition than in the condition without contrast. The experimental results clearly show that this is not the case. In fact, across both conditions *dieser* has been used almost equally often and even slightly more often in the condition with contrast. Therefore, one could conclude that *dieser* is indeed able to express a contrast between its referent and other potential referents sharing similar properties but also differing from the chosen referent in a significant way, or is at least compatible with a contrast like that.

(H2) is not supported by the experimental results. If the ability to express this sort of contrast was a difference between *dieser* and *der* in a way that only *dieser* is able to express contrast, *dieser* should have been used more often in the contrast-condition than in the condition without contrast. The results indicate that this is not the case. As stated before, *dieser* and *der* were used almost equally often in both conditions. Even though the descriptive statistics showed a numerical *dieser*-preference in the condition with contrast, the results of the inferential statistics indicate that this small effect is not statistically significant. Therefore, one can conclude that the results do not support the hypothesis of Bisle-Müller (1991) and Ahrenholz (2007) according to which only *dieser* expresses a contrast between several discours referents and that this ability of *dieser* leads to differences in the use of the two demonstratives.

Across both conditions, both *dieser* and *der* were chosen almost equally often. One question to discuss is whether a possible reason for these results can be explained by inherent qualities of the experimental items. Maybe *dieser* is contrast-sensitive but not to the type of contrast in my items. For my experimental design, I decided to produce constructions that resemble constructions with the information structural notion of a contrastive focus (see Umbach 2004; Repp 2010, Repp 2016 for contrast in information structure). I chose these constructions, because I thought they underlie a similar mechanism as the contrast in Ahrenholz (2007) and Bisle-Müller (1991) as well as the examples I found conducting a small corpus study investigating contrastive uses of *dieser* in spoken and written German (Voigt 2021). However, there would have been other types of contrast which could also fit the contrast concept by Ahrenholz (2007) and Bisle-Müller (1991) and the corpus examples. For example, Bader et al. (2020) discuss partitive constructions as in (6) to express a contrast similar to the concept of Bisle-Müller (1991). Another possibility would be investigating constructions where a topic contrast is established between several referents. Further experiments with partitive and contrastive topic constructions would be fruitful in order to test to what extent the absence of the expected contrast effect is due to my items.

(6) Ich habe mein-e Söhne mit-gebracht.
1SG.NOM have.1SG.PRS 1SG.GEN-M.ACC.PL sons.PL.M.ACC with-bring.1SG.PRF
[pointing gesture]
Dieser/Der ist Linguist.
DEM.3SG.M be.PRS.3SG linguist.
'I brought my sons. This one is a linguist.'

(German; Bader et al. 2020:(2))

Another possible reason for the observed results could lie in the experimental design. Perhaps a forced-choice design is not fine-grained enough to capture the differences between *der* and *dieser* with regards to contrast. It might be possible that experimental designs eliciting more

fine-grained measurements (such as acceptabity judgement tasks or self-paced reading tasks) would be more suitable to show more subtle differences in the use of *der* and *dieser*.

Nevertheless, if one assumes that the lack of a contrast-based difference between *der* and *dieser* in the results is not due to inherent properties of the items or the experimental design, one has to conclude that the results speak against the hypothesis from Ahrenholz (2007) and Bisle-Müller (1991). Instead, they might be more in line with the hypothesis of Bosch & Hinterwimmer (2016) that *der* is able to express a contrast between several discourse referents. Since *der* was chosen almost equally often in the contrast-condition and in the condition without contrast, the results might be interpreted as supporting the part of the hypothesis by Bosch & Hinterwimmer (2016) stating that the demonstrative *der* can be used to express a contrast. Still, it remains unclear whether this is a difference between the pronominal demonstrative *der* (and *dieser*) and the personal pronoun *er* as the authors hypothesize. To test this hypothesis, I conducted another forced-choice experiment using the same items but with an additional *er* to choose. The results are reported in Voigt (2022), and they indicate that the ability to express a contrast might be a difference between the two demonstratives *der* and *dieser* and the personal pronoun *er* as Bosch & Hinterwimmer (2016) hypothezise. Still, given the very small number of items and participants, further research needs to be done.

Another question arising from the results of this study regards the adnominal use of *der* and *dieser*. My results could show that there is no contrast-driven difference between *der* and *dieser* in the pronominal use. However, both Bisle-Müller (1991) and Ahrenholz (2007) hypothezise about a contrast-based difference in the adnominal use as well. Since there was no such difference in the pronominal use, it might be interesting to experimentally investigate whether one can find such a difference in the adnominal use. However, setting up an experimental design that investigates the adnominal use of *der* and *dieser* could be very difficult, because the adnominal demonstrative *der* in German is hardly distinguishable from the definite determiner *der* which has a very similar morphological form.

In addition to revealing insights about the behavior of the pronominal *der* and *dieser* in contrastive context, the results can also be discussed with regards to the factors presented in section 3. One result of the experiment is that *dieser* was chosen almost twice as often as *der* in both conditions. A question arising from this pattern is what factor evokes such a strong preference for *dieser* across conditions. A possible answer for this question could lie in the modality of the items. The items were presented in the written modality. As discussed in section 3.3., some authors assume *dieser* preferably occurs in written language, while people tend to use *der* more often in spoken language. Perhaps the strong preference for *dieser* across both conditions goes back to this. However, this is just one possible interpretation of the results. Since all conditions were presented in written form, it cannot be verified. If the modality indeed has an effect on the pronominal use of *der* and *dieser*, it might be possible that there is an interaction between the factors language modality and contrast: maybe there is a contrast effect in the direction of Bisle-Müller (1991) and Ahrenholz (2007), but since the effect of the written modality is so strong, the contrast-effect gets overridden by the modality effect. To disentangle these two potential factors, it might be interesting to conduct a similar experiment with the same items and to additionaly vary the modality of the language in a between-items design.

Finally, the results give clear implications for the discussion of a possible last-mentioned preference of *dieser*. As presented in section 3.1. and 3.5., there is the hypothesis that the linear order of referents affects the interpretative preferences of *dieser* and *der* in such a way that *dieser* is only able to pick up the last mentioned entity while *der* is more flexible in its referential choice. The results of Patil et al. (2020) and especially the results of Patterson & Schumacher

(2021) suggest a small effect of linear order. Contrary to that, my experiment cannot support this claim. In my experimental design, both demonstratives do not pick up the last mentioned referent. Still, participants do not seem to have a problem picking up this referent with the demonstrative *dieser*. In fact, they even prefer *dieser* over *der* to do so. These results clearly speak against a strong influence of a last-mentioned preference. Again, perhaps there is an interaction between the factors modality and linear order in such a way that the effect of the written modality is stronger than the linear order effect. An experiment as outlined in the paragraph above could also be fruitful in order to disentangle these two potential factors.

5. Conclusion

In this paper, I presented the results of a forced-choice experiment investigating the pronominal use of the demonstratives *der* and *dieser* in German. The main hypothesis following Bisle-Müller (1991) and Ahrenholz (2007) was that *dieser* is able to express a contrast between its antecedent and other similar referents in discourse, whereas *der* is not or only hardly able to do this. Therefore, one would expect people to prefer to use *dieser* over *der* in linguistic contexts with such a constrast.

The results of the experiment can be interpreted as supporting the hypothesis that *dieser* is able to express a contrast between its antecedent and other referents or at least is compatible with such a contrast. However, they are not in line with the hypothesis that the ability to express this sort of contrast is a difference between *dieser* and *der* which leads to differences in the use of these two demonstratives. Instead, the results show that both demonstratives seem to be equally able to be used in a contrastive way. This is in line with the hypothesis of Bosch & Hinterwimmer (2016) who state that *der* might be able to express a linguistic contrast.

As the discussion has shown, the results offer many starting points for further experimental research on *der*, *dieser*, and *er*. In addition to this, they provide new insights into the other factors possibly affecting the pronominal use of the two demonstratives. Thus, they speak against a strong effect of a last-mentioned preference for *dieser*. Furthermore, they might support the idea that language modality is a strong factor determining the choice between *der* and *dieser*.

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Abbreviations

1, 2, 3	first, second, third person	INF	infinitive
ACC	accusative	M	masculine
DAT	dative	NOM	nominative
DEF	definite	PL	plural
DEM	demonstrative	PRF	perfect
GEN	genitive	PRS	present
INDEF	indefinite	PST	past

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An analysis of Mandarin Chinese islands in Phase Theory

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This paper reconsiders islands in Mandarin Chinese under Phase Theory, proposed by Chomsky (2000). Based on the ideas of phases by Chomsky (2008) and Kanno (2008), among others, I argue that the difference of islandhood in Chinese and English can be explained by arguing that phases are not formed in Chinese because it lacks phi feature agreement. Furthermore, I extend the analysis to long-distance binding in Chinese, following the analysis of Quicoli (2008) and Saito (2017a, b). If my proposal is correct, it suggests that languages which lack phi feature agreement do not show a phase effect entirely.

1. Introduction

It has long been considered in the literature that, unlike English, Mandarin Chinese does not show *wh*-island and adjunct island effects, as illustrated in (1) and (2) (This paper uses Mandarin Chinese data, which is referred to as Chinese here for the sake of convenience only).

(1) ni xiang-zhidao [shei mai-le shenme]?
you want-know who buy-ASP what
a. 'Who is the x such that you wonder what x bought?'
b. 'What is the x such that you wonder who bought x?' (Huang 1982:267)

(2) ta [yinwei ni shuo shenme hua] hen shengqi?
he because you say what word very angry
'What is the x such that he was angry because you said words x?'(Huang & Li 1996:65)

However, it is also observed that *wh*-adjuncts exhibit both of these island effects, unlike *wh*-arguments, as shown in (3) and (4).

(3) [ni xiang-zhidao [shei weishenme mai-le shu]]?
you want-know who why buy-ASP book
*'What is the reason x such that you wonder who bought books for x?'
(Huang 1982:525–526)

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(4) *ta [yinwei ni weishenme shuo hua] hen shengqi?
he because you why say word very angry
'Why (x) such that he was angry because you said words x?' (Huang & Li 1996:65)

To account for this asymmetry, numerous analyses have been proposed in the literature (Huang 1982; Tsai 1994a, b; Reinhart 1998; Soh 2005; Hsu 2009, 2010; Murphy 2017; among others). Arguably, the most well-known analyses involve Logical Form (LF) movement (Huang 1982) or unselective binding (Tsai 1994a). Although these two approaches are both insightful and intriguing, both of them comprise some conceptual problems, as I will discuss below.

The aim of this paper is to provide a phase-based analysis for Chinese islands. Since Chomsky's (2000) innovative proposal, the derivation of the sentence has been taken to proceed phase by phase. Hence, *wh*-movement must move through phase edges to reach the matrix CP spec position: under Phase Theory, movement takes place not in the one-fell-swoop fashion but by way of successive cycles, as illustrated in (5).

(5) [$_{CP}$ what [do you think [$_{CP}$ ~~what~~ [John likes ~~what~~]]]]

In the standard view, CP and *v**P are considered phases (Chomsky 2000, 2001). Why do these two form a phase? It was originally argued that they form a phase because they are propositional (Chomsky 2000:107). However, many alternatives have also been suggested in the literature (Chomsky 2008, 2015; Kanno 2008; Legate 2012; Takahashi 2010; Gallego 2010; Miyagawa 2011; Bošković 2014; among others). Thus, it is fair to say that there is no consensus on what forms a phase. This paper adopts and supports a persuasive suggestion that an unvalued phi feature (or phi feature agreement) constitutes a phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b; Sakumoto 2021a; among others), and provides a natural explanation for the peculiar syntactic behavior of Chinese. In particular, I argue that the lack of island effects in Chinese is naturally explained if a phase does not exist in languages which lack phi feature agreement. Furthermore, I will show that the proposed analysis in this paper can explain why long-distance binding is possible in Chinese, on the basis of the insightful analysis by Quicoli (2008) and Saito (2017a, b).

The organization of this paper is as follows: Section 2 takes up two influential analyses of *wh*-islands from previous studies (i.e., Huang 1982; Tsai 1994a, 1997, 1999a, b). In Section 3, I observe how a phase and island are connected in previous studies of Phase Theory. Based on the previous literature, Section 4 provides a natural explanation for the lack of islands in Mandarin Chinese, claiming that phases are not constituted in Chinese. I also discuss the long-distance binding of Chinese, which is well known for its peculiar properties (e.g. Yang 1983). In Section 5, I consider the theoretical consequences of this paper, focusing on computational efficiency in Phase Theory in the sense of Chomsky (2000, 2001). Section 6 addresses potential remaining problems of this paper. I conclude this paper in Section 7.

2. Previous analyses of the derivation of wh-questions in Chinese

This section introduces two important analyses of *wh*-island effects in Chinese: covert movement (Huang 1982) and unselective binding (Tsai 1994a, 1997, 1999a, b). In Chinese syntax, these two analyses have played a crucial role in the study of *wh*-movement.

2.1. Covert movement analysis

Let us first begin with covert movement analysis. Huang (1982) proposes that *wh*-phrases undergo covert movement in Mandarin Chinese. Under this analysis, *wh*-phrases move covertly at LF, which determines the scope position, as in (6).

(6) ni kanjian-le shei
you see-ASP who
'Who did you see?' (Huang 1982:253)

Hence, in (6), a *wh*-phrase *shei* 'who' moves covertly to the CP spec position to determine the scope position. Interestingly, it is also observed in Huang (1982) that in situ *wh*-phrases in Chinese are able to take wide scope even when they appear in embedded clauses, as shown in (7).

(7) [Zhangsan zhidao [shei mai-le shu]] (?)
know who buy-ASP book
a. 'Who does Zhangsan know bought books?'
b. 'Zhangsan knows who bought books.' (Huang 1982:254)

Huang claims that covert movement at LF is not subject to the island condition or subjacency condition of Chomsky (1973) (cf. Nishigauchi 1986; 1990). Therefore, *wh*-island effects are not exhibited in Chinese (see also Watanabe 2001 for an analysis involving covert operator movement). Huang attributes the ungrammaticality of moving *wh*-adjuncts from island to the Empty Category Principle (ECP) in Chomsky (1981), capturing the argument/adjunct asymmetry.[1]

(8) In particular, if adjuncts in Chinese are adjoined to VPs, then they are neither governed by the verb (government blocked by the lower VP node) nor governed by INFL (government blocked by the higher adjoined VP node). Therefore, although subjects are properly governed in Chinese by the (lexical) INFL, adjuncts are not. The effect of ECP is therefore visible on movement of adjuncts. (Huang 1982:524)

Thus, movement of *wh*-adjuncts from islands is disallowed by ECP, unlike *wh*-arguments. In this way, the argument/adjunct asymmetry is well captured (I will discuss this asymmetry further in Section 4.2). However, the notions of ECP and LF movement cannot be sustained in the Minimalist Program (see Hsu 2009; Murphy 2017, and references therein).[2] Thus, I cannot directly maintain Huang's analysis for *wh*-islands in Chinese as it stands. Hsu (2009) attempts to solve this problem and claims that covert movement in Chinese applies in the narrow syntax based on ideas from Chomsky (2004) and Pesetsky (2000). She argues that the difference between covert/overt *wh*-movements in different languages lies only in their phonetic realization (see also Murphy 2017). However, if we assume that both *wh*-arguments and *wh*-adjuncts undergo covert movement (cf. Hsu 2009), it is not clear why only *wh*-adjuncts exhibit *wh*-island effects, unlike *wh*-arguments (see also Hsu 2009 and Murphy 2017 for their alternative suggestions).

[1] See Huang (1982); Huang & Li (1996); Cheng (2009) for evidence in favor of LF movement.
[2] See Hsu (2009:21) for empirical problems of Huang's (1982) analysis based on ECP.

2.2. Unselective binding analysis

Let us consider another influential approach to *wh*-questions in Chinese: unselective binding as suggested by Tsai (1994a, 1997, 1999a, b; see also Baker 1970; Heim 1982; Nishigauchi 1986; Pesetsky 1987; Tsai 2008, Reinhart 1998; Hsu 2009, 2010; Saito 2017c; among others). Tsai (1994a, 1997, 1999a, b) claims that *wh*-arguments are variables, which are licensed by unselective binding: *wh*-phrases can be bound by an operator, which is base-generated in the CP spec position (see also Cheng 1991; Aoun & Li 1993). Thus, *wh*-arguments in Chinese can stay in situ, unlike those in English. On the other hand, *wh*-adjuncts are operators, which need to move to the scope position. Under his analysis, the *wh*-phrase like *shei* 'who' is a variable and must be unselectively bound by the implicit interrogative operator in the CP spec position, as illustrated in (9).

(9) Chinese-type: $[_{CP}\ OP_{x\ [Q]}\ [_{TP}\ \ldots\ wh(x)\ \ldots]]$ (Tsai 1999a:61, slightly modified)

As Tsai (1994a) argues, no movement is utilized in this analysis, so no island effects are expected. Though this analysis nicely accommodates the contrasts between *wh*-arguments and *wh*-adjuncts, it must hypothesize two different mechanisms (unselective binding and movement) for one phenomenon (*wh*-questions) (see Tsai 1999a:41; Murphy 2017 for this point). Consider Murphy's (2017) following argument.

(10) In short, exactly which mechanism is assumed for a particular *wh*-phrase follows from its island sensitivity, i.e. the *wh*-phrase counts as an operator if it exhibits island sensitivity, when ideally the situation should be the reverse. (Murphy 2017:190)

(11) We therefore have a 'hybrid approach' to variation with wh-in-situ constructions−some *wh*-phrases are unselectively bound by an operator, others must raise at LF. This seems to undermine the entire spirit of non-movement accounts such as unselective binding, and furthermore proves to be unworkable in light of efforts to dispense with LF movement in the Minimalist Program (Chomsky 1995; see Simpson 2000 and Sect. 2.5 for discussion). (Murphy 2017:202)

As such, it seems ad hoc to utilize movement for *wh*-adjuncts only because they induce island-effects. This paper attempts to derive a unified explanation solely through movement, which has theoretically desirable consequences (see Murphy 2017 for his alternative).

3. The phase-based approach to islands

In this section, I consider how the notion of a phase and island phenomena have been related in previous studies. Arguably, the most important concept in this regard is the Phase Impenetrability Condition (henceforth, PIC) of Chomsky (2000), as shown in (12).

(12) Phase Impenetrability Condition (PIC)
In phase α with Head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations. (Chomsky 2000:108)

This condition states that the complement of a phase head is not accessible, but the head and its edge are accessible to operations. That is, no syntactic operations in the complement of the phase head are allowed once it is transferred to the interfaces. Many researchers attempt to relate PIC effects and impossibility of extraction from islands (Ishii 2000; Kanno 2008; Narita 2011; Boeckx 2012; among many others).[3]

Let us first consider how the idea of PIC has been used to account for *wh*-island effects (Ross 1967) in previous studies. It has been acknowledged in the literature that *wh*-island effects do not occur if the embedded clauses are non-finite, as in (13) (see Ross 1967; Frampton 1990; Manzini 1992, among others).

(13) a.*What$_i$ do you wonder [how$_j$ Mary repaired t_i t_j]?
b. What$_i$ do you wonder [how$_j$ to repair t_i t_j]? (Manzini 1992:51)

Kanno (2008) argues that elements can be extracted from a *wh*-island if its C does not constitute a phase (see also Grano & Lasnik 2018; Sakumoto 2021a).[4] The idea that the CP of an infinitive (non-finite) clause does not constitute a phase has been argued by many researchers, and the reasons why they are not a phase differ depending on the source (Kanno 2008; Wurmbrand 2013; Grano & Lasnik 2018; among many others). This paper adopts and strengthens the argument that an unvalued phi feature defines the phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b; Sakumoto 2021a; among others). Many researchers indeed emphasize the relationship between phases and a phi feature (agreement) (Chomsky 2001, 2008; Kanno 2008; Gallego 2010; Saito 2017a, b; among many others). Because the C of infinitival clauses like (13b) lack phi features, it is not a phase under this definition.[5] Thus, *wh*-extraction from infinitival clauses is expected to be possible.

Then, let us consider adjunct island effects (see Ross 1967; Huang 1982). The widely held observation is that extraction from adjunct clauses is banned, as shown in (14).

(14) a.*Who$_i$ did John go home [before he talked to t_i]?
b.*Who$_i$ did John go home [after he talked to t_i]?
c. *Who$_i$ did John fall asleep [while he was talking to t_i]? (Truswell 2011:176)

From evidence like this, adjuncts have been considered to be invisible in syntax in previous studies (see Bode 2020 for an overview). To capture this invisibility, Chomsky (2004) argues that adjuncts are introduced by a special type of Merge, namely pair-Merge, which can function to make syntactic elements objects in a *separate plane*. Under pair-Merge, adjuncts become invisible, and extraction from them is impossible. However, the pair-Merge approach to

[3] See e.g. Boeckx (2007), Boeckx & Grohmann (2007), and Citko (2014) for an argument against relation between PIC and island.

[4] See also Frampton (1990:69-70) for the examples which Kanno (2008) cites in his paper. See also Ross (1967:27) for the observation.

[5] More precisely, Kanno (2008) proposes the following definition.

(i) The phasehood of CPs is determined by the combination of an Agree feature and a Tense feature; if a CP possesses both Agree and Tense features, it is a phase; if a CP does not have one or both of the two features, it is not a phase. (Kanno 2008:24-25)

As shown in (i), Kanno necessitates not only an Agree (phi) feature but also a Tense feature for the determining factor of a phase. Since whether to assume a Tense feature does not affect the argument of this paper, this paper simply hypothesizes that an (unvalued) Agree (phi) feature is what forms a phase. See Sakumoto (2021a) for related discussion.

adjuncts is problematic. As Oseki (2015) and Sakumoto (2021a, b) argue, pair-Merge cannot explain data like (15) where extraction from adjunct clauses is permitted (see Truswell 2011 for more data).

(15) a. What$_i$ did you come round [to work on t_i]?
b. Who$_i$ did John get upset [after talking to t_i]?
c. What$_i$ did John come back [thinking about t_i]? (Truswell 2011:129)

If pair-Merge makes adjuncts invisible in syntax, no extraction from them should be possible (e.g., see Oseki 2015; Sakumoto 2021a, b for this point). In addition, more empirical and theoretical problems of pair-Merge have been pointed out by many researchers (Gallego 2010; Oseki 2015; Bode 2020; Sakumoto 2021a, b; among others). Instead of assuming a *separate plane* for adjuncts, many researchers propose a phase-based approach to adjuncts (Raposo 2002; Narita 2011; Boeckx 2012; Munemasa 2015; Bošković 2016; Grano & Lasnik 2018; Richards 2019; Sakumoto 2021a, b; among others).

Here, I adopt Sakumoto's (2021b) analysis for adjuncts. He argues against the idea of the *separate plane* in Chomsky (2004) (see also Oseki 2015), and instead proposes '[a] pair-Merged syntactic object does not contribute to labeling but is visible in syntax (Sakumoto 2021b:207).' Following Kanno's (2008) proposal, he captures the finite/non-finite asymmetry of adjuncts: if the C of adjunct clauses does not have a phi (Agree) feature and a Tense feature, then it does not form a phase, and extraction from those clauses is allowed (see also Narita 2011; Truswell 2011; Oseki 2015; Grano & Lasnik 2018; Bode 2020 for their alternative analysis).[6] Hence, under his analysis, pair-Merged adjuncts are syntactically *visible*, unlike the original hypothesis in Chomsky (2004).

To summarize the discussion so far, *wh* and adjunct island effects disappear if C of embedded clauses does not have an unvalued phi feature. This idea is straightforwardly extended to the lack of island effects in Chinese, which will be shown in the following section.

4. Proposal and analysis

4.1. An analysis of islands

So far, I have observed how a phase (especially, a phi feature) has been related to islands in previous studies. Given the similarity between the English infinitival and Chinese infinitivals, it is reasonable to argue that Chinese which lacks phi feature agreement does not have phases either.[7] Let us first consider the *wh*-island effects, as repeated here as in (16) and (17).

(16) ni xiang-zhidao [shei mai-le shenme]?
you want-know who buy-ASP what
a. 'Who is the x such that you wonder what x bought?'
b. 'What is the x such that you wonder who bought x?' (= (1))

[6] For the sake of brevity, this paper puts aside a Tense feature as a determining factor of a phase here. See footnote 5, Kanno (2008) and Sakumoto (2021b) for the discussion of a Tense feature and phases.

[7] The lack of CP phases in languages like Chinese is already suggested by Despić (2015) on the basis of binding facts, and Despić assumes *v**P phases in Chinese. Instead, this paper argues that *v**P as well as CP does not form a phase in Chinese, supporting the argument that an unvalued phi feature determines a phase, as discussed in Section 3 (see also Keine 2016, 2017 for the argument against *v*(*)P phases). See footnote 16 for the further discussion.

(17) What$_i$ do you wonder [how$_j$ to repair t_i t_j]? (= (13b))

As discussed above, *wh*-island effects are not exhibited in Chinese, just as for the English infinitival. The lack of *wh*-island effects is easily captured if we assume that Chinese does not have phases. This argument can also be extended to adjunct island effects. Chinese does not exhibit adjunct island effects as in (18), just like the English Infinitival clause in (19).

(18) ta [yinwei ni shuo shenme hua] hen shengqi?
he because you say what word very angry
'What is the x such that he was angry because you said words x?'
(Huang & Li 1996:65)

(19) a. What$_i$ did you come round [to work on t_i]?
b. Who$_i$ did John get upset [after talking to t_i]?
c. What$_i$ did John come back [thinking about t_i]? (= (15))

The lack of island effects in both languages strongly suggests a unified explanation: Chinese CP and English infinitival CP do not form a phase because both lack phi feature agreement. This strengthens the validity of the argument that phi feature agreement determines what is a phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b; Sakumoto 2021a; among others).[8]

4.2. Argument/adjunct asymmetries

As briefly discussed above, *wh*-adjuncts behave differently from *wh*-arguments. In this section, we will show that similarities can be observed in *wh*-adjuncts between the English infinitival and Chinese constructions. *Wh*-adjuncts such as *why* and *how* exhibit *wh*-island effects unlike *wh*-arguments in Chinese (Huang 1982), as shown in (20) and (21).

(20) [ni xiang-zhidao [shei weishenme mai-le shu]]?
you want-know who why buy-ASP book
*'What is the reason x such that you wonder who bought books for x?' (= (3))

(21) *ta [yinwei ni weishenme shuo hua] hen shengqi?
he because you why say word very angry
'Why (x) such that he was angry because you said words x?' (= (4))

To accommodate this adjunct/argument asymmetry, numerous proposals have been suggested in previous studies (Huang 1982; Xu 1990; Lin 1992; Aoun & Li 1993; Tsai 1994a, b, 1999b;

[8] Hsu (2009, 2010) points out that the unselective binding analysis (e.g. Tsai 1994a) is theoretically problematic. She argues that unselective binding violates PIC because such a binding relation necessarily searches for transferred materials (see also Lee 2003). In order to solve the problem, she suggests that 'each spelled-out phase maps to the semantics component and forms a full tree, where the binding relation can be confirmed without violating PIC (Hsu 2009:2).' Notice that his paper's analysis not only is compatible with unselective binding analysis but also can naturally resolve the issue without additional assumption: in Chinese, an unselective binding relation can be established because no phases are constituted.

Reinhart 1998; among others).[9] Recall also that Huang (1982) attempts to capture their asymmetry through ECP (Chomsky 1981). However, note also that Huang (1982) observes that *where* and *when*, which are also *wh*-adjuncts, do not show any island effects in Chinese, as shown in (22-23).

(22) [ni xiang-zhidao [Lisi zai nali mai-le sheme]]?
you want-know at where buy-ASP what
a. 'What is the thing x such that you wonder where Lisi bought x?'
b. 'Where is the place x such that you wonder what Lisi bought at x?'
(Huang 1982:529)

(23) [ni xiang-zhidao [Lisi (zai) shemeshihou mai-le sheme]]?
you want-know (at) when buy-ASP what
a. 'What is the thing x such that you wonder when Lisi bought x?'
b. 'When is the time x such that you wonder what Lisi bought at x?'
(Huang 1982:529, slightly modified)

To capture the grammaticality of (22) and (23), Huang (1982) argues that *where* and *when* are nominal phrases which are headed by a silent preposition for the following reason.

(24) There is good reason to believe that both 'where' and 'when' are NPs in Chinese, since nali 'where' is always preceded by the preposition zai 'at', and 'when' is rendered as 'what time' as in shemeshihou, with sheme 'what' modifying shihou 'time'. Furthermore, 'when' may be optionally preceded by the preposition 'at', too[.] (Huang 1982:530)

Interestingly, these contrasts can also be found in English infinitivals (see Szabolcsi 2006, and references therein) as in (25, 26).

(25) *Why$_i$ did John ask <whether to fire him _>?
*How did John ask <which problem to phrase _>? (Szabolcsi 2006:494)

(26) ?Where did John ask <whether to {put/read} this book _>? (Szabolcsi 2006:495)
??When did John ask <whether to fire him _>? (Szabolcsi 2006:494)

As we can see here, *where* and *when* can be extracted from islands unlike *how* and *why*. As an anonymous abstract reviewer has correctly pointed out, *why*-questions have unique properties unlike all other *wh*-adverbials (see e.g. Bromberger 1992; Tsai 1994a, b, 1999b, 2008; Koo 2005; Jin 2016; Murphy 2017).[10] Since the detailed analysis of the properties of *wh*-adjuncts is beyond the scope of this paper, I leave it for future research. What is significant is that *weishenme* 'why' and *zenme*(*yang*) 'how' both show *wh*-island effects unlike *nali* 'where' and *shemeshihou* 'when' (Huang 1982; Lin 1992; Tsai 1994a, b; among others). As we have seen above, Tsai (1994a) treats *wh*-adjuncts in Chinese as operators, which accommodates the

[9] More precisely, the argument/adjunct asymmetry should be taken as the nominal/adjunct asymmetry (Huang 1982; Xu 1990; Lin 1992; Tsai 1994a, b, 1999b, 2008; Fujii & Takita 2007; Yang 2007; Fujii et al. 2014; Jin 2016; Murphy 2017, among others).

[10] I thank the anonymous abstract reviewer for bringing Bromberger's (1992) and Jin's (2016) study to my attention.

presence of island effects, and *wh*-arguments are subject to unselective binding, and thus do not exhibit island effects. However, as discussed above, it is theoretically undesirable to hypothesize two different mechanisms for one phenomenon, i.e. *wh*-movement. This argument/adjunct asymmetry is possibly not related to the locality but to another factor such as referentiality, as is argued by Cinque (1990), Rizzi (1990), Szabolcsi (2006), and Yoshida (2006), among others. Kroch (1998) persuasively argues that referentiality effects in Cinque (1990) and Rizzi (1990) are attributed not to syntactic but to pragmatic requirements (see also Szabolcsi & Zwarts 1993; Boeckx 2012; Szabolcsi 2016; Yoshimura 2016).

Though the detailed analysis of referential/pragmatic effects is also beyond the scope of this study, it is fair to emphasize that the Chinese construction and the English infinitival show similar syntactic behaviour regarding *wh*-movement. Their similarities strongly indicate that both *wh*-arguments and *wh*-adjuncts in Chinese move covertly in narrow syntax, just like in English. Hence, it can be said that, as Pesetsky (2000) and Hsu (2009) argue, the difference between covert/overt *wh*-movements in Chinese and English lies only in their phonetic realization. Notice that the present approach differs from Tsai's (1994a) unselective binding analysis in that the former only utilizes movement for both *wh*-arguments and *wh*-adjuncts in Chinese, but the latter uses two distinct operations (unselective binding for *wh*-arguments and movement for *wh*-adjuncts). As discussed in Section 2.2, it does not seem theoretically desirable to assume two different operations to analyze *wh*-questions (see Murphy 2017 for a unified account by unselective binding). My proposed analysis utilizes only (covert) movement in the narrow syntax for *wh*-questions in Chinese with a hypothesis that phases are not formed in it. Thus, it reflects Huang's (1982) original insight, in which both *wh*-arguments and *wh*-adjuncts undergo (LF) movement, without appealing to Tsai's unselective binding. I argue that this unified approach by movement has theoretically desirable effects (see Hsu 2009; Murphy 2017 for different analyses). The subsequent subsection discusses the long-distance binding in Chinese, which is well known for its peculiar properties.

4.3. Long-distance binding

Let us now discuss long-distance binding. I argue that the proposed analysis in this paper can be further supported by long-distance binding in Chinese. Before analyzing the Chinese data, let us go over Saito's (2017a, b) analysis of Condition A, which is based on Quicoli's (2008) proposal (see also Charnavel & Sportiche 2016). Saito (2017a, b) insightfully provides a phase-based account for lack of Nominative Island Condition (NIC) effects (see Chomsky 1980:13, 1981; Yang 1983) by adopting Quicoli's (2008) suggestion that 'condition A applies cyclically at the end of each phase' (Quicoli 2008:304).[11] Saito (2017b) summarizes Quicoli's argument as follows (see also Saito 2017a:4).

(27) Information on the reference of an anaphor is sent to the C-I interface along with the transfer domain that contains the anaphor. (Saito 2017b:62)

Let us consider how Quicoli's (2008) proposal works with Saito's (2017a) examples.

(28) a. John recommended himself.
b. [$_{vP}$ John [v [$_{VP}$ recommended himself]]] (Saito 2017a:4)

[11] The definition of Nominative Island Condition (NIC) is as follows.

(i) A nominative anaphor in S cannot be free S' containing S. (Chomsky 1980:13)

In (28a), the reflexive *himself* can be coreferential with *John* because the antecedent *John* is already introduced in part of the structure (= (28b)), and the information of such a relation can be transferred to the C-I interface. Thus, (28a) is grammatical. Observe now an ungrammatical case, as shown in (29).

(29) a.*John thinks that Mary recommended himself.
b. [$_{vP}$ Mary [*v* [$_{VP}$ recommended himself]]] (Saito 2017a:4)

In the derivation (= (29b)), the matrix subject *John* cannot be coreferential with the reflexive *himself* as the shaded part (=VP) is already transferred and thus the information, '*John = himself,*' cannot be sent to the C-I interface. Therefore, (29a) is correctly expected to be ungrammatical (see Quicoli 2008 for the detailed analysis of reconstruction effects on binding).

Saito (2017a) extends Quicoli's analysis to account for the lack of the NIC effect (Chomsky 1980, 1981) in languages where phi feature agreement is absent, mainly based on Yang's (1983) observation. Yang (1983) observes that wider binding domains are available if the relevant languages do not have agreement: Japanese anaphora also allows a wider binding domain than English, as shown in (30a, b) (see Yang 1983; Cole & Sung 1994; Huang & Li 1996; among many others for the long-distance binding).

(30) a. Taroo-wa [$_{CP}$ [$_{TP}$ zibunzishin-ga suisensareru] to] omotteiru.
Taroo-TOP self-NOM nominated-will.be C think
'Taroo thinks that he (= Taroo) will be nominated. (Saito 2017a:7)

b. Hanako-wa [$_{CP}$ [$_{TP}$ zibunzisin-ga sore-o mita] to] syutyoosita
Hanako-TOP self-NOM it-ACC saw C insisted
'Hanako insisted that she (=Hanako) saw it' (Saito 2017a:8)

Saito (2017a) argues that this can be also observed in English infinitival constructions, as shown in (31).

(31) John believes [$_{TP}$ himself to be the best candidate]. (Saito 2017a:8)

To capture these peculiar properties, Saito (2017a) argues that what is transferred upon the completion of the CP phase is *v*P when TP lacks phi feature agreement (see Saito 2017a for its detail and Saito 2017b for the developed version). Given this, let us consider the derivation of (30b), as illustrated in (32).

(32) [$_{vP}$ Hanako-ga [[$_{VP}$ [$_{CP}$ [[$_{TP}$ zibunzisin-ga [[$_{vP}$ …] $T_{[+Past]}$]] C]] syu-tyoos] *v*]]
(Saito 2017a:8)

As shown in (32), *zibunzisin* 'self' in the embedded subject position is sent to the C-I interface when the complement which contains it is transferred by the phase head *v* in the matrix clause. Saito (2017a) argues that since the information that *zibunzisin* is *Hanako* is available in (32), the sentence in (30b) is expected to be licit. Next, let us consider the following example.

(33) *John thinks [$_{CP}$ that [$_{TP}$ himself will be nominated]] (Saito 2017a:7)

The anaphor *himself* in (33) is not able to refer to its antecedent *John* because the CP constitutes a phase.

Saito (2017a) does not provide an answer to the question of 'why there should be an asymmetry between CPs with and without φ-feature agreement[.] (Saito 2017a:9)' For the purpose of this paper, I simply assume that an unvalued phi feature (or phi feature agreement) defines a phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b, Sakumoto 2021a, among others), putting aside the detailed mechanism (see Saito 2017b:64-65). Hence, it can be simply stated that if C(P) does not form a phase, wider binding relation is allowed.[12]

This paper analyzes long-distance binding in languages which lack phi feature agreement based on Saito's (2017a) analysis.[13,14] Yang (1983:184) observes that unbounded reflexive-binding is allowed in languages such as Chinese and Malayalam. Let us first consider the following example of Chinese from Yang (1983).

(34) John$_i$ xiangxin Bill$_j$ dui Sam$_k$ shuo ziji$_{i,j,*k}$ taoyan Mary.
John believe Bill to Sam say self hate Mary
'John$_i$ believes that Bill$_j$ said to Sam$_k$ that self$_{i,j,*k}$ hated Mary.' (Yang 1983:184)

It should be noted that the English infinitival and Chinese constructions exhibit similar syntactic properties with their lack of agreement.[15, 16]

The validity of the above analysis can be further strengthened by Malayalam, which also lacks agreement (Yang 1983). It has been observed that long-distance binding is possible as shown in (35) (see Yang 1983:184-185 for the discussion and his analysis based on the data from Mohanan 1982).

[12] In Saito's (2017a, b) system, *v*P and *v**P constitute a phase in both English and Japanese. See Saito (2017b) for detailed discussion.

[13] Saito (2017b:61, 63) briefly discusses Korean in addition to Japanese.

[14] More precisely Saito (2017a, b) deals with the non-local anaphor *zibunzisin* 'self-self' but not the long-distance anaphor. In this paper, I will analyze the long-distance anaphor in Chinese (and Malayalam) with Saito's (2017a, b) analysis, which is based on Quicoli's (2008) proposal. For the local anaphor in Chinese, see footnote 16.

[15] As is argued by Yang (1983), reflexives of Chinese and Malayalam 'have some language-particular exceptional restrictions' (Yang 1983:184). See also Huang & Li (1996); Huang et al. (2009); references cited therein for the unique properties of Chinese reflexives.

[16] Despić (2015) makes a similar proposal to Saito's (2017a, b) based on data from languages like Korean, Japanese, Chinese, Vietnamese, and Tamil (though Despić 2015 mainly focuses on the phasehood of DP, this paper only discusses his proposal on CP phases since a detailed analysis of the DP is beyond the scope of this paper). He focuses on subject reflexives instead of long-distance anaphors, and proposes that 'the phasehood of C is determined by the presence of T[.]' (Despić 2015:221) However, the long-distance anaphor *ziji* such as in (34) differs from local anaphors like *ta ziji* (see Despić 2015:226, citing from Sung 1990:72) in that only the former is not locality bound, which strongly suggests that *v**P as well as CP does not constitute a phase in Chinese, contrary to the proposal made by Despić (2015). If *v**P is a phase in Chinese, as argued by Despić, long-distance relations should never be possible, failing to account for the property of long-distance anaphors in (34). This paper mainly focuses on long-distance anaphors, adopting Saito's (2017a) analysis, and leaves the question as to what differentiates local anaphors from non-local ones for future research (see also Despić 2015:229, fn. 35 for the argument against a relation between agreement and anaphors).

(35) [[swan̲t̲am$_{i,j}$ suhrət̲t̲inte] bhaarīyayuṭe] amma] aanaye n̲uḷḷi en̲n̲ə rāajaawinə$_j$
self's friend's wife's mother elephant pinched that king
t̲oon̲n̲i en̲n̲ə raaṇi$_i$ man̲t̲riye wiśwasippiccu
felt that queen minister believe.caused
'The queen$_i$ convinced the minister that the king$_j$ felt that self's$_{i,j}$ friend's wife's mother pinched the elephant.' (Mohanan 1981:29, slightly modified)

This observation can also be expected, if we incorporate the analyses of Quicoli (2008) and Saito (2017a, b), which support the idea that unvalued phi feature (or phi feature agreement) defines the phase domain.

Notice further that in Malayalam *wh*-island effects are not exhibited, as shown in (36) (see Jayaseelan 2001 for a detailed analysis).

(36) John [aarə pooy-oo ennə] coodiccu?
John who went-DISJ C asked
a. 'Who$_i$ did John ask whether (he) went?'
b. *'John asked who went.' (Jayaseelan 2001:76)

Furthermore, Yoshida (2006) observes that adjunct island effects are not exhibited in Malayalam (see Yoshida 2006 for his detailed analysis of adjunct island effects in Malayalam).

(37) Scrambling out of Conditional Clauses
Stillman-inu$_i$ Quinn [Virginia t$_i$ sammaanam kodu-thaal] karayum.
S-DAT Q-NOM V-NOM present.ACC give-COND cry.will
'Quinn will cry if Virginia gives a present to Stillman.'
(Yoshida 2006:191, slightly modified)

The absence of locality of binding and island effects in these languages strongly supports the idea that a phi feature (agreement) is crucial for a phase.

5. Phase domain

Finally, I address an important concept: the phase domain. As we have seen, it seems that the languages which lack phi feature agreement do not have phases. Thus, languages like Chinese and Malayalam are expected to have no phase domains: they do not exhibit island effects and they allow long-distance binding. If this paper's argument is correct, certain languages would lack a phase overall. Is a phase not universal? We need to reconsider the notion of the phase. It is generally taken in the generative literature that phases are universal in languages, and that C and *v** are phase heads (Chomsky 2000).

The fact that Chinese does not have the kind of locality conditions that we have seen above suggests that such a computational unit does not exist at all in the relevant languages. If this reasoning is on the right track, it is necessary to reconsider the computational efficiency of a phase, but we leave this issue for future research (e.g., see Boeckx 2007; Boeckx & Grohmann 2007; Chomsky 2008; Keine 2016; Otsuka 2014, 2017, among others for related discussions).

This state of affairs strongly supports the view that a phase domain is defined not by a proposition (Chomsky 2000), but by an unvalued phi feature (Chomsky 2008; Kanno 2008;

Legate 2012; Saito 2017a, b; Sakumoto 2021a; among others). Given this, it can be argued that languages which do not have an unvalued phi feature do not transfer any units separately. Of course, elements in narrow syntax have to be transferred to the interfaces anyway for interpretation, so the entire CP must be transferred at the end of derivation even in languages which lack phi feature agreement (see Chomsky 2004:108; Obata 2009, 2010 for the root transfer).

If the present analysis is correct, it has theoretical consequences. First, the fact that certain languages lack a phase entirely makes a significant departure from the original idea of Phase Theory in Chomsky (2000). It has been traditionally considered that movement proceeds phase by phase (in a successive-cyclic fashion), but as discussed in this paper, languages like Chinese allow one-fell-swoop movement, contrary to the standard view. That is, derivation in the narrow syntax varies from language to language depending on the presence of a phase. This strengthens the view that an unvalued phi feature (or phi feature agreement) is what forms a phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b; Sakumoto 2021a, among others), capturing differences among languages. In addition, it is necessary to think of whether the concept of phase exists universally in languages. If so, computational efficiency in languages needs to be re-examined (this argument could eliminate the notion of a phase entirely (see Boeckx and Grohmann 2007; Epstein et al. 2014 for the related discussion). I hope that the analysis here provides a novel perspective to Phase Theory. If this paper's discussion is on the right track, further research is required to investigate the role of a phase.[17]

6. Remaining problems

This section discusses some remaining problems of the present study. First, it is necessary to consider whether Japanese lacks the phase domain entirely. Saito (2017a, b) argues that the transfer domain in Japanese is wider than the one in English because the former lacks phi feature agreement. This suggests that Japanese lacks CP phases, as discussed above (more precisely, Saito 2017a, b assumes that Japanese CPs are a phase, but we do not discuss this in detail; see Saito 2017a, b; Sakumoto 2020 for related discussions of a Japanese phase).

Thus, it is expected that Japanese should not exhibit *wh*-island effects. However, it is well known that *wh*-island effects are observed in Japanese, as shown in (38) (see Nishigauchi 1990; Watanabe 1992, 2001; among many others).

(38) ??John-wa [Mary-ga nani-o katta kadooka] Tom-ni tazuneta no?
John-wa Mary-NOM what-ACC bought whether Tom-DAT asked Q
'What did John ask Tom whether Mary bought?' (Watanabe 2001:208)

Therefore, we have an issue that is yet to be explained: how can we explain the differences between Chinese and Japanese when it comes to islandhood? I will raise one possibility: it can be assumed that the Japanese CP does form a phase, as has been traditionally assumed. Given Miyagawa's (2011) and Takahashi's (2010) argument that Case is the determining factor of a phase, it can be argued that the presence of Case in Japanese makes it different from Chinese,

[17] An anonymous reviewer suggests that Bode's (2020) proposal might throw more light on the problem of syntactic islands in Mandarin Chinese. Because the detailed investigation of her approach is beyond the scope of this paper, I leave it for future research. For empirical and theoretical issues of Bode (2020), the reader is referred to Hayashi (forthcoming).

or that Japanese does have abstract phi feature agreement (Ura 1999; Hiraiwa 2001; Takahashi 2010; among others), and thus has phases (see also Fukui 1988; Saito 2016, and references therein for the argument against phi feature agreement in Japanese). This paper leaves these matters for future research.

7. Conclusion

This paper has suggested a phase-based analysis of island phenomena in Chinese. Based on Huang's (1982) original insight, I have claimed that *wh*-arguments in Chinese undergo movement in narrow syntax, arguing against an unselective binding analysis (e.g., Tsai 1994a). Specifically, it has been argued that island effects are not observed because phases are not formed in Chinese, on the basis that an (unvalued) phi feature forms a phase (Chomsky 2008; Kanno 2008; Legate 2012; Saito 2017a, b; Sakumoto 2021a, among others). The proposed analysis in this paper has theoretical consequences: languages which lack phi feature agreement do not form a phase completely, which differs from the traditional idea of Phase Theory and casts doubt on the universality of a phase. Furthermore, this paper has extended the analysis into long-distance binding phenomena in Chinese and Malayalam, based on analyses by Quicoli (2008) and Saito (2017a) and Yang's (1983) observations. If what has been argued in this paper is on the right track, Phase Theory could be advanced further in new directions.

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Abbreviations

ACC	accusative	DISJ	disjunctive suffix
ASP	aspect marker	NOM	nominative
C	complementizer	Q	question
DAT	dative	COND	conditional
TOP	topic		

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Scope relation and structure hierarchy in Hong Kong Sign Language (HKSL):
Exploring ditransitives

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In this paper, I adopt scope relation of Quantifier Noun Phrases (QNPs) to investigate the hierarchical structure of ditransitive constructions in HKSL. I argue that HKSL does not have Quantifier Raising. The inverse scope of ONE-phrases is due to their lexical ambiguity between a QNP and a referential DP. When a ONE-phrase is structurally lower, it can take the maximal scope through existential quantification. The scope relations between IO and DO reveals that IO is structurally higher than DO in HKSL. This study provides insights in adopting scope relations to investigate structural hierarchy in sign languages.

1. Introduction

Hong Kong Sign Language (HKSL) is a natural sign language used by the Deaf communities in Hong Kong SAR, China. While sentences with a transitive verb have been found to be SVO underlyingly (Sze 2000, 2015), the structure hierarchy of ditransitive constructions is less clear. On the surface, a ditransitive construction in HKSL allows both [S-DO-V-IO] and [S-V-IO-DO] orders (IO stands for *indirect object* and DO for *direct object*, to be elaborated in Section 1.2). Due to the correlation between syntactic structure and semantic interpretation, the hierarchical relations between constituents can be reflected by their scope relation (May 1978; Barss & Lasnik 1986; Larson 1988; Aoun & Li 1993, a.o.). In this paper, I discuss the hierarchical structure of ditransitive constructions in HKSL by investigating scope relation of arguments with Quantifier Noun Phrases (QNPs). In the following subsections, I will first introduce the main hypothesis that I am adopting, and then turn to the issue in question in HKSL.

1.1 Scope relation reflects c-commanding relation

Under the Generative framework, semantic interpretation is determined by syntactic structure. Following the Y-model of grammar under transformational syntax (Chomsky 1965), May (1978) argues that the mapping between Surface-Structure (S-Structure) and Logical Form (LF), both of which are derivations in the core syntax, is transformational. Such transformation is realized by quantifier raising (QR), an instance of Move α (Chomsky 1981). According to May

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(1978), QR moves quantificational phrases in the LF component to a A-bar position (non-argument position). Specifically, the quantifiers are adjoined to the maximal projection S (IP in the later theories, see for instance, Chomsky 1986) and receive their scope. The notion 'scope' of a quantified phrase *φ* is defined as everything which *φ* co-commands (1).

(1) **C-command:**
a c-commands *b* if every maximal projection dominating *a* dominates *b*, and *a* does not dominate b.

Accordingly, the scope relation of two quantifiers corresponds to their c-commanding relation at LF. [1] For instance, sentence (2) is ambiguous. It can either mean 'for each person, there is some individual or other that he loves' (2a) or 'everyone loves the same individual' (2b). In the first interpretation, the universal quantifier *everyone* takes the wide scope. In the second interpretation, *someone* takes the wide scope. [2]

(2) Everyone loves someone.
a. Interpretation 1: For all person *x*, there is a person *y* s.t. *x* loves *y.*
[*everyone* > *someone*]
b. Interpretation 2: There is a person *y* and for all person *x* s.t. *x* loves *y.*
[*someone* > *everyone*]
(English)

The ambiguity can be explained as follows: the two quantifiers undergo QR (in either order) at LF. After QR, there are two LF representations generated (3). Crucially, a node created by the adjunction to a maximal projection is not a maximal project. Instead, it is still a segment of the maximal projection. Therefore, the two quantifiers in (2) share the same maximal projection. In other words, they mutually c-command each other. Assuming the notion of 'scope', the mutually c-commanding relation between *everyone* and *someone* in (2) causes the ambiguity, thus either of them can take the wide scope. Interpretation (2a) (*everyone* > *someone)* is a *rigid scope*, defined as (4a), in which the scope relation reflects the syntactic hierarchy of the two quantifiers. Interpretation (2b) (*someone* > *everyone)* is an *inverse scope*, defined as (4b).

(3) a. ∀ > ∃: [$_{S'}$ [$_S$ [$_{NP}$ everyone]$_2$ [$_S$ [$_{NP}$ someone]$_1$ [$_S$ e_2 loves e_1]]]
b. ∃ > ∀: [$_{S'}$ [$_S$ [$_{NP}$ someone]$_2$ [$_S$ [$_{NP}$ everyone]$_1$ [$_S$ e_1 loves e_2]]]
(Chierchia & McConnell-Ginet 2000:122)

(4) a. **Rigid scope***:* An expression *a* has *rigid scope* over an expression *b* if and only if *b* is in the semantic scope of *a* and c-commands *b* at S-structure.

b. **Inverse scope***:* An expression *a* has *rigid scope* over an expression *b* if and only if *b* is in the semantic scope of *a* but *a* does not c-command *b* at S-structure.

[1] Some proposals, (for instance, May 1985) argue that LF only constrains possible scope configurations, but does not totally disambiguate them. Nevertheless, using c-command relation between the quantifiers to account for their scope ambiguity still stands.

[2] Throughout this paper, examples from languages other than HKSL will be specified with the name of the language.

Asymmetric c-commanding relations between the arguments can also be reflected by their scope relation. For instance, in a wh-question, when the argument wh-phrase co-occurs with a quantifier, scope ambiguity is only attested in object wh-questions (5a) but not subject questions (5b). This is because the object wh-phrase and the subject wh-phrase have different c-commanding relations with the quantifiers. In particular, in (5a), after wh-movement and quantifier-raising, the subject *everyone* and the object *what* share the same maximal projection (6a), i.e., they mutually c-command each other, so either of them can take the wide scope and the question is ambiguous. By contrast, the only valid LF configuration of (5b) is to have *everything* adjoining to VP (6b).[3] In the structure, *who* asymmetrically c-commands *everything*. Thus, *who* always takes the wide scope, and the question is unambiguous.

(5) a. What did everyone buy for Max? [ambiguous]
b. Who bought everything for Max? [unambiguous, ∀ > who only]
(English, Aoun & Li 1993:71-72)

(6) a. [$_{S'}$ What$_i$ [$_S$ everyone$_j$ [$_S$ t$_j$ buy t$_i$ for Max]]]
b. Who$_j$ [$_S$ t$_j$ [$_{VP}$ everything$_i$ [$_{VP}$ buy t$_i$ for Max]]]
(ibid.)

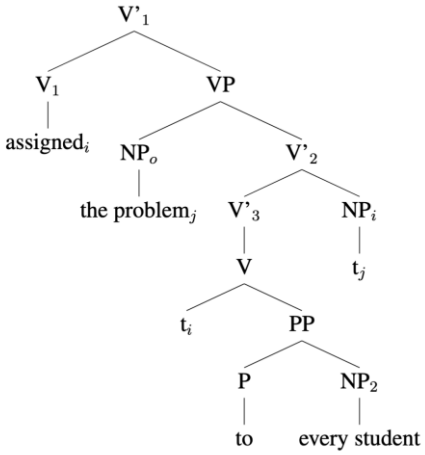
A similar correlation has also been attested in constructions with a ditransitive verb (Barss & Lasnik 1986; Larson 1988; Aoun & Li 1993, a.o.). For instance, in English, when two quantifier phrases co-occur, scope ambiguity between the two quantifier NPs (QNPs) is available in a ditransitive construction (7a), but not in a double object construction (7b). Adopting Larson's (1988) proposal, this is because the indirect object (IO) and the direct object (DO) in the two sentences have different structural configurations (8). The DO *one problem* in (7a) moves to the NP^o, the two objects share the same maximal node VP (8a). Thus, either of them can take the wide scope, and the sentence is ambiguous. By contrast, the DO *every problem* in (7b) adjoins to VP, and the IO *one student* adjoins to V'$_1$ (8b). Thus, the two objects share different maximal node. *One student* is always higher thus always takes the wide scope, and the sentence is unambiguous. In this study, I will adopt scope relation of Quantifier Noun Phrases (QNPs) to investigate the hierarchical structure of ditransitive constructions in Hong Kong Sign Language (hereafter HKSL). Before diving into the methodology and data, let me introduce the word order problems in HKSL.

(7) a. Martha assigned one problem to every student. [ambiguous]
b. Martha assigned one student every problem. [unambiguous, ∃>∀ only]
(English)

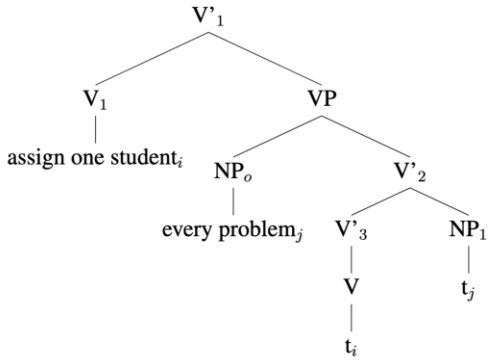
[3] For (5b), (6b) is the only valid LF configuration because: (a) is banned due to the violation of the standard version of Empty Category Principle (ECP); (b) is not possible, either. Because who already adjoins to S, forming an adjunct node, which is not a possible adjunction site for the everything.
a. *Who$_j$ [$_S$ everything$_i$ [$_S$ t$_j$ buy t$_i$ for Max]]
b. *Everything$_i$ [$_{S'}$ who$_j$ [$_S$ t$_j$ buy t$_i$ for Max]]

(8)

a.



b.



1.2 Word order problems in Hong Kong Sign Language

In HKSL, for sentences with a transitive verb, three patterns of word order are possible. The canonical word order is SVO (Sze 2000, 2015). For certain verbs, SOV and OSV order are also attested. The word order patterns are demonstrated in (9). [4]

(9) a. AARON LIKE BANANA. (SVO)
'Aaron likes bananas.'
b. AARON BANANA LIKE. (SOV)
c. BANANA AARON LIKE. (OSV)

When involving two objects, i.e., an IO and a DO, two word orders are possible. [S-DO-V-IO] is accepted by all of my consultants (to be introduced in Section 2.1) (10a), and [S-V-IO-DO] is less preferred but acceptable (10b) (see also Sze 2000). [S-V-DO-IO] is unaccepted (10c). As will be discussed in Section 4, the pattern applies to sentences with less than two [+ human] objects. E.g., sentences like 'Aaron gave a book to Laura', or 'Aaron gave a cat to Laura'; but not 'The emperor gave a maid to the eunuch'. Nevertheless, the underlying structures of the two accepted word orders are less clear. This study makes use of scope relations to explore the structural hierarchy of ditransitive constructions in HKSL. In particular, I aim to determine the hierarchical relation between the IO and the DO. The idea of using scope relations is that the

[4] Notation convention: In this paper, signs are glossed in small caps. If the translation of a sign contains more than one word, the words are connected by dashes in between, e.g.: DON'T-UNDERSTAND. IX stands for pointing signs. The number 1, 2, or 3 following it refer to first person, second person, and third person, respectively, e.g., IX-1 'I', IX-2 'you'. The letter following it marks the index. Such pointing signs often points at a locus assigned in the previous discourse, e.g., IX$_a$ COMPANY 'that company'. CL refers to classifier constructions (Supalla 1982, 1986). The meaning of the classifier is indicated by the subscript, e.g.: CL$_{read}$. For verbs, there are different types: plain verb, inflecting verb, and spatial verb (Padden 1988). Plain verbs are articulated in a fixed location, whereas inflecting verbs and spatial verbs exploits the spatial dimension in sign. Inflecting verbs mark the subject and object in the space, such as GIVE in HKSL, and special verbs mark location in the space, such as THROW in HKSL. The latter two types are often referred to as 'agreeing verbs'. In the annotation, the number following the agreeing verbs denotes person, e.g., 1-GIVE-2 'I give you'. The small letter indicates the agreement between the loci established in the previous discourse e.g., a-GIVE-b 'GIVE moves from locus a to locus b'.

asymmetrical hierarchical relations between the two objects should be reflected in their scope relation, just as in (7).

(10) a. AARON$_a$ BOOK a-GIVE-b BRENDA$_b$. (S-DO-V-IO)
'Aaron gave a book to Brenda.'
b. ?AARON$_a$ a-GIVE-b BRENDA$_b$ BOOK. (S-V-IO-DO)
c. *AARON$_a$ a-GIVE-b BOOK BRENDA$_b$. (S-V-DO-IO)

As a preliminary study, I only examined the scope relation between Quantifier Noun Phrases (QNPs) with ONE and ALL. The paper is organized as follows, Section 2 introduces the methodology; Section 3 and 4 discuss quantifier scope in sentences with transitive verbs and ditransitive verb GIVE, respectively; and Section 5 is the discussion and Section 6 concludes.

2. Methodology

2.1 Design of the tasks

The analysis is mainly based on judgment data from two deaf native signers of HKSL, with 'native' defined as being born to deaf signing parents and have been using HKSL as their primary language of communication (male, 30s & 40s).[5] They are second language users of Cantonese and English (mostly written). The data collection was conducted through Zoom, with the stimuli pictures and sentences set up in a Google Form. Except for the glossing which was presented in both written English and traditional Chinese, the instructions throughout the Google Form used traditional Chinese.[6] The language for communication between the researcher (the author) and the consultants during the data collection was HKSL.

The data collection involved three steps. An example of each step is given in Figure 1-3, respectively. Step 1 is elicitation (Figure 1). The signers were asked to describe pictures representing possible readings of the target sentences. The pictures were presented in sets. This step is to make sure that the signers understand the interpretation that each picture intends to represent, preparing them for Step 3, and to collect the preferred version of the signing (Bruening 2008). Step 2 is acceptability judgment on different word orders (Figure 2). The signers were asked to rate their acceptance of the grammaticality of the glossed sentences reflecting possible HKSL word order patterns. The judgments were collected through a five-point Likert scale, with 1 labeled as 'totally unacceptable (完全不接受)' and 5 labeled as 'totally acceptable (完全接受)'. As mentioned, the glossing was presented in both written English and written Chinese. Note that both consultants had linguistics training and are familiar with the glossing system presented. The consultants were asked to sign the sentences in HKSL first, and then give judgments. Step 3 is judgment of meaning (Figure 3). The judgments were collected through multiple-choice questions. The signers were asked to select all the pictures of which the target sentence can express the meaning. The tasks were self-paced. During the data collection, the researcher and the signers may pause and discuss some sentences or pictures. In the task design, no fillers were added due to restricted time constraint for the data collection.

[5] 'Male' in terms of natal sex.

[6] The reviewer points out that the language background of the consultants as L2 Cantonese and English users could potentially affect their judgments. While this is a possibility, the data showed no strong indications of the influence from the two languages. Further, monolingual HKSL users are very rare, as most deaf people in Hong Kong are multilingual due to language contact (see also Schembri & Lucas 2015, for discussions on multilingualism in Deaf communities).

Admittedly, follow-up studies should consider more thoroughly regarding adding fillers and avoiding possible priming effect that the choices for Step 3 might have. Note that sentences with the grammaticality judgment (in Step 2) lower than 3 were excluded for the analysis of Step 3.

Step 1. Instruction: 'Please describe the following pictures in HKSL in one sentence.'

	
a	b

Figure 1. Example of Step 1 (the instruction and the Google Form display)

Step 2. Instruction: 'Please sign the sentence in HKSL according to the glossing, and then judge whether the sentence is grammatical.'

(0) MAN ALL LIKE WOMAN ONE.

Sentence (0) is:

	1	2	3	4	5	
完全不接受	○	○	○	○	○	完全接受

Figure 2. Example of Step 2 (the instruction and the Google Form display)

Step 3. Instruction: 'Sentence (0) can mean (please check all applicable options):'

		None of them
☐ a	☐ b	☐ c

Figure 3. Example of Step 3 (the instruction and the Google Form display)

I first tested scope relation patterns in transitive verbs as the baseline and then moved on to ditransitive verbs. For transitive verbs, the three word orders, SVO, SOV, OSV were all tested. For ditransitives, two word orders, S-DO-V-IO and S-V-IO-DO were tested.

2.2 Selection of verbs

Before elaborating the data, it is necessary to introduce more about the selection of verbs. The design of the stimuli for Step 1 involved some modifications on the selection of verbs. Originally, I adopted Bruening's (2008) public stimuli for the Scope Fieldwork Project. However, many of those pictures turned out to be expressed in HKSL by classifier constructions (Supalla 1982, 1986). A classifier is a morpheme with a non-specific meaning used to represent

entities by denoting the salient characteristics, which is achieved by particular configuration of the hands (Zwitserlood 2012). When involving a classifier predicate instead of a lexical verb, because the object is incorporated into the classifier predicate, the word order is SOV instead of the canonical one (Sze 2000). To elicit sentences with the canonical word order SVO, I revised the stimuli and conducted the second round of data collection, which targeted lexical transitive verbs only.

Furthermore, the selection was restricted to non-agreeing verbs only. In sign languages, it is commonly considered that there are three classes of verbs, 'agreeing verbs', 'spatial verbs', and 'plain verbs'. Agreeing verbs shows directionality to indicate a human subject and object. Spatial verbs show the endpoint of the motion. Plain verbs do not change directionality (Padden 1988; Lillo-Martin & Meier 2011; Mathur & Rathmann 2012). When an agreeing verb is involved, a distributive reading and a collective reading are expressed in different verb forms. In particular, the distributive reading is usually reflected by verb inflection, namely a repetitive movement in a distributive manner (Figure 4) (Klima & Bellugi 1979). Thus, scopal ambiguity is not obtainable in these sentences. On the other hand, for plain verbs like *LIKE* (Figure 5), without differences in the form of the verbs, the sentence can be ambiguous. Thus, to establish a baseline on the correlation between scope ambiguity and word order, i.e., to restrict the minimal pair to be the word order of the arguments versus scopal ambiguity, and to exclude other factors that contributes to scopal readings such as verb inflections, I consider plain transitive verbs only, such as *LIKE* and *EAT*.

The selection of ditransitive verbs encountered several complications. First, plain ditransitive verbs are not found, all of them involve agreeing inflection. Fortunately, for these agreeing ditransitive verbs, such as *GIVE*, with a single movement (i.e., from locus *a* to a locus *b*, without a repetitive movement in a distributive manner), scope ambiguity between distributive reading and collective reading is also possible, making the verb eligible for the judgment tasks.[7] Second, originally, ditransitive verbs that have been explored include *SHOW*, *INTRODUCE*, and *BORROW*. However, the signers seem to have different preferences on the word order containing these verbs. And the word orders seem to be affected by the animacy of the objects and different thematic role of the objects. At this stage, I leave the paradigm of all these verbs for future study. In this paper, I only focus on exploring the full paradigm of *GIVE*. Moreover, to examine the correlation between scope ambiguity and word order, I focus on *GIVE* with a single movement only. For each sentence, only two arguments contain QNPs at a time, the third argument is a proper name (Table 1). Please note that due to the restrictions of my task design, the paradigm of *GIVE* could be different from the one of *SHOW*, *INTRODUCE,* and *BORROW*, even though they can all act as ditransitive verbs. Nevertheless, narrowing down to *GIVE* with a single movement allows us to examine the correlation between scopal ambiguity and word order while minimizing the influence from other linguistic factors. In the next section, I will discuss the data in detail.

[7] As mentioned earlier, by contrast, for transitive verbs with a single movement, scopal ambiguity is not attested. The underlying reason for this contrast between transitive and ditransitive verbs remains to be investigated.

Figure 4. Distributive manner of verb movement

Figure 5. *LIKE* in HKSL

#	**Subject**	**DO**	**IO**
A1	proper name	*ALL*	*ONE*
A2	proper name	*ONE*	*ALL*
B1	*ALL*	*ONE*	proper name
B2	*ONE*	*ALL*	proper name
*C1	*ALL*	proper name	*ONE*
*C2	*ONE*	proper name	*ALL*

Table 1. The paradigm for stimuli with the ditransitive verb GIVE
(* The sentences under the pattern were complicated by other factors, see Section 4.2)

3. Quantifier scope in sentences with transitive verbs

As mentioned, quantifier scope in sentences with transitive verbs were tested as a baseline on the correlation between scope ambiguity and word order. Three different word orders were tested. All the tested sentences were judged as 5, i.e., completely acceptable. For the canonical word order SVO, when *ONE* is in the subject and *ALL* in the object, the sentence can only get a collective reading, i.e., the rigid scope (∃>∀) (11). The same applies to the other two word order patterns, SOV (12a) and OSV (12b). Thus, it seems to suggest that there is no Quantifier Raising (QR) in HKSL, so the scope relation between the two QNPs reflects their relative heights in the syntactic hierarchy.

(11) MAN ONE LIKE WOMAN ALL. (∃>∀ only)
Intended: 'A man likes all women.'
a. Collective (∃>∀): 'There is a man x such that x likes all women.'
b. #Distributive (∀>∃): 'For every woman y there is a man x such that x likes y.

(12) a. MAN ONE WOMAN ALL LIKE. (∃>∀ only)
Intended: 'A man likes all women.'
b. WOMAN ALL, MAN ONE LIKE. (∃>∀ only)

Interestingly, when the subject is modified by the sign *ALL*, and the object by *ONE*, the paradigm becomes more complicated. With the canonical SVO order, the sentence is ambiguous (13). Both distributive reading (rigid scope) (∀>∃) and collective reading (inverse scope) (∃>∀) are available. Even more interestingly, with SOV and OSV order, the sentences are unambiguous,

but it is the object *WOMAN ONE* that always takes the wide scope. In other words, in (14), only the inverse scope (∃>∀) is possible.

(13) MAN ALL LIKE WOMAN ONE. (ambiguous)
Intended: 'All men like one woman.'
a. Collective (∃>∀): 'There is a woman *x* such that all men like *x*.'
b. Distributive (∀>∃): 'For every man *x* there is a woman *y* such that *x* likes *y*.'

(14) a. MAN ALL WOMAN ONE LIKE. (∃>∀ only)
Intended: 'All men like one woman.'
b. WOMAN ONE, MAN ALL LIKE. (∃>∀ only)

Comparing to the only available rigid scope reading in (11) and (12), it seems to suggest that the cause of the scope ambiguity in (13) is not syntactic (otherwise it should apply to every sentence). In the following, I provide an explanation for the above observations. I suggest that QNPs with *ONE* can take the wide scope through existential quantification.

Fodor & Sag (1982) claim that indefinites are lexically ambiguous. They can either be quantifiers or demonstratives. While functioning as a quantifier, an indefinite will bind a variable and enter a scope relation with other quantifiers. When it is a demonstrative, it refers to a referential proper name or a demonstrative phrase (DP), i.e., an unidentified but identifiable individual. In this case, an indefinite does not enter a scope relation with other quantifiers, but it implies an existential quantification of the maximal scope. The ambiguity is illustrated in (15). In (15a), the indefinite phrase *a professor* is a QNP; and in (15b), it is a referential DP.

(15) a. Every student admires *a professor* in college. (ambiguous)
b. *A professor* that I admire, I had dinner with her in Boston last week. (unambiguous)

Adopting Fodor & Sag (1982), I assume that numeral ONE in HKSL is similar to the numeral *one* in English, which can form indefinite NPs. Thus, NPs modified by ONE are lexically ambiguous. When it is interpreted as a QNP, it enters the scope relation with other QNPs. When it is interpreted as a DP, it does not enter the scope relation with other QNPs, but it implies an existential quantification of the maximal scope of the sentence. Accordingly, the asymmetric possibilities for ambiguity in (11) and (13) can be explained. Both interpretations (as a QNP and a DP) of the subject *MAN ONE* in (11) lead to a collective reading (∃>∀); whereas in (13), the QNP reading of the object *WOMAN ONE* leads to a rigid distributive reading (∀>∃), and the DP interpretation of ONE-phrase yields a collective reading (∃>∀). This proposal can be supported by (16). When replacing ONE with the quantifier EACH (1-handshape ☝ with a distributive movement), the sentence can only get a rigid scope.[8] In other words, even though WOMAN EACH is in the structurally lower object position as WOMAN ONE in (14), it cannot take the wide scope. This suggests that ONE-phrases bare different characteristics from other QNPs.

(16) MAN ALL LIKE WOMAN EACH.
Intended: '*All men each like one woman*.' (∀>∃ only)

Assuming the lexical ambiguity of ONE-phrases, what causes the only available inverse scope in (14) then? One possibility is that the SOV and OSV order, which involve topicalization of a

[8] The handshape fonts are created by CSLDS, CUHK. http://www.cslds.org/v4/resources.php?id=1.

ONE-phrase in the derivation, eliminate the rigid scope and enforces the existential maximal scope of the ONE-phrases. The following is my proposed explanation: the ONE-phrase in (14a) is topicalized to the left periphery, and in (14b), it is topicalized to the middle field (Frey 2012:208; Lacerda 2020). Semantically, a topicalized constituent carries old information and must be referential. Thus, the structurally lower ONE-phrase is forced to be interpreted as a DP only. Fodor & Sag (1982:360) made a similar observation about indefinites (c.f. (15b), in which the topicalized indefinite takes the maximal scope). There are alternative accounts of indefinites to Fodor & Sag's (1982) proposal (c.f. Carlson 1977; Farkas 1981; Reinhart 1997; Martí & Ionin 2019, a.o.).[9] Due to space limitation, I will not discuss whether alternative accounts can account for the data. The crucial point of my proposal here assumes that the scope ambiguity in (13) must resort to a non-syntactic explanation, and HKSL is a scope-rigid language in nature.

As an interim conclusion, I have argued that in HKSL, there is no Quantifier Raising. The scope relation of two QNPs reflects the hierarchy of the base-generated structure. In addition, NPs containing ONE are lexically ambiguous between a QNP (which enters scope relation with other QNPs in the sentence) and a DP (which takes maximal scope in the sentence through an existential quantification in semantics). This explains the asymmetric possibilities in showing scope ambiguity. Specifically, ambiguity is attested with subject-ALL + object-ONE combinations, but not with subject-ONE + object-ALL combinations. Moreover, topicalization of an indefinite either to the left periphery or the middle field forces that only the indefinites take the wide scope, yielding an elimination of the ∀>∃ reading. Discussions on double object construction will be built on these arguments.

4. Quantifier scope in ditransitive construction

4.1 IO is higher than DO

For sentences with the ditransitive verb GIVE, there are two main observations. First, when the two objects are QNPs, the preference for [S-DO-V-IO] order over [S-V-IO-DO] order mostly remains (17), but other factors seem to be at play and affect the judgments of grammaticality, which I will elaborate on shortly. Because the scores for grammaticality judgment vary across ditransitive sentences, I will mark the score with a square bracket [ ] in front of each sentence (‘1’ = ‘*’).

(17) a. [4] LAURA BOOK ALL GIVE STUDENT ONE. [S-DO-V-IO]
b. [3] LAURA GIVE STUDENT ONE BOOK ALL. [S-V-IO-DO]

c. [4] LAURA BOOK ONE GIVE STUDENT ALL. [S-DO-V-IO]
d. [3] LAURA GIVE STUDENT ALL BOOK ONE. [S-V-IO-DO]

Second, the asymmetry of scope relation between IO and DO reveals that IO is hierarchically higher than DO. Recall that in transitive sentences, ONE-phrases can take the maximal scope through existential quantification. This means that when they are structurally lower than an ALL-phrase, an inverse scope reading is available. Otherwise, only a rigid scope is available. In (17b) and (17d), elaborated below as (18) and (19), both sentences have the [S-V-IO-DO] order; when DO is the ONE-phrase, the sentence is ambiguous (18); whereas when IO is the ONE-

[9] Luisa Martí (p.c.) points out that Fodor & Sag’s (1982) claim should be examined by testing the existence of intermediate scope of ONE-phrases (see, for instance, Farkas 1981; Innes 2007). At this stage, I have not yet been able to do the follow-up tests.

phrase, the sentence is unambiguous (19). This indicates that DO is hierarchically lower than IO, so that when DO is a ONE-phrase, it can take the inverse scope though the existential quantification.

(18) [3] LAURA GIVE STUDENT ALL BOOK ONE. [S-V-IO-DO]
Intended: 'Laura gave all students a book.' (ambiguous)
a. Collective (∃>∀): 'There is a book *y*, such that Laura gave *y* to all students.'
b. Distributive (∀>∃): 'For every student *z*, there is a book *y* such that Laura gave *y* to *z*, respectively.'

(19) [3] LAURA GIVE STUDENT ONE BOOK ALL. [S-V-IO-DO]
Intended: Laura gave a student all the books. (∃>∀ only)
a. Collective (∃>∀): 'There is a student *z* such that Laura gave all books to *z*.'
b. #Distributive (∀>∃): 'For every book *y*, there is a student *z*, such that Laura gave *y* to *z*, respectively.'

Assuming this, the counterparts of (17b) and (17d) with [S-DO-V-IO] order should have the same scope relation patterns. This is borne out for (17a), repeated below as (20). Interestingly, this is not the case for (17c), repeated below as (21). The sentence only has an inverse scope. This can be explained by topicalization. Recall that in (14), repeated below as (22), I proposed that the topicalization of a ONE-phrase in the derivation eliminates the rigid scope and enforces the existential maximal scope of the ONE-phrase. Following this, it seems to suggest that DO in [S-DO-V-IO] is topicalized to the pre-verbal position.[10] In other words, [S-DO-V-IO] is the derived word order that involves topicalization, and [S-V-IO-DO] seems to be the base-generated word order for ditransitives in HKSL.

(20) [4] LAURA BOOK ALL GIVE STUDENT ONE. [S-DO-V-IO]
(∃>∀ only): 'There is a student *x* such that Laura gave all the books to *x*.'

(21) [4] LAURA BOOK ONE GIVE STUDENT ALL. [S-DO-V-IO]
(∃>∀ only): 'There is a book *y* such that Laura gave *y* to all the students as a group.'

(22) a. MAN ALL WOMAN ONE LIKE. (∃>∀ only)
b. WOMAN ONE, MAN ALL LIKE. (∃>∀ only)

Thus far, I have shown that scope ambiguity between IO and DO is attested in [S-V-IO-DO] word order, when DO has the ONE-phrase and IO has the ALL-phrase. With [S-DO-V-IO] word order, if DO has the ONE-phrase, the inverse scope is enforced by topicalization of DO. Now I will examine the scope relation between Subject and DO, as well as Subject and IO. The same pattern argued above should apply. Alternatively, the deviant data should be explainable.

The scope relation between Subject and DO is correctly predicted for (23a) (inverse scope enforced by topicalization of DO) and (24b) (rigid scope only), partially correct for (24a), but not (23b). Specifically, (24a) received mixed judgments: signer B judged it as acceptable (score: 3) with a rigid reading only, which falls into my prediction; However, signer A judged it as

[10] Non-manual marking seems to support this claim. In natural signing, DO often co-occurs with a brow raise, which can mark topics in HKSL (Sze 2008, 2011). However, because the co-occurrence is not consistent, and topics in HKSL are not always marked by a brow raise, at this stage, I remain conservative in using the presence of brow raise as an argument for this claim.

ungrammatical (score: 1). The reason remains to be investigated.[11] For (23b), since no topicalization is involved, it should have been ambiguous, but the rigid scope is somehow eliminated. In the next section, I will suggest an explanation for this puzzle. I will argue that clause-final ONE-phrases can cause an anti-reconstruction effect and eliminate the rigid scope reading.

(23) a. [5] WOMAN ALL BOOK ONE GIVE LAURA. [S-DO-V-IO]
(∃>∀ only): 'There is a book *x* such that all women as a group gave *x* to Laura'

b. [5] WOMAN ALL GIVE LAURA BOOK ONE. [S-V-IO-DO]
(∃>∀ only): 'There is a book *x* such that all women as a group gave *x* to Laura'

(24) a. [1/3] WOMAN ONE BOOK ALL GIVE LAURA. [S-DO-V-IO]
(∃>∀ only): 'There is a woman *x* such that *x* gave all the books to Laura.'
(Signer A: 1; Signer B: 3, ∃>∀ only)

b. [3] WOMAN ONE GIVE LAURA BOOK ALL. [S-V-IO-DO]
(∃>∀ only): 'There is a woman *x* such that *x* gave all the books to Laura.'

4.2 When a bare noun enters scope relations

The scope relation between Subject and IO is complicated by other factors and thus is excluded in our discussion. In this section, I will detour to elaborate some details. However, due to the lower relevance, readers can choose to skip this section and move on to *Discussion* directly.

In the task design, I excluded [+ human] DOs for the sake of consistency between ditransitive sentences and transitive sentences. This was because the [+ human] feature of the objects appears to affect the word order of ditransitives sentences (but not transitives). With two [+ human] objects, the [S-V-DO-IO] order can be acceptable (25b) (c.f. (10c)).[12]

(25) 'The emperor gave a maid to the eunuch.'
a. [5] EMPEROR MAID GIVE EUNUCH [S-DO-V-IO]
b. [3] EMPEROR GIVE MAID EUNUCH [?S-V-DO-IO]

Recall that to compare the scope relation between two QNPs at a time, the third argument in a ditransitive sentence was intended to be a proper name (see Table 1). However, including only [- human] DOs brings another issue: a bare noun (BN) (rather than a human name) in DO is unavoidable. Crucially, bare noun phrases in HKSL can enter the scope relation with the two QNPs, which means that the comparison of scope relation is no longer between the two QNPs as intended. In (26), even though *HKSL-DICTIONARY* was intended to be a book name (proper

[11] One possibility may be that *ALL* could act as a preverbal adverbial. If this is the case, DO in (24a) is the bare noun *BOOK*, which can either mean 'the book' or 'a book' (see the following paragraph), i.e., singular. Thus, with the singular subject *WOMAN ONE* and a singular 'a book/the book', using *ALL* in modifying the verb *GIVE* makes the sentence semantically infelicitous: 'A woman all gave a book/the book to Laura'.

[12] Moreover, [S-V-IO-DO] order is unacceptable for some signers (EMPEROR GIVE EUNUCH MAID). At this stage, I do not have an explanation for this puzzle regarding how [+ human] feature of objects affects the word order of ditransitives. I leave it to future study.

name), it does not guarantee the uniqueness, and can mean 'there are several copies of *HKSL Dictionary*'. According to the consultants, (26) has similar readings as (27), a sentence with one ALL-phrase and two ONE-phrases. The accepted readings are illustrated by Figure 6.

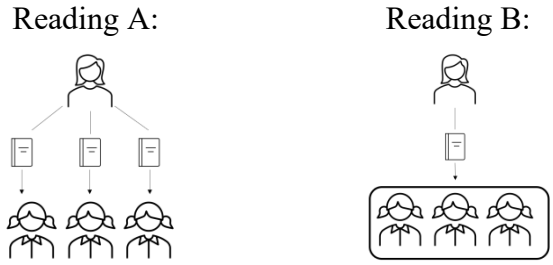


Figure 6. The two available readings for (26) and (27).

(26) a. [3] TEACHER ONE HKSL-DICTIONARY GIVE STUDENT ALL. (ambiguous, reading A &B)
b. [3] TEACHER ONE GIVE STUDENT ALL HKSL-DICTIONARY. (ambiguous; reading A &B)
Reading A: 'There is one teacher *x*, such that for all student *z*, *x* gave a HKSL dictionary to *z*.'
Reading B: 'There is one teacher *x* and a HKSL dictionary *y*, such that *x* gave *y* to all the students as a group.'

(27) [3] TEACHER ONE BOOK ONE GIVE STUDENT ALL. (ambiguous: reading A & B)
Reading A: 'There is one teacher *x*, such that for all student *z*, *x* gave a book to *z*.'
Reading B: 'There is one teacher *x* and a book *y*, such that *x* gave *y* to all the students as a group.'

Bare noun phrases entering scope relations is not surprising. In American Sign Language (ASL), for instance, bare noun phrases can be interpreted as either definite or indefinites (Petronio 1995; MacLaughlin 1997). They interact with other QNPs, which brings scopal ambiguity (28).

(28) t
CAR, TWO STUDENT BUY.
a. 'Two students together bought a car.'
b. 'Two students each bought a car.'
c. 'Two students bought cars.' (ASL, Petronio 1995, ex. 13)

Logically, when involving three QNPs, there should be six possible scope relations, listed in (29). Scope relation b & e result in the same reading; so do scope relation c & d. The possible readings are listed in Table 2. Reading D should be excluded because it is pragmatically impractical (it is difficult to give a book to multiple receivers unless the book is teared into different parts). At this moment, little is known about how a ONE-phrase interacts with a bare noun when they co-occur in HKSL, and whether any scope relation in Table 2 can be eliminated due to their co-occurrence. Nevertheless, according to my consultants, for (27), only reading A and B are possible, in which ONE always takes a wider scope than ALL (reflecting the hierarchical relation between the Subject and the IO).

(29) Logically possible scope relations for (26): S: ONE; IO: STUDENT ALL; DO: BN
a. (S>IO>DO): ONE > ALL > BN

'There is one teacher *x*, such that for all student *z*, *x* gave a HKSL dictionary to *z*.'

b. (S>DO>IO): ONE > BN > ALL

'There is one teacher *x* and a HKSL dictionary *y*, such that *x* gave *y* to all the students as a group.'

c. (IO>S>DO): ALL > ONE > BN

'For all student *z,* there is one teacher *x* such that *x* gave a HKSL dictionary to *z*.'

d. (IO>DO>S): ALL > BN > ONE

'For all student *z,* there is a HKSL dictionary *y* such that a teacher gave *y* to *z*.'

e. (DO>S>IO): BN > ONE > ALL

'There is a HKSL dictionary *y* such that one teacher *x* gave *y* to all the students.'

f. (DO>IO>S): BN > ALL > ONE

'There is a HKSL dictionary *y* such that for all student *z,* one teacher gave *y* to *z.*

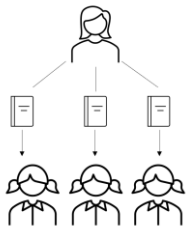
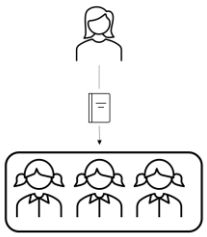
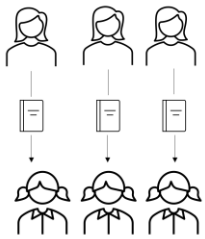
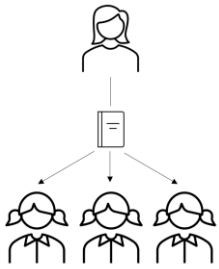
readings	A	B	C	D
				
scope relation	a. ONE > ALL > BN	b. ONE > BN > ALL e. BN > ONE > ALL	c. ALL > ONE > BN; d. ALL > BN > ONE	f. BN > ALL > ONE

Table 2. Options of readings with different scope relations in (29)

As shown above, with a bare noun DO, an intermediate scope is introduced in the scope relation. Due to the complication of the matter, in the following discussion, I will exclude the data regarding the scope relation between Subject and IO (C1 and C2 in Table 1). The scope relations with the arguments in sentences with transitive verbs and the ditransitive verb *GIVE* is summarized in Table 3. The exception is marked with underline. In (23b), repeated below as (30), compared to its counterpart with the [S-DO-V-IO] order that is ambiguous (24a), it only gets an inverse scope (∃>∀).

Transitives	**S vs. O**		SUB-ALL; OBJ-ONE	SUB-ONE; OBJ-ALL
	possible readings		∀>∃; ∃>∀	∃>∀ only
Ditransitives	**IO vs. DO**		IO-ALL; DO-ONE	IO-ONE; DO-ALL
	possible readings	[S-DO-V-IO]	∃>∀ only (17c)	∃>∀ only (17a)
		[S-V-IO-DO]	∀>∃; ∃>∀ (17d)	∃>∀ only (17b)
	S vs. DO		SUB-ALL; DO-ONE	SUB-ONE; DO-ALL
	possible readings	[S-DO-V-IO]	∃>∀ only (23a)	*/ok ∃>∀ only (24a)
		[S-V-IO-DO]	∃>∀ only (23b)	∃>∀ only (24b)

Table 3. The paradigm of scope relations in sentences with transitives & ditransitives

(30) WOMAN ALL GIVE LAURA BOOK ONE (∃>∀ only)

This sentence has a clause final ONE-phrase. In the next section, I will propose an account related to this observation.

5. Discussion

5.1 Anti-reconstruction effect

In this subsection, I provide an explanation for the exception in (30), which has a clause-final ONE-phrase and only has an inverse scope reading. I propose that the rigid scope reading between *ALL* and *ONE* (∀>∃) is eliminated by an anti-reconstruction effect caused by the clause-final focused ONE-phrase. Shibata (2012, 2015) observed an anti-reconstruction effect in Japanese. In Japanese, objects must move to a projection above negation (at LF) in syntax. In semantics, reconstruction of the original trace is possible.[13] This explains the ambiguity between the object and the negation in (31a). On the one hand, the object must move to the projection that is higher than the negation, so it is outside the scope of negation in syntax, yielding the wide scope of the object. On the other hand, the inverse scope is still possible due to reconstruction effect. Specifically, the A-moved element can reconstruct to the original trace position in semantics. By contrast, in (31b), when the object co-occurs with the focus particle *only*, i.e., a focused phrase, the inverse scope is no longer possible. Shibata proposed that when a focus is involved in the sentence, it traps the object in their scope position in LF, so reconstruction of the trace is not possible. This process is dubbed an *anti-reconstruction effect*.

(31) a. Taroo-wa zen'in gakusee-o sikar-anakat-ta.
Taro-TOP all student-ACC scold-NEG-PST
'Lit. Taro didn't scold all students.' [OBJ > NEG; NEG > OBJ]

b. Taroo-wa pan-dake kaw-anat-ta.
Taro-TOP bread-only buy-NEG-PST
'Lit. Taro didn't buy only bread.' [OBJ > NEG; *NEG > OBJ.]

(Japanese, Shibata 2012, ex. 27, 28)

Adopting Shibata's (2012, 2015) account, I suggest that the clause-final ONE-phrase in (30) occupies a focus position and triggers a similar anti-reconstruction effect. This proposal is motivated by the observation that the right periphery position in HKSL can host focus. I provide two pieces of evidence. First, a Question-Answer Pair (QAP) construction like (32) has been argued to be a focus construction (Wilbur 1996; Stickles 2012; Crasborn & Van Der Kooij 2013). In a QAP, the first clause raises a question, and the second clause answers it immediately.[14] The whole construction is an assertion. Compared to regular declarative SVO sentences like (32), a QAP emphasizes the content being answered (the second clause), which is located clause-finally. Second, in a declarative sentence, when a subject co-occurs with the focus particle 'only', signed as ONE-FINISH, the focused phrase is also dislocated to the clause-final position (33). Moreover, focus occurring in the clause-final position is also attested in other sign languages (Wilbur 1996; Petronio & Lillo-Martin 1997; Stickles 2012 for ASL; Crasborn & Van Der Kooij 2012, 2013 for Sign Language of the Netherlands (NGT); de Quadros 1999

[13] A semantic reconstruction is assumed here, i.e., scope reconstruction results from semantic procedures. C.f. for instance, Fox (1999), for the alternative account that assumes scope reconstruction is syntactic.

[14] Other scholars argue that QAPs are wh-clefts (Wilbur 1996 for ASL; Branchini 2014 for Italian Sign Language (LIS)).

for Brazilian Sign Language (LSB), a.o.). Thus, it is plausible to assume that the clause final ONE-phrase in (31) bares focus.

(32) a. LOVE JOHN WHO, MARY$_F$
'The person that loves John is Mary.'
b. MARY LOVE JOHN.
'Mary loves John.'

(33) a. AARON GO SCHOOL.
'Aaron went to school.'
b. GO SCHOOL AARON ONE-FINISH
'Only Aaron went to school.'

Accordingly, I suggest that the head of FocP in HKSL is to the right periphery of the sentence. Moreover, I propose that when a ONE-phrase appears clause-finally, it has to be interpreted through focus. Thus, the ONE-phrase in (30) undergoes focus movement and moves rightward to the Foc-head (at LF), which is structurally higher than ALL. This will yield the rigid scope reading ∃>∀. I propose that as an existential quantifier, when the ONE-phrase occupies FocP, it triggers *anti-reconstruction effect*. This bans the ONE-phrase from being interpreted at its base-generated position, where ALL is hierarchically higher than ONE. Instead, it must be interpreted at LF. Thus, the ∀ > ∃ reading is eliminated and only the ∃>∀ reading is available.

5.2 On the V-IO-DO sequence

Recall that although the [S-V-IO-DO] sequence is accepted, it is degraded. I suggest two possible explanations. First, it could be due to a (visual) modality idiosyncrasy of sign languages. Specifically, although the [S-V-IO-DO] order seems to be base-generated, the linear co-occurrence of two object NPs on surface ([V-IO-DO]) could add burden to the processing of visual information (c.f., for instance, Napoli & Sutton-Spence 2014). Also, in the [V-IO-DO] sequence, it could be confusing for the signers to decide which object is the DO and which is the IO, thus, this sequence is less preferred. Alternatively, it could be restricted for prosodic reasons. When a sentence involves two objects, the prosodic mapping might prefer that they are both adjacent to the verb to form a prosodic unit. Thus, the [S-DO-V-IO] sequence is preferred over [S-V-IO-DO].

6. Conclusion

This study is one of very few studies investigating ditransitives in a sign language (c.f. Sze 2000 for HKSL; Choupina et al. 2016 for Portuguese Sign Language; Pavlič 2020 for Slovenian Sign Language). In this study, I investigate the hierarchical structural of ditransitive sentences in HKSL using the link between hierarchical relations of constituents and their scope relation. As a baseline, I first examined scope relation of ALL-phrase and ONE-phrase in sentence with transitive. The data suggest that HKSL is a scope rigid language. There is no QR. Nevertheless, I show that ONE-phrase is lexically ambiguous. As a quantifier, it enters scope relation with other quantifiers. As a DP, it can take maximal scope through existential quantification. Thus, when a ONE-phrase is structurally lower, the sentence is ambiguous.

In sentences with the ditransitive verb GIVE, the scope relations between DO and IO suggest that IO is underlyingly higher than DO. The scope relations between Subject and IO are also correctly predicted. To account for one exception, (30), which only has an inverse scope reading, I propose that clause-final ONE-phrases move to the structurally high Foc^{o} at the right periphery. As an existential quantifier, the focused ONE-phrase triggers an anti-reconstruction effect, forcing the quantifiers from being interpreted at their derived positions in LF, instead of the base-generated positions. If this proposal is on the right track, it shows that a rightward movement is at play in HKSL (c.f. similar observations in Neidle et al. 1998; Wood 2009 for ASL; Cecchetto et al. 2009 for LIS). I also suggest some explanations for the preference on the [S-DO-V-IO] order over the [S-V-IO-DO] order. Modality idiosyncrasies of sign languages seem to interact with the word order.

In order to further test the preliminary findings and the proposed theoretical explanations discussed above, replications of the study with a larger population of participants and an extensive list of verbs are necessary. Nevertheless, despite the limited scale of this investigation and the remaining puzzles, this study provides insights from adopting scope relations to investigate word order problems in sign languages. Scope relations have been commonly used in research on spoken languages, but barely in that on sign languages. This study shows that scope relation tests could be one option to bypass certain difficulties in sign language research on word order due to modality idiosyncrasies such as simultaneity (Leeson & Saeed 2012) and the frequent lack of overt functional elements.

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Abbreviations

OBJ	object
ACC	accusative
TOP	topic
NEG	negation
PST	past

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