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The 14th Generative Linguistics in The Old World in Asia (GLOW in Asia XIV)

Edited by Xiangyu Li, Zetao Xu, Yuqiao Du, Zhuo Chen, Chenghao Hu, Zhongyang Yu & Victor Junnan Pan

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PREFACE

This volume contains regular talks and posters presented at the 14th Generative Linguistics in the Old World in Asia (GLOW in Asia XIV) 2024, Hong Kong, on March 6-8, 2024.

Following the successful hosting of GLOW in Asia VI and GLOW in Asia XIV at the Chinese University of Hong Kong in 2007 and in 2022, we are once again honored to host GLOW in Asia XIV. Thanks to the support from the colleagues, we received a substantial number of abstracts from all over the world. A total of 15 regular talks and 34 posters were presented during the three-day conference. All of the talks represented most up-to-date research findings in a wide range of subfields in generative linguistics.

We were privileged to have six distinguished scholars to present their research as the keynote speeches: Luigi Rizzi (Collège de France), Hisatsugu Kitahara (Keio University), Caterina Donati (Université Paris Cité), Rajesh Bhatt (University of Massachusetts Amherst), Roberta D'Alessandro (Utrecht University), Željko Bošković (University of Connecticut).

The conference drew over 100 participants and we had excellent discussions throughout the three days. We thank The Chinese University of Hong Kong, Faculty of Arts, Department of Linguistics and Modern Languages, and New Asia College for their generous funding; we would also like to thank Prof. Mamoru Saito from Nanzan University, Prof. Anoop Mahajan from University of California Los Angeles, and other GLOW in Asia executive committee members: Prof. Wei-Tien Dylan Tsai, Prof. Tanmoy Bhattacharya, Prof. Myung-Kwan Park, Prof. Koji Sugisaki and Prof. Yuji Takano.

Finally, we express our deepest gratitude to the abstract reviewers who have contributed to the overall quality of the conference.

The GLOW in Asia XIV Organizing Committee
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Economy Constraints on Phrasal Causatives

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1. Introduction[1]

Economy considerations lie at the core of linguistic theorising, with the system favouring expressions with the *Least Effort* flavour, i.e., derivations with less computational/representational costs (see Chomsky (1995) *et seq*). The Strong Minimalist Thesis rules out *true optionality* where two or more PF forms co-exist with the same LF representation (though, see Biberauer and Richards (2006) for exceptions). In this paper, we show that minimally different PF forms can co-exist with a single meaning, and they are ranked from good to marginal. This gradation, we show, is based on costs incurred on semantic computations and equivalence at LF (following Reinhart (1998)). Our inquiry is directed at Bangla (a.k.a. Bengali; an Eastern Indo-Aryan language) morphological and phrasal causatives, with the former scoring a higher rank than the latter.

The paper is arranged as follows: Section 2 presents a brief on three types of causatives in Bangla, i.e., lexical, morphological, and phrasal causatives. Section 3 lays out details of a survey conducted by the authors, the methodology used, and the results regarding the distribution patterns of phrasal causatives. Section 4 summarises two existing proposals for comparing derivations, while Section 5 elaborates on the syntactic and semantic representations for both morphological and phrasal causatives. This is where we also show that the semantic representations for the two are considered for comparison, and the phrasal causatives are ranked lower than morphological causatives because of the extra computational costs that the former incur at LF. Section 6 concludes with some theoretical implications for theories adopting pan-derivational comparisons at the semantic interface.

2. Three types of Bangla Causatives

Bangla has two primary kinds of causatives: lexical and morphological. As illustrated through the contrast in (1a-b), the lexical causative (LC) form of a verb such as *poraa* 'fall' is *phello*. In morphological causatives (MC), on the other hand, there is a separate causative morpheme *-waa* that is attached to the verbal root. Relevant examples are shown in (2a-b), where the verb *khaa* 'eat' is causativised as *khaa-waa*.

(1) a. *Raam* ***porlo.*** (Lexical Causative)
Ram fall.PST.3
'Ram fell down.'

b. *Sitaa Raam-ke* ***phello.***
Sita Ram-ACC throw.PST.3
'Sita threw Ram.' (lit. pushed Ram to the floor)

[1] We thank our Bangla informants for sharing their linguistic judgements with us. We are also grateful to Rajesh Bhatt, Roberta D'Alessandro, Hamida Demirdache and Caterina Donati for very insightful comments on the paper, and to Victor Junan Pan, Zetao Xu and other organisers of GLOW in Asia XIV for their kind hospitality.

(2) a. *aami khaabaar khe-laam.* (Morphological Causative)[2]
I food eat-PST.1
'I ate food.'
b. *aami Raam-ke khaabaar khaa-**waa**-laam.*
I Ram-ACC food eat-**CAUS**-PST.1
'I fed Ram.'

Lexical causatives are mostly seen with unaccusatives such as 'fall', 'go', 'come' etc. Table 1 lists some examples (also, see Dasgupta (2007)).

Table 1: Lexical Causatives with Unaccusatives

Unaccusatives	**Causatives**
poraa 'fall'	*phela* 'throw'
jaawaa 'go'	*pnouche dewaa* 'make someone reach'
aashaa 'come'	*aanaa* 'bring'
moraa 'die'	*maaraa* 'kill'
ghum theke othaa 'get up'	*ghum theke tolaa* 'wake someone up'
thaakaa 'stay'	*raakhaa* 'keep'
cholaa 'go'	*chaalaano* 'drive'/'make something run'

Not every unaccusative, however, can be lexically causativised; verbs such as *dobaa* 'sink', *golaa* 'melt', *photaa* 'bloom', *pochaa* 'rot' instead have morphological causative forms (*dob**aa**no* 'to cause to drown', *gol**aa**no* 'to cause to melt', *phot**aa**no* 'to cause to bloom', *poch**aa**no* 'to cause to rot'). Morphological causatives with unaccusatives are also not very common; one cannot use **por**aa**no* 'to cause to fall', **jaaw**aa**no* 'to cause to go', **aash**aa**no* 'to cause to come', **mor**aa**no* 'to cause to die', **ghum theke oth**aa**no* 'to cause to get up', **thaak**aa**no* 'to cause to stay', **chol**aa**no* 'to cause to go/run', etc. MCs are most productive with unergatives and (di)transitives, as shown in Table 2 below.

Table 2: Morphological Causatives with Unergatives and (Di)transitives

Unergatives	**Morphological Causatives**
naachaa 'dance'	*naach-**aa**-no* 'make someone dance'

[2] Bangla also has morphological double causatives, where no additional morphology is required other than *-waa*; in (i), 'I' is the first causer, and 'Ram' is the second causer.
(i) *aami Raam-ke diye goru-ke khaabaar khaa-**waa**-laam.*
I Ram-OBJ by cow-ACC food eat-CAUS-PST.1
'I made Ram feed the cow.'

knaadaa ‘cry’	*knaad-**aa**-no* ‘make someone cry’
(Di)transitives	**Morphological Causatives**
bolaa ‘tell’	*bol-**aa**-no* ‘make someone tell’
dewaa ‘give’	*de-**waa**-no* ‘make someone give’
khaawaa ‘eat’	*kha-**waa**-no* ‘feed’
dekhaa ‘see’	*dekh-**aa**-no* ‘show’

A clear-cut pattern that can be seen from the above-presented data is, that if a verb has undergone lexical causativisation, it does not go with morphological causativisation. But in general, lexical causative forms are few, and many verbs instead end up with morphological causative forms.

Bangla has a third type of causative - the phrasal causative, which is the primary topic of our investigation here. These are briefly reported in the literature (Dasgupta 2007), but they are not explored further as very few speakers of Standard (Kolkata) Bangla use them. They are constructed with an additional *karaa* ‘do’ that is causativised (3a-b). Dasgupta reports them as non-standard variants.

(3) a. *Jitu Rinaake diye dutxo saarxi kaacaa **kar-aa-be.***
Jitu Rina-OBJ by two saris to-wash will-cause-to-do
‘Jitu will make Rina wash two saris.’ (Dasgupta 2007: pp 219)

b. *aami Raam-ke khaabaar khaawaa **kar-aa-laam.***
I Ram-ACC food eat do-CAUS-PST.1
‘I fed Ram.’

In this paper, we ask two questions concerning phrasal causatives: the first is about their distributional patterns, and the second concerns their non-preferential status. More specifically, do phrasal causatives occur with different kinds of verbs, or are they restricted to a few verb classes? Second, what explains their degraded status vis-a-vis morphological causatives?[3]

3. Experimental Survey and Results

Previous literature on Bangla morphological causatives has already established their wide acceptability among native speakers for all verbs except for intransitives such as ‘fall’, ‘die’, etc (see Dasgupta (2007)).[4] However, there is currently no existing work that talks extensively about phrasal causatives. We therefore conducted a survey trying to fill in this lacuna.

[3] Rajesh Bhatt (personal communication) directs our attention to Hindi structures with ‘steal’ which have both morphological causative and phrasal causative forms (*churvaayi* ‘steal-cause’ and *chori karvaayi* ‘steal do-cause’). However, we believe that the latter may not be instances of phrasal causatives since the base/default form of ‘steal’ in Hindi is *chorii-karnaa* ‘steal-do’, which means that no extra ‘do’ is added to an existing verb.

[4] Dasgupta (2007) also mentions that morphologically, only *sarcastic causatives* can be formed with these verbs, but not the regular causatives.

Our methodology involved circulating a feedback form (testing comprehension) containing 20 phrasal causatives among 20 native speakers in the age range of 23-35 years. All informants are native speakers of Bangla residing in the city of Kolkata (West Bengal, India). Phrasal causatives with (di)transitives (e.g., 'eat', 'tell'), unergatives (e.g., 'dance'), and unaccusatives (e.g., 'fall') were intermixed with fillers (non-causative sentences). Respondents were asked to judge the sentences on a three-point scale: good/acceptable (=yes), bad/unacceptable (=no), and marginal. Below, we present the results of the survey. Consider the graph below for results on unaccusative verbs.

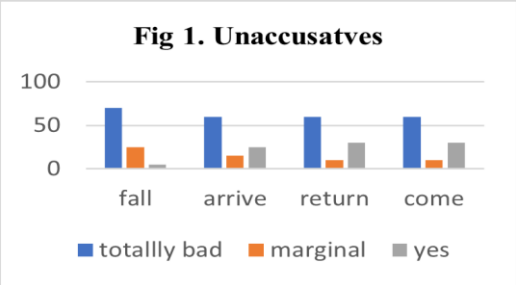


Fig 1: Acceptability of phrasal causatives with Bangla unaccusative verbs

Speakers ruled out phrasal causatives with unaccusatives. We performed a χ^2-test for independence to check whether the complete rejection of phrasal causatives is independent of the use of unaccusative verbs like 'fall', 'arrive', 'return', and 'come'. The result is as follows: χ^2(df = 6)-value = 30.088, p-value = 0.00003 < 0.05, H_0 = complete rejection of phrasal causatives is independent of the use of unaccusative verbs. Thus, we note a statistically significant result where the use of unaccusatives strongly lowers the acceptability of phrasal causative structures in Bangla.

On the other hand, the formation of phrasal causatives is deemed possible with (di)transitives. However, not all transitive phrasal causatives are equally acceptable. See Fig 2 below.

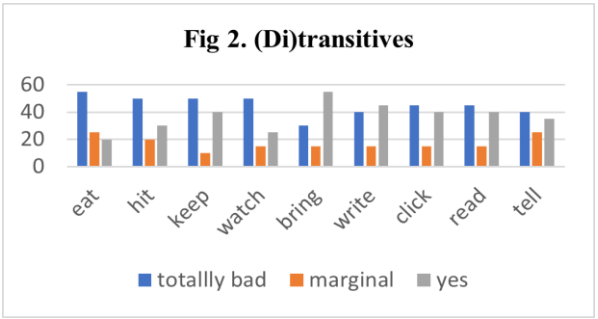


Fig 2: Acceptability of phrasal causatives with Bangla (di)transitive verbs

With transitives like 'eat', 'hit', 'keep', and 'watch', most informants find it odd to form a phrasal causative structure (χ^2(df = 3)-value = 14.02, p-value= 0.029 < 0.05, H_0 = complete rejection of phrasal causatives is independent of the use of these transitive verbs), while with 'bring', 'write', 'read', 'click', and 'tell', phrasal causative formation is more acceptable (χ^2(df = 8)-value = 13.80, p-value = 0.086 > 0.05, H_0 = complete rejection of phrasal causatives is not sensitive to the use of these transitive verbs).

Finally, turning to unergative intransitives, the following figure evinces the acceptability pattern of phrasal causatives containing this predicate type:

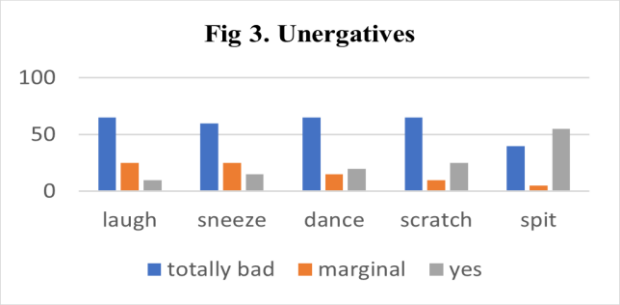


Fig 3: Acceptability of phrasal causatives with Bangla unergative verbs

Verbs such as 'laugh', 'sneeze', 'dance', and 'scratch' are bad in phrasal causative constructions (χ^2(df = 6)-value = 16.43, p-value = 0.011 < 0.05, H_0 = complete rejection of phrasal causatives is independent of the use of these unergative verbs), while 'spit' is comparatively good, with many respondents opting for the "totally good" option.

To summarise, phrasal causatives are ruled out with unaccusatives, as shown in Fig 1, while phrasal causatives are possible with some (di)transitive and unergative verbs though the possibility is not statistically significant (F = 4.769 > F (0.95, 13, 3) = 0.293, p-value = 0.8879 > 0.05, left-tailed test). The data do not show a complete rejection of the phrasal causatives; the (di)transitives and the unergatives are more acceptable than the accusatives. But this kind of statistical insignificance tells us that speakers are mostly avoiding phrasal causatives, irrespective of the verb types.

4. Comparing Derivations

Preference for one construction over another calls for pan-derivational comparison, also known as global economy. The notion of comparing derivations doesn't align too well with minimalist ideals, where decisions regarding costs are taken locally, at different points of constructing a single derivation. Comparing derivations, on the other hand, implies that the system should, additionally, have the resources to compare two representations that are stored in two separate derivational workspaces. If separate derivations are compared and rated against each other, it implies that principles such as parsimony and economy apply both globally and locally. Below we talk about two approaches that have been proposed to compare derivations.

One popular approach is to compare constructions that constitute a *reference set*. There are several different viewpoints on what constitutes a reference set. Under one account, if derivations D1 and D2 are both convergent and start from the same *Numeration*, they are part of the same reference set and hence comparable (see Chomsky's (1992) *Shortest Movement Requirement*). This is illustrated with the following sentences from English:

(4) Who e bought what?

(5) *What did who buy e?

(4) moves the higher wh-item 'who' to the sentence periphery, whereas in (5), it is the lower wh-item 'what' that is moved. Object movement in the second sentence incurs more cost, as it is a longer movement. Since another derivation can be concurrently created from the same

numeration ({who, buy, what, T, C, v}), the system, upon comparing the two derivations, rules out the one with the longer (object) movement in (5).

The challenge for this approach, however, comes from derivations that emerge from the same numeration, with distinct computations, and yet, are not ruled out in favour of one another. Consider the following constructions in (6)-(7), both of which are grammatical despite the latter hosting a longer movement (what-movement to spec, embedded CP) than the former.

(6) Who e knows who e bought what?

(7) Who e knows what who bought e?

Reinhart (1998) explains that these two derivations, despite sharing the numeration, do not end up competing with each other because they have distinct semantics. In the former, where the 'who' has moved to the embedded CP, the question is asked of the wh-in situ 'what' (8), whereas in the latter, the 'what' has moved to the embedded CP, the question is asked of the wh-in situ 'who' (9).

(8) For which <x, z>, x knows who bought z.

(9) For which <x, y>, x knows what y bought.

(8) and (9) are not identical representations at LF, and therefore they do not compete against each other. These cases fail to provide the ground to implement the global economy constraint and hence both derivations are equally possible (see Golan (1993)) for the original conception of locality in these terms). Building on these observations, Reinhart (1998) resets global economy as an interface strategy that applies at the stage when syntactic forms are translated into semantic representations (also see Reinhart and Reuland (1993) for a similar observation on the application of Condition B). At that stage, if there is a semantically equivalent derivation D1 with less cost, it blocks the more expensive D2 with the same semantic representation. This is formally stated by Reinhart in (10). Thus, comparison at the level of semantics is considered (cf. Fox 1995).

(10) D' blocks D unless their translations are not equivalent. (pp. 50)

5. Comparing Phrasal and Morphological Causatives

As discussed, morphological and phrasal causatives are minimally different in that the latter has an extra 'do' morpheme. The following sentences show the contrast:

(11) *aami raam-ke diye mishti aan-aa-laam.*
I Ram-OBJ by sweets bring-CAUS-PST.1
'I had Ram bring the sweets.'

(12) *aami raam-ke diye mishti aan-aa* ***kor****-aa-laam.*
I Ram-OBJ by sweets bring-NMLZ do-CAUS-PST.1
'I had Ram bring the sweets.'

The sentences are different in their choice of lexical items. While the morphological causative in (11) has the causative morpheme attached to the lexical verb, the phrasal causative in (12) has an extra 'do' morpheme to which the causative morpheme is attached. The other difference is that the phrasal causative also has a nominalised verb. The *-aa* marker attached to the verbal *aan-* root in (12) is a nominaliser, though it is homophonous to the causative morpheme in the inflected form of 'do'. More evidence for *-aa* used as a nominaliser comes from (13), where the nominalised form *aan-aa* constitutes an event.

(13) *ekhaane baacchaader aan-**aa** thik naa.*
here child.PL bring-NMLZ right NEG
'Bringing children here is not right.'

Clearly, the morphological causative and the phrasal causative have different numerations. This presents a challenge, since according to the first approach discussed above, comparisons between constructions are possible only if they are derived from the same numeration. The concerned structures have different numerations, and yet, they are compared and ranked vis-a-vis each other.

5.1. Comparison at the Interface

An alternative explanation must therefore be sought out. We thus enquire if Reinhart's proposal of pan-derivational comparison as an interface condition can account for the differential treatment meted out to phrasal causatives in Bangla. For this, we have to look carefully for semantic overlaps in the LF translations of morphological and phrasal causatives. Once an overlap is confirmed, indicating their semantic equivalence, we have an answer for why the two constructions are comparable, despite being associated with different numerations.

Let us delve deeper into the meanings of these two types of causatives. Interestingly, our informants unanimously ascribed two meanings (a-b) to both types of causatives given in (11)-(12):

a. In one reading, the matrix subject 'I' is the causer of the event, and 'Ram' is the agent of the resultant event 'bringing sweets' – let us call it a 'single causative' reading;
b. In another reading, the matrix subject 'I' is the causer of the event, but 'Ram' is not the agent of the resultant event 'bringing sweets' himself. Instead 'Ram' acts as another causer who makes someone else (agent) 'bring sweets' – this is a 'double causative' reading.

This kind of ambiguity is related to the structural nuances of the constructions. In the literature on causatives (cf. Pylkkänen 2008), two types of languages are identified: *voice bundling* languages and *non-voice bundling* languages. In the former type, which also includes English, the *agent* and the *causer* roles overlap on a functional v head, whereas in the latter, they are hosted on two separate functional heads.[5] The overlap is illustrated below, where the causative (transitive) verb (15) has the same form *bhaanglo* as the inchoative (intransitive) counterpart (14). The inchoative lacks an external causer/agent, while the causer/agent distinction is clearly made in the transitive. Despite this difference, the verbal morphology is the same, indicating that the causer and the agent roles are carried on the same verb.

[5] The same is noted for Hindi-Urdu (aka Hindi) (Bhatt and Embick 2017).

(14) *jaanlaa-ta bhaanglo*
window-CLF break.PST.3
'The window broke.' (Inchoative)

(15) *Lisaa jaanlaa-ta bhaanglo*
Lisa window-CLF break.PST.3
'Lisa broke the window.' (Causative)

In contrast, Japanese and Finnish have a distinct way of introducing the causer. Consider the following pairs to understand the difference. Their transitive verbs are marked with *-ase* and *-tti* respectively to indicate that a causer is present.

(16) Japanese (Pylkkänen 2008: pp. 81)

a. *Yasai-ga kusa-tta*
vegetable-nom rot-past
'The vegetable rotted.' (Inchoative)

b. *Taroo-ga yasai-o kus-**ase**-ta*
Taro-nom vegetable-acc rot-cause-past
'Taro caused the vegetable to rot.' (Causative)

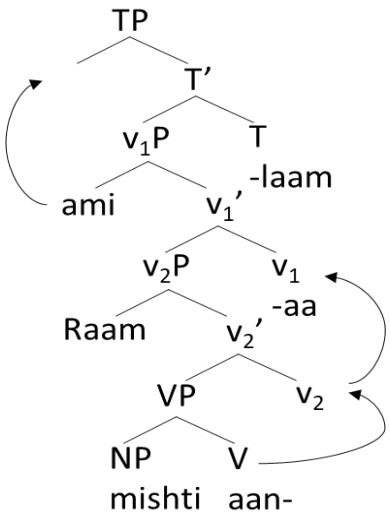
(17) Finnish (Pylkkänen 2008: pp. 82)

a. *Ikkuna hajo-si*
window.nom break-past
'The window broke.' (Inchoative)

b. *liisa hajo-**tt**-i ikkuna-n*
Lisa.nom break-cause-past window-acc
'Lisa broke the window.' (Causative)

Since Bangla does not distinguish between inchoatives and transitives as concerns the morpho-syntax of the verb, we infer that it encodes the two semantic roles of the 'agent' and the 'causer' on a single verb. With that assumption in place, we posit (18) as the structural representation for a morphological causative (see e.g., (11)) with a single causative meaning.

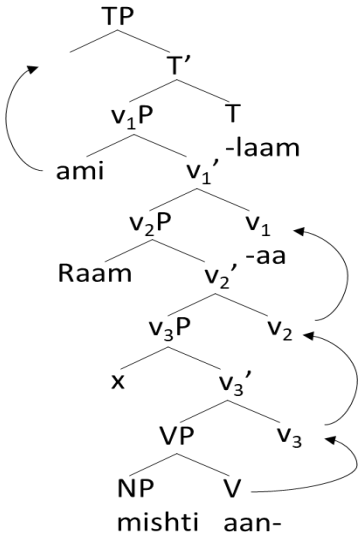
(18)



(18) shows a recursive vP structure (following Bhatt and Embick (2017), with v1 selecting v2. The lower v2 head can only assign an agent theta role to its external argument *Ram*. The higher v2 head to which the causative morpheme *-aa* is attached simultaneously assigns both causer and agent theta-roles to the external argument *aami*.

On the other hand, the double causative reading associated with the morphological causative requires another recurring vP which accommodates the agent of bringing sweets who is someone else other than *Ram*. Here, *Ram* acts as an intermediate causer ordering/causing someone to bring the sweets. We propose the following representation to account for this kind of reading (19):

(19)

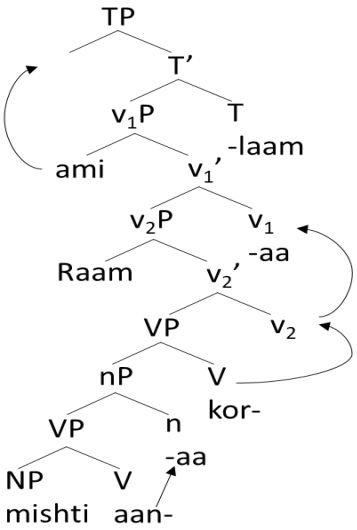


In (19), v3 assigns only the agent theta-role, whereas the higher functional heads v2 and v1 can simultaneously assign both causer and agent theta-roles to their respective external arguments. To elaborate, the x who 'brings sweets' is assigned an agent theta-role by v3, whereas by v2, *Ram* is assigned theta-roles of a causer (of causing someone else to bring the sweets) and an

agent of the event which causes someone to bring the sweets. Similarly, *aami* is the causer as well as agent of the event that triggers *Ram* to cause x to bring sweets.

The same meanings are also available with phrasal causatives including (12). The single causative reading receives the following structural representation:

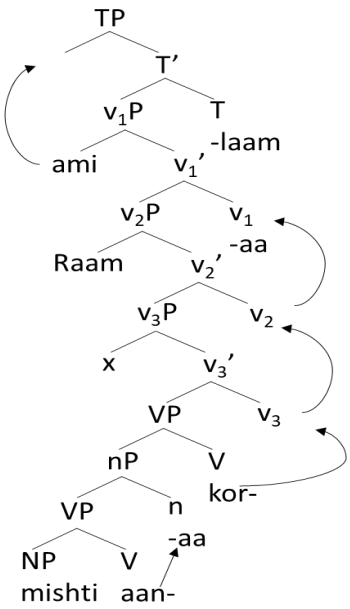
(20)



The phrasal causative has the following distinct features. The first involves the nominalised nP 'brining sweets' and the second is the verb *kor*- which is acting as a main verb here. Same as the morphological causative, v2 in (20) also assigns the agent theta-role to *Ram*, whereas v1 assigns both the causer and agent roles to the matrix subject *aami*.

The double causative reading associated with the phrasal causative likewise recurs another layer of vP where the lowest v3 assigns only the agent theta-role to the x who brings the sweets. The v2 and v1 heads assign both the causer and agent theta roles to their external arguments. See the following:

(21)



What we have shown till this point is that despite the extra nP and 'do', phrasal causatives have the same recurring vP-structure that allows single and double causative readings. However, they must also be shown to have the same translations at LF.

Now, coming to the semantics corresponding to the ambiguous readings associated with the morphological causative in (11), we follow Pylkkänen's (2008) insight in defining the interpretation of a v with both causer+agent readings.

(22) $[[v_{[AG+CAUS]}]] = \lambda P_{<v,t>}\lambda x_e \lambda e'_v.\exists e[P(e) \& cause(e',e) \& ag(e') = x]$

It takes a predicate (of eventualities) P, along with one individual argument x and an event argument e', and it returns true if there exists an event e that is predicated by P and is caused by e' whose agent is x. Now, getting to check how it works in (18) computationally, we see that the event predicate that *-aa* morpheme takes as its argument is v_2P, the interpretation of which is in (23). The consequent compositional steps are the following:

(23) $[[v_2P]] = \lambda e_v.bring(sweets)(e) \& ag(e) = Ram$ (via (i) Event Identification (Kratzer 1996), VP & v_2; and (ii) Function Application (FA), v_2' & [[Ram]])
(24) $[[v_1']] = \lambda x_e \lambda e'_v.\exists e[bring(sweets)(e) \& ag(e) = Ram \& cause(e',e) \& ag(e') = x]$
(via FA, v_1, v_2P)
(25) $[[v_1P]] = \lambda e'_v.\exists e[bring(sweets)(e) \& ag(e) = Ram \& cause(e',e) \& ag(e') = Speaker]$
(via FA, v_1', [[aami]])

The open event argument in (25) is then bound by an existential closure introduced by the finite T head (Kratzer 1996), yielding the following interpretation of the TP:

(26) $[[TP]] = \exists e' \exists e[bring(sweets)(e) \& ag(e) = Ram \& cause(e',e) \& ag(e') = Speaker]$

It states that there exist two events e' and e such that e is the event of bringing sweets by Ram and caused by e' whose agent is the speaker in the context. It successfully captures the single causative reading associated with the morphological causative. On almost similar lines, the double causative reading for morphological causatives is derived via the following steps:

(27) $[[v_3P]] = \lambda e_v.\text{bring(sweets)}(e) \& \text{ag}(e) = x_i$
(28) $[[v_{2[AG+CAUS]}]] = \lambda P_{<v,t>}\lambda x_e \lambda e'_v.\exists e[P(e) \& \text{cause}(e',e) \& \text{ag}(e') = x]$
(29) $[[v_2P]] = \lambda e'_v.\exists e[\text{bring(sweets)}(e) \& \text{ag}(e) = x_i \& \text{cause}(e',e) \& \text{ag}(e') = \text{Ram}]$
(30) $[[v_1P]] = \lambda e''_v.\exists e'\exists e[\text{bring(sweets)}(e) \& \text{ag}(e) = x_i \& \text{cause}(e',e) \& \text{ag}(e') = \text{Ram} \& \text{cause}(e'',e') \& \text{ag}(e'') = \text{Speaker}]$
(31) $[[TP]] = \exists e''\exists e'\exists e[\text{bring(sweets)}(e) \& \text{ag}(e) = x_i \& \text{cause}(e',e) \& \text{ag}(e') = \text{Ram} \& \text{cause}(e'',e') \& \text{ag}(e'') = \text{Speaker}]$

We now have the task of computing the single and double causative meanings of phrasal causatives. Following Portner (1991, 1992), we assume that the nominalised phrase/gerund denotes sets of events/minimal situations.[6] The nominaliser (NMLZ) *-aa* denotes an identity function of type <<v,t>, <v,t>> (Bhadra and Banerjee 2023), as stated in (31). We make an ontological assumption that eventualities are also part of the domain containing individuals, i.e., $D_v \subset D_e$. We also follow the Kratzerian stand to include only internal arguments in the verbal semantics, severing the external one which is supplied by the functional v. So, we view 'do' as having the Kratzerian transitive semantics such as $\lambda y_e \lambda e_v.\text{do}(y)(e)$ where the y variable will be saturated by the kind-level eventuality denoted by the nominalised phrase. Now, we compute the semantics of VP, as in (33).

(32) $[[_{NMLZ}\text{ -aa}]] = \lambda P_{<v,t>}\lambda e_v.P(e)$

(33) $[[VP]] = \lambda e_v.\text{do}(\cap[\lambda v.\text{bring(sweets)}(v)])(e)$ (via FA, [[kor-]], [[nP]])

We follow Portner's (1992) assumption in viewing verbal nominalisations as entity correlates. This is the reason we use Chierchia's (1998) '$\cap$' operator to convert a property (in this case, property of eventualities of type <v,t>) into its entity correlate. Now, the VP will compose with the agent-introducing v_2 head via Event Identification (Kratzer 1996). After that, the causative morpheme *-aa* in v_1 will introduce the CAUS and AG semantics in it. Eventually, we will get the single causative interpretation of v_1P in (34). It successfully captures the causative meaning where the speaker is causing some *doing* event by *Ram* himself and what is *done* is the event of bringing sweets. As before, $\exists$-closure now happens to bind the free event variable e' and, consequently, we get a t-type interpretation of the whole TP.

(34) $[[v_1P]] = \lambda e'_v.\exists e.\text{do}(\cap[\lambda v.\text{bring(sweets)}(v)])(e) \& \text{ag}(e) = \text{Ram} \& \text{cause}(e', e) \& \text{ag}(e') = \text{Speaker}]$

From our experimental survey in Section 3, we noted that phrasal causatives are bad with unaccusatives. The reason behind this is – 'do' necessarily asks for a θ-assigning $v_{[AG]}$ head just above it. However, in the case of unaccusatives, this kind of $v_{[AG]}$ projection is absent, therefore also ruling out 'do' in the structure. Likewise, the double causative reading of (21)

[6] Also see Bhadra and Banerjee (2021), Banerjee (2023) for a discussion on the semantics of Bangla gerunds.

can be inferred by introducing an additional layer of causation semantics that can be imported from another v projection. Eventually, the TP in (21) results in having the following double causative interpretation:

(35) [[TP]] = ∃e''∃e'∃e.do(∩[λv.bring(sweets)(v)])(e) & ag(e) = x_i & cause(e',e) & ag(e') = Ram & cause(e'',e') & ag(e'') = Speaker

To summarise, though morphological and phrasal causatives begin from different numerations, with the latter hosting extra items including an overt verb 'do' and a nominalised item, the two eventually translate into the same LF forms. In other words, phrasal causatives do not contribute any extra semantics in comparison to their morphological counterparts. It is at this level that the two are compared, and the phrasal causatives are ranked lower than the morphological causatives because they have extra LF/semantic computations including the conversion of the property of eventualities into entity correlates. The costlier option is therefore syntactically possible, but a less preferred option at the interface.

5. Conclusion

This paper discusses phrasal causatives which are rated lower than morphological causatives by Bangla speakers. As we enquire about the reasons behind this ranking, we understand that pan-derivational constructions are indeed possible with minimally different sentences as long as they share the same semantics. When two derivations with the same semantics are compared, the one that incurs more cost at LF is deemed more expensive and is therefore considered less acceptable. From this viewpoint, pan-derivational comparisons do not occur in the syntactic space where economy and parsimony act on local domains. The semantic interface is different in that it allows comparisons across different derivations.

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Aspectual Coercion and the Decomposition of VP

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1. Introduction*

Aspectual coercion—or aspect shift—occurs when there's a meaning mismatch between the input conditions of a viewpoint aspect construction and the actual input. Take the English continuative aspect verb *continue*, which requires durative input (Rochette 1999:158). Selection of an achievement like *arrive* results in a conflict resolvable by iterative coercion; the only possible reading of (1) involves a plurality of 'arrivings'.[1] Iteration coerces 'arriving' into stretching out over time and so the durative selectional restriction of *continue* is satisfied. For (1) to work, consider the following scenario: Kailyn wasn't invited to the party but she showed up anyway. We refused her entry multiple times and were expecting her to give up by now, but…

(1) *Kailyn continued arriving.*

At first sight, the type of coerced reading illustrated by (1) looks to be a semantic or pragmatic repair strategy. This is the standard account of aspectual coercion (i.a., Moens & Steedman 1988; de Swart 1998; Koontz-Garboden 2007; Michaelis 2011). This paper presents novel data which suggest that there's also a syntactic side to aspect shift. The data concern alternative ways of marking the same type of viewpoint aspect. For instance, besides *continue*, there's also the continuative particle *on*. In general these are interchangeable: (2a) and (2b) mean the same thing. However, *on* categorically disallows coercion (2c), even given the scenario from (1). What's crucial is that (2c) has the same meaning as (1), and is as such interpretable, but nonetheless ungrammatical. So, whatever is blocking aspectual coercion in (2c) likely isn't semantics or pragmatics. The hypothesis pursued here therefore holds that syntax drives the coercion effects.

(2) a. *Kailyn continued reading.* b. *Kailyn read on.* c. **Kailyn arrived on.*

The contrast illustrated by (1)/(2c) is not limited to English, nor to continuative aspect.[2] This paper examines data from two types of viewpoint aspect in two unrelated languages: Mandarin and Dutch. To see that the contrast recurs across languages, consider continuative aspect. Mandarin has the aspectual verb *jìxù* 'continue' (3a) and the verbal suffix *-xiaqu* (3b), Dutch the aspectual verb *blijven* 'stay' (4a) and the particle *door* (4b). Within these pairs, given the context from (1), the first two allow aspect shift (3a)/(4a) while the last two block it (3b)/(4b). As a shorthand for these contrasts I will use the term **Aspectual Coercion Blocking** (ACB)

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[1] There's at least one other route to durativity: preparatory process coercion (Moens & Steedman 1988:18). This happens with progressive aspect—e.g., *The train is arriving at the station*. This paper is limited to iterativity.

[2] In Dutch, the contrast is also found with certain ingressive constructions (see Bogaards et al. 2022:§4).

effects.[3]

(3) **Mandarin**

a. *Kǎilín jìxù* {*yuèdú*/***chūxiàn***}.
Kailyn CONT read show.up

b. *Kǎilín* { *yuèdú*/****chūxiàn***}*-xiaqu.*
Kailyn read show.up -CONT
'Kailyn kept reading/showing up.'

(4) **Dutch**

a. *Kailyn bleef* {*lezen* / ***arriveren***}.
Kailyn CONT read arrive

b. *Kailyn* {*las* / ****arriveerde***} *door*.
Kailyn read arrived CONT
'Kailyn kept reading/arriving.'

Previous work derives ACB effects from the concept of Distinguished Subevent (Chief 2007) and merge relative to little *v*/Voice (Fukuda 2012). This paper argues that the novel data and their syntactic properties show that previous analyses don't fully explain these contrasts.

I propose that ACB effects fall out naturally from a particular style of verbal decomposition (i.a., Travis 2010; Xuán 2011; Lu et al. 2019; Woo 2021; Sybesma 2015, 2017, 2021). Specifically, aspect markers like *-xiaqu* (3b) and *door* (4b) merge within the extended projection of big VP and c-select for the syntactic articulation of their required situation type. Aspect markers such as *jìxù* (3a) and *blijven* (4a) merge after big VP is built up and s-select for situation aspect, allowing for the resolution of input violations via aspect shift (in line with standard accounts of coercion). ACB effects thus reduce to complement size—complements smaller than the inner- aspectual extension of VP block aspectual coercion, larger ones allow it.

At a more general level, this paper (i) provides independent evidence for approaches to the decomposition of VP which derive achievements from syntax; and (ii) suggests that functional projections encoding viewpoint aspect are distributed over not two but three distinct domains: not just above and below little *v*/Voice (as assumed by, e.g., Cinque 1999; Laca 2004; Fukuda 2012; Ramchand & Svenonius 2014), but also outside and within the articulation of big VP.

The paper outline is as follows. Section 2 provides an overview of the ACB patterns exhibited by Mandarin/Dutch continuative and prospective aspect constructions. In section 3, I contend that previous work doesn't capture these patterns. Section 4 introduces the adopted model of verbal decomposition. Working from this model, section 5 formulates the proposal, discussing evidence from distribution, licensing and intervention effects.

2. Aspectual Coercion Blocking

This paper examines ACB effects displayed by two pairs of viewpoint aspect markers in Mandarin and Dutch. The types of viewpoint aspect under study are continuative aspect ('keep on') and prospective aspect ('be about to'). The main object of study is their interaction with situation aspect, understood as the standard Vendlerian four-way classification of VPs into states, activities, accomplishments and achievements (Vendler 1967; Dowty 1979; Smith 1990, among many others). In particular: how does this interaction play out when situation type clashes with input condition—is aspectual coercion a grammatical way out?

For continuative aspect, the relevant expressions in Mandarin are the aspectual verb *jìxù* 'continue' and the suffix *-xiaqu* (see Xiao & McEnery 2004:§5.4); in Dutch, they are the aspectual verb *blijven* 'stay' and the particle *door* (see Bogaards 2022:§6.2). The ACB effects

[3] This paper follows the Leipzig Glossing Rules, with the following additions: CONT=continuative aspect, LE=particle *le* 了, PROSP=prospective aspect, PRT=particle.

displayed by these markers were illustrated by (3)-(4): all of them select for durativity, but *jìxù* and *blijven* allow punctual-to-durative coercion via iterativity, while *-xiaqu* and *door* block it.

For prospective aspect, the relevant Mandarin expressions are the aspectual verb *jiùyào* (5a) and the adverb *kuài* (5b) (see Yan & Yuan 2024). The Dutch prospective constructions under study are *op…staan* 'stand on' (5c) (henceforth OP) and *op het punt staan (om) te* 'stand on the point to' (5d) (henceforth OHPS) (see Bogaards 2023).

(5) a. *Fángzi jiùyào dǎotā le.*
house PROSP collapse LE

b. *Fángzi kuài dǎotā le.*
house PROSP collapse LE

c. *Het huis staat op het punt in te storten.*
the house stands on the point in to collapse

d. *Het huis staat op instorten.*
the house stands on collapse
'The house is about to collapse.'

Prospective aspect construes some transition as imminent, so in general it's sensitive to change of state, i.e., selects achievements. When combined with a non-punctual, atelic verb like *walk*, the mismatch can be repaired by onset coercion, profiling the onset transition ('start walking'). This strategy is allowed with *jiùyào* (6a) and OHPS (6c) but blocked by *kuài* (6b) and OS (6d). As was the case for the ACB effects in (3b)/(4b), it's not that (6b)/(6d) are uninterpretable; they could be understood to mean the same as (6a)/(6c), but yet they're ungrammatical. Table 1 provides an overview of the constructions and whether they allow or block aspectual coercion.

(6) a. *Kǎilín jiùyào zǒulù le.*
Kailyn PROSP walk LE
'Kailyn is about to walk.'

b. **Kǎilín kuài zǒulù le.*
Kailyn PROSP arrive LE

c. *Kailyn staat op het punt te lopen.*
Kailyn stands on the point to walk
'Kailyn is about to walk.'

d. **Kailyn staat op lopen.*
Kailyn stands on walk

Table 1 Overview of viewpoint aspect constructions and ACB effects

Continuative aspect		**Prospective aspect**		**Coercion?**
Mandarin	Dutch	Mandarin	Dutch	
jìxù 继续	*blijven*	*jiùyào* 就要	*op het punt staan (om) te* (OHPS)	✓
-xiaqu 下去	*door*	*kuài* 快	*op…staan* (OP)	✗

3. Previous work

There are two previous analyses which touch upon Aspectual Coercion Blocking effects. This section reviews them and points out where they fall short of capturing the new data.

3.1 Distinguished Subevent

Chief (2007) observes that prospective *kuài* selects achievements (7a) but not accomplishments (7b) or activities (7c). He explains this from the meaning of *kuài*, which "modifies verbs whose DS [i.e., Distinguished Subevent] corresponds to a result state" (Chief 2007:213), where DS refers to the subevent available for modification (see Pustejovsky 1995). Accomplishments and achievements differ in allowing, respectively, modification of the process and result subevent.

(7) a. *Fēijī kuài dào le.*
airplane PROSP arrive LE
'The airplane's about to arrive.' [Chief 2007:218, (106)]

b. **Tā kuài xiū diànshì le.*
3SG PROSP repair TV LE
(Intended: 'They're about to fix the TV.') [Chief 2007:164, (58)]

c. **Āmèi kuài xǐzǎo le.*
Amei PROSP shower LE
(Intended: 'Amei is about to take a shower.') [Chief 2007:214, (97)]

As noted in section 2, *jiùyào* is another Mandarin prospective marker. Like *kuài*, it construes the situation denoted by the main verb as imminent and combines with achievements (8a). But unlike *kuài*, *jiùyào* licenses both accomplishments (8b) and activities (8c) under onset coercion.

(8) a. *Fēijī jiùyào dào le.*
airplane PROSP arrive LE
'The airplane's about to arrive.'

b. *Tā jiùyào xiū diànshì le.*
3SG PROSP repair TV LE
'They're about to fix the TV.'

c. *Āmèi jiùyào xǐzǎo le.*
Amei PROSP shower LE
'Amei is about to take a shower.'

On Chief's approach, we'd have to say that both *kuài* and *jiùyào* encode imminence and select verbs with a result state DS, but only *jiùyào* also accepts verbs whose DS is a process. While this covers the distribution in (7)-(8), it in effect amounts to postulating the selectional restrictions as part of the semantics of *kuài* and *jiùyào*. It also doesn't explain why *jiùyào*—despite imposing looser selectional restrictions—still coerces its complement into a punctual representation (in Chief's terms: into a result state DS). In other words, a semantic account relying on the notion of DS is not only forced to postulate the contrast, it also fails to capture the fact that both *kuài* and *jiùyào* are sensitive to achievements, differing only in whether onset coercion is allowed.

3.2 Position Relative to Little *v*/Voice

Fukuda (2012) analyzes the Japanese viewpoint aspect markers *hajime-* 'begin', *tsuzuke-* 'continue', *owar-* 'end' and *oe-* 'finish' as functional heads occupying different positions along the clausal spine. He observes that, out of these four, only *oe-* blocks iterative coercion with achievements:

(9) **Japanese**
Kankookyaku-ga hoteru-ni tsuki-* ***oe-* *ta.*
tourists-NOM hotel-LOC arrive-finish-PST
(Intended: 'The tourists finished arriving at the hotel.') [Fukuda 2012:985, (40)]

In the present terms, this is an ACB contrast, observed between *oe-* on the one hand, and *hajime-*, *tsuzuke-* and *owar-* on the other. Fukuda (2012) derives the contrast from merge above/below *v*/Voice. He calls these positions H(igh)-Asp and L(ow)-Asp, respectively.

Fukuda's main diagnostic concerns the possible positions of the viewpoint aspect head relative to the passive morpheme *(r)are-*, assumed to head *v*/VoiceP. According to this evidence, the high position above *v*/Voice—to the right of *(r)are-*—is only accessible to *hajime-*, *tsuzuke-* and *owar-*, not to *oe-*. ACB effects thus seem to correlate with low merger of the aspect head. What's more, *hajime-* and *tsuzuke-* can optionally merge in the low position

(i.e., to the left of *(r)are-*), **except** under aspectual coercion—in (10), multiple 'discovering' events:

(10) *Atarashii wakusei-ga mitsuke- <*tsuzuke->rare- <tsuzuke->ta.*
new planet-NOM discover-CONT- PASS-CONT- PST
'New planets continued to be discovered.' [Adapted from Fukuda 2012:991, (59)]

New data from Dutch and, especially, Mandarin cast doubt on a one-to-one relation between merger below *v*/Voice and ACB effects. Let's start with Mandarin continuative *jìxù*, which allows aspectual coercion. Transposing Fukuda's passive test to Mandarin, we can use the position relative to the passive marker *bèi* to diagnose merger above or below *v*/Voice. It turns out that both positions are available for *jìxù* (11). Since *màidiào* 'sell' is an achievement verb, the acceptability of the low position (i.e., to the right of *bèi*) is inconsistent with the data in (10).

(11) *Méiyǒu bànfǎ chóu-dào qián jiù <jìxù> bèi <jìxù> mài-diào-le.*
NEG way raise-arrive money so CONT PASS CONT sell-off -LE
'There was no way to raise the money, so it continued to be sold.'

Second, Mandarin prospective *kuài* blocks coercion, so on Fukuda's account, we expect it to only merge low (i.e., to the right but not to the left of *bèi*). But prospective *kuài* in fact only merges high (12a).[4] It thus patterns with prospective *jiùyào* (12b) rather than with non-coercers like Japanese *oe-*. Fukuda's account thus doesn't predict *kuài*'s ACB effects.

(12) a. *Qìchē <kuài> bèi <*kuài> huǐhuài le.*
car PROSP PASS PROSP destroy LE
b. *Qìchē <jiùyào> bèi <*jiùyào> huǐhuài le.*
car PROSP PASS PROSP destroy LE
'The car was about to be destroyed.'

Last, consider Dutch continuative *blijven*, which like *jìxù* and *jiùyào* displays no ACB effects. Following Fukuda, we therefore expect that, under iterative coercion, it only merges high. However, there seems to be some optionality in where to put *blijven* relative to the Dutch passive marker *worden*. In (13a)—despite the iterative coercion with the achievement *ontdekken* 'discover'—*blijven* can be to the left or right of *worden*. This does not appear to be a trivial matter of clustering, as other (semi-)aspectual verbs like *gaan* 'go' (13b) and root modals like *moeten* 'must' (13c) categorically disallow the rightmost position. I take this to mean that there's a low position (below *v*/Voice) available to *blijven* that isn't available to *gaan*/*moeten*.[5]

[4] Huang (1999:349) observes that, in general, "long-distance passives", as he calls them (i.e., with a non-main verb in the position to the right of *bèi*), "are well-formed in Mandarin Chinese, quite unlike English passives".

[5] The Dutch data are weaker than the Mandarin evidence for a few reasons. First, the embedded verb in (13a-c) is a (passive) participle, which meets the selectional restrictions of passive *worden* rather than continuative *blijven* (which takes an infinitive). Second, there is some inter-speaker variation regarding the acceptability of the rightmost position, although this does clearly contrast with its categorical unacceptability in (13b-c). Third, the pattern instantiated by low *blijven* in (13a)—i.e., Long Passive—is a marginal structure in Dutch more generally, especially with aspectual verbs (see Kovač & Schoenmakers under revision and references cited

(13) a. *dat* *er* *nieuwe* *planeten* *<blijven>* *worden* *<%blijven>* *ontdekt*
that there new planets CONT PASS CONT discovered
b. *dat* *er* *nieuwe* *planeten* *<gaan>* *worden* *<*gaan>* *ontdekt*
that there new planets go PASS go discovered
c. *dat* *er* *nieuwe* *planeten* *<moeten>* *worden* *<*moeten>* *ontdekt*
that there new planets must PASS must discovered
'that new planets continue to / are going to / must be discovered'

Finally, deriving ACB effects from low merger is also incompatible with recent syntactic accounts of the English *ing*-progressive, which situate it inside *v*/VoiceP (i.a., Harwood 2015; Ramchand 2018:chap.2). The *ing*-progressive has no issue coercing (Boogaart 1999; Michaelis 2011)—e.g., *New planets are being discovered*—contrary to what Fukuda's account predicts.

3.3 Interim Summary

We have seen that previous analyses of ACB either need to postulate the effects as part of the semantics of non-coercers, or make inaccurate predictions about the distribution of Mandarin and Dutch (and English) aspect markers relative to little *v*/Voice. The next section lays the groundwork for the new proposal by introducing the adopted decompositional model of VP.

4. The Decomposition of VP

Decompositional approaches derive inner-aspectual and/or thematic properties of the situations denoted by verbs from the syntactic articulation of VP. They assume an isomorphic mapping between situation structure and phrase structure, so that these properties can be directly read off of particular (combinations of) functional projections. Proposals in this tradition—the most influential being Borer (2005), MacDonald (2008), Ramchand (2008) and Travis (2010)—vary in the number and type of projections and how they're ordered, but the basic idea is the same.

For the proposal made in this paper, I adopt a particular version of verbal decomposition rooted in work by Travis (2010) and Xuán (2011), developed by Sybesma (2015, 2021) and Lu et al. (2019), and spelled out most explicitly in Sybesma (2017). What sets this model apart—and is to play a key role in the proposal—is that achievements are represented one-to-one in syntax. That is, there's a dedicated functional projection which takes an accomplishment as its complement and turns it into an achievement. By way of further exposition, this section goes over evidence from Mandarin and Dutch in support of this way of decomposing VP.

Table 2 Situation-aspectual features

	Telic	**Durative**
Activity	–	+
Accomplishment	+	+
Achievement	+	–

Table 2 lists the standard situation-aspectual features to be mapped to the phrase structure by any isomorphic model: telicity (whether the situation tends towards an inherent endpoint) and durativity (whether it extends over time). (14) shows how these situation types map to syntax. Activities are assumed to be the most basic dynamic situation type. They're articulated by a simplex VP (14a) whose V⁰ may only select a

there). Readers not convinced by the Dutch data may limit themselves to the observations on Mandarin (and those on the English progressive below), none of which are affected by the validity of the Dutch evidence.

theme internal argument which—even when quantized—does not license telicity. [6] Accomplishments (14b) and achievements (14c) are complex situation types built out of an activity VP and one or two functional projections (Asp1P/Asp2P). Together, they form the extended projection of big VP dedicated to the computation of inner aspect. Little *v*P and VoiceP fall outside of this domain, reflecting the canonical view that external arguments don't affect situation aspect (e.g., Tenny's 1994:119 Non-Measuring Constraint on External Arguments).[7]

(14) a. $[_{VP}\ [V^o]]$ Activity
b. $[_{Asp1P}\ [Asp1^o]\ [_{VP}\ [V^o]]]$ Accomplishment
c. $[_{Asp2P}\ [Asp2^o]\ [_{Asp1P}\ [Asp1^o]\ [_{VP}\ [V^o]]]]$ Achievement

Asp1º selects an activity VP and turns it into an accomplishment, or in terms of table 2, makes it telic. Asp1P has a direct counterpart in most decompositional models of VP—e.g., Asp_Q^{max} (Borer 2005), AspP[±q] (MacDonald 2008), ResP (Ramchand 2008) and AspP (Travis 2010)—and goes back to the concept of Small Clause (SC) in the work of Hoekstra (1984, 1988). An SC-complement is a minimal state predication (e.g., *the parents awake*) found in combinations of the type *the child cried [the parents awake]* (example from Sybesma 2021:58). In this kind of sentence, *cry* is an activity, but the SC-complement makes *cry the parents awake* an accomplishment. On the theory adopted here, SCs are a subtype of Asp1P: the result state predicate (e.g., *awake*) is in Asp1º and its subject (e.g., *the parents*) in the specifier. Asp1P dominates VP as the functional projection responsible for telicity. (15a)/(16a) are examples; (15b)/(16b) show the underlying decomposition with *xǐng/wakker* 'awake' in Asp1º and *fùmǔ/ouders* 'parents' in [Spec, Asp1P].[8] (14b) generalizes this analysis to all telic predicates (e.g., (15c)/(16c)) by assuming that Asp1º can be phonologically null. We thus get a uniform analysis of accomplishments with (e.g., (15b)/(16b)) and without (e.g., (15d)/(16d)) an SC.[9]

(15) a. *Háizi kū -xǐng -le fùmǔ.*
child cry-awake-LE parents
'The child cried the parents awake.' [Sybesma 2021:58, (18j)]
b. […$[_{Asp1P}$ fùmǔ $[_{Asp1^o}$ xǐng $[_{VP}\ [_{V^o}$ kū]]]]]
c. *Háizi chī-le zhè -kuài bǐnggān.*
child eat-LE DEM-CLF cookie
'The child ate this cookie.'
d. […$[_{Asp1P}$ zhè-kuài bǐnggān $[_{Asp1^o}$ Ø $[_{VP}\ [_{V^o}$ chī]]]]]

[6] The classic example (due to Vendler 1967:100-102) is *She pushed the cart (#in one hour)*. This property has been qualified in various ways: [Spec, VP] is "[–SQA]" (Verkuyl 1972), cannot do "Measuring-Out" (Tenny 1994), "falls out from the event 'spine'" (Travis 2010:119) or is not a "Delimiter" (Fukuda 2012:981).

[7] I lack the space to go into the articulation of states in this type of model; they correspond to Asp1P without an underlying dynamic VP. Moreover, Sybesma (2017, 2021) argues that the inner-aspectual domain is topped off by Asp3P, headed in Mandarin by verbal *-le*. Since this projection isn't needed for the present proposal, it's outside of the scope of the present discussion. I therefore abstract away from it in structures like (15b)/(15d).

[8] For Dutch, this yields the correct surface order; for Mandarin, the surface string can be derived by cyclic movement of *fùmǔ* and *kū-xǐng* to the inner-aspectual projection headed by *-le* (i.e., Asp3P, see fn.7) and then of *kū-xǐng-le* to *v*/Voiceº, all ofwhich is independently motivated. See Sybesma (2021:57-62) for the details.

[9] An additional piece of evidence for the presence of Asp1º in (16d) is that it can be filled with the particle op, which signals the endpoint of the process: *dat het kind dit koekje **op**-at*.

(16) a. *dat het kind de ouders wakker huilde*
that the child the parents awake cried
'that the child cried the parents awake'
b. [… [$_{Asp1P}$ de ouders [$_{Asp1^0}$ wakker [$_{VP}$ [$_{V^0}$ huilde]]]]]
c. *dat het kind dit koekje at*
that the child this cookie ate
'that the child ate this cookie'
d. [… [$_{Asp1P}$ dit koekje [$_{Asp1^0}$ Ø [$_{VP}$ [$_{V^0}$ at]]]]]

Having some implementation of a "telicizing" functional projection (Asp1P or otherwise) is pretty commonplace. Less standard is the idea of a "punctualizing" projection which takes an accomplishment as its complement and—in terms of table 2—makes it non-durative, i.e., turns it into an achievement. Sybesma (2015, 2017) and Lu et al. (2019) propose precisely this type of inner-aspectual projection: Asp2P. Asp2^0 selects Asp1P and makes the process leading up to the offset transition (e.g., in (15c)/(16c): a series of bites from the cookie) syntactically inaccessible. Building on work by Rappaport Hovav (2008) and Rothstein (2008), Lu et al. (2019) formalize this operation as SCALE REDUCTION: Asp2^0 is a function taking as its argument a multi-point scale (e.g., the series of bites above) and producing as output the corresponding two-point scale (i.e., only the onset and offset transitions, with no temporal extension in between). Following these proposals, achievements correspond to the phrase structure in (14c). Achievements are thus bigger structures than accomplishments, which are in turn bigger structures than activities.

Empirical evidence for Asp2P comes from the class of so-called "phase-complements" (Chao 1968:461-465) in Mandarin—also known as "phase RVCs" (Li & Thompson 1981:65-66)—which covers elements such as *wán* 'finish', *diào* 'off' and *dào* 'arrive'. Lu et al. (2019:282-284) show that combinations like *zhǎo-dào* 'lit. look.for-arrive = find' behave differently from combinations like *kū-xǐng* 'cry-awake' with respect to Dowty's (1979) *almost*- and progressive-tests—namely, that the former pattern with achievements and the latter with accomplishments. While Asp2P is limited to this small class of complements in Mandarin, Lu et al. (2019) show that another Chinese language—Changsha Xiang—systematically turns accomplishments into achievements by generating an aspectual morpheme in Asp2^0: *ka*^{41}.[10]

Furthermore, Sybesma (2017) points at cases in Mandarin where phase-complements and Asp1-heads co-occur (17a), where *huài* 'to pieces' is in Asp1^0, making the activity VP *pǎo* 'run' telic; and *diào* is in Asp2^0, making the 'running' process denoted by *pǎo-huài* 'run to pieces' syntactically inaccessible (17b). For the present proposal, I generalize Asp2P to all achievement verbs by assuming that both Asp1^0 and Asp2^0 can be abstract functional positions. This extends the analysis to all achievement verbs, like Dutch *bereiken* 'reach' (18a), which buys us a uniform structural account of achievements with and without an overt phase-complement.

(17) a. *Wǒ bǎ yùndòngxié pǎo-huài -diào-le.*
1SG CAUS sneakers run-to.pieces-off -LE
'I ran my sneakers completely to pieces.' [Sybesma 2017: (17b)]

[10]Lu et al. (2019) also point at Song's (2018) discussion of *liu* in Dongying Mandarin, which is similar to *ka*^{41} and hence likewise a good candidate for heading Asp2P. So, there's a growing body of crosslinguistic evidence for Asp2P (see also the Dutch data on completive *uit*-), which is therefore deserving of further study.

b. [… [$_{Asp2P}$ [$_{Asp2^0}$ diào [$_{Asp1P}$ yùndòngxié [$_{Asp1^0}$ huài [$_{VP}$ [$_{V^0}$ pǎo]]]]]]]

(18) a. *Felix bereikte z'n bestemming.*
Felix reached his destination
'Felix reached his destination.'
b. [… [$_{Asp2P}$ [$_{Asp2^0}$ Ø [$_{Asp1P}$ bestemming [$_{Asp1^0}$ Ø [$_{VP}$ [$_{V^0}$ bereikte]]]]]]]

As an aside, empirical evidence for Asp2P can be found in Dutch as well. This means that Asp2P need not be postulated based on comparative data. To illustrate this point, consider the following novel observations. There is a productive construction in Dutch built out of the preposition *uit* 'out' and a perfect participle,[11] with the meaning of 'totally finished/done'—e.g., *uitgegeten* 'lit. out-eaten: done eating', *uitgezongen* 'lit. out-sung: done singing', etc. (see also Biggs 2021 on [*done* V-*ing*]). Let's call this element completive *uit*.[12] It selects an unergative activity verb and makes it unaccusative, meaning that it predicates the 'being done' state of the subject, which is turned from an external into an internal argument.[13] All of this is accounted for if there's a covert result state predicating over the subject in [Spec, Asp1P], while completive *uit* heads Asp2P and makes the process (e.g., the 'singing' in the case of *uitgezongen*) structurally inaccessible. Indeed, manner adverbs modifying the 'singing' process—e.g., *vals* 'off key'—are incompatible with this construction (19a). The underlying decomposition, parallel to (17b)/(18b), is shown in (19b). Two immediate predictions generated by (19b) are that the construction is incompatible with accomplishments (since Asp1P is occupied by a covert head predicating over the subject) and achievements (since Asp2P is occupied by *uit*). Both predictions are correct, see (19c)-(19d). If (19b) is on the right track, then (19d) constitutes empirical evidence for the generalized phrase structure of achievements in (18b).

(19) a. *Ik ben nu wel (*vals) uit- gezongen.*
1SG am now PRT off.key out- sing.PTCP
'I'm all sung out (*off key) right now.'
b. [… [$_{Asp2P}$ [$_{Asp2^0}$ uit [$_{Asp1P}$ ik [$_{Asp1^0}$ Ø [$_{VP}$ [$_{V^0}$ gezongen]]]]]]]
c. *Het kind is nu wel (*de ouders wakker) uit- gehuild.*
the child is now PRT the parents awake out-cry.PTCP
'The child is all (*the parents awake) cried out now.'
d. **Felix is nu wel uit-bereikt.*
Felix is now PRT out-reached

[11] *Uit* coinciding with participial *ge-* in Dutch is reminiscent of phase-complements coinciding with *-le* in Mandarin, especially since it's been argued that *ge-* and *-le* in these languages are semantically identical (Sybesma & Vanden Wyngaerd 1997). As noted in fn.7, this paper abstracts away from the position of *-le*.

[12] There seems to be a comparable element *out* in English in cases like *I'm all sung out* and *I'm totally texted out*, but it seems more restricted, and the adverb (which is optional in Dutch) appears to be obligatory. Note that this kind of "completive" adverb (*all, totally, completely, fully*, etc.) is a prime candidate for the specifier position of Asp2P given its semantic contribution (and assuming that adverbs are in [Spec, FP], following Cinque 1999). From this perspective, the difference between English and Dutch with respect to the obligatoriness of adverbs with completive *out/uit* could follow from grammaticalization of overt [Spec, Asp2P] and Asp2^0 in English, versus just Asp2^0 in Dutch (as well as Mandarin and Changsha Xiang).

[13] This is evident from standard diagnostics for unaccusativity in Dutch (Hoekstra 1984): perfect auxiliary selection (*ik {ben/*heb} uitgegeten* 'I {am/*have} finished eating', compare *ik {*ben/heb} gegeten* 'I {*am/have} eaten'), attributive participial modification (*de uitgegeten jongen* 'the boy who's finished eating') and ungrammaticality of impersonal passive (**er wordt uitgegeten* '*there is being finished eating').

This section has discussed independent evidence from both Mandarin and Dutch for a three-part inner-aspectual decomposition which directly derives activities [VP], accomplishments [Asp1P [VP]], and achievements [Asp2P [Asp1P [VP]]] from the phrase structure. The next section capitalizes on this decompositional model to derive the observed ACB effects.

5. Proposal

In what follows, I make a proposal for the positions of (non-)coercing viewpoint aspect markers in relation to the decomposition of VP, based on evidence from syntactic distribution, licensing and intervention effects. These positions, I will argue, better account for ACB effects.

5.1 Low continuatives and Asp1P

The continuative markers displaying ACB effects (i.e., *-xiaqu* and *door*) are in complementary distribution with Asp1P—e.g., [*bōlí gān*]/[*het glas droog*] 'the glass dry' in (20a)-(20b) (ex. (a) is from Lu et al. 2019:283). Their coercer counterparts (*jìxù* and *blijven*) not only allow Asp1P; they are in fact not cases of coercion, as iterative readings are not necessary in (21a)-(21b). Since this shows that (20a)-(20b) do not display ACB, I take this to mean that their ungrammaticality is purely due to level of attachment. It follows that the projections headed by *-xiaqu* and *door* are merged around the same position as Asp1P, i.e., directly above VP. On the approach laid out in section 4, this means that *-xiaqu/door* (but not *jìxù/blijven*) c-select for a projection within the articulation of VP and disrupt complex predicate formation in the inner aspect domain (22).

(20) a. *Wǒ cā -gān(*-xiaqu) bōlí.*
1SG wipe-dry -CONT glass
b. *Ik wreef het glas droog (*door).*
1SG wiped the glass dry CONT
'I wiped the glass dry (*on).'

(21) a. *Wǒ jìxù cā -gān bōlí.*
1SG CONT wipe-dry glass
b. *Ik bleef het glas droog-wrijven.*
1SG CONT the glass dry -wipe
'I kept wiping the glass dry.'

(22) [… [jìxù/blijven [… [$_{Asp2P}$ [$_{Asp1P}$ [-xiaqu/door [$_{VP}$ [V^{0}]]]]]]]]

5.2 Low prospectives and Asp2P

The prospective markers exhibiting ACB effects (*kuài* and OS) select specifically for Asp2P. This is easiest to show for *kuài*, which blocks achievement coercion (23a) but becomes grammatical with precisely those elements which in our theory head Asp2P—e.g., *wán* 'finish' (23b). For *jiùyào* and OHPS, Asp2P doesn't need to be present (recall (6a)/(6c)). In line with (22), I conclude that *kuài* and OS (but not *jiùyào* and OHPS) c-select for Asp2P inside of the articulation of VP, participating in complex predicate formation.

(23) a. *Tā {*kuài/jiùyào} chī zhè -kuài bǐnggān le.*
3SG PROSP eat DEM-CLF cookie LE
b. *Tā {kuài/jiùyào} chī-**wán** zhè -kuài bǐnggān le.*
3SG PROSP eat-finish DEM-CLF cookie LE
'They're about to finish this cookie.'

(24) [… [jiùyào/OHPS [… [kuài/OS [$_{Asp2P}$ [$_{Asp1P}$ [$_{VP}$ [V^{0}]]]]]]]]

5.3 Co-occurrence

One claim made by (22)/(24) is that coercers and non-coercers are in different positions. We thus expect co-occurrence to be possible. This is correct for the continuative (25a)-(25b) and prospective (25c)-(25d) constructions in both languages. While especially (25d) feels rather redundant, it isn't ungrammatical.[14]

(25) a. *Tā jìxù dù -xiaqu.*
3SG CONT read-CONT

b. *Die bleef door -lezen.*
3SG CONT CONT-read
'They kept on reading.'

c. *Tā jiùyào kuài líkāi le.*
3SG PROSP PROSP leave LE

d. *Die staat op het punt om op vertrekken te staan.*
3SG stands on the point COMP on leave to stand
'They're about to be on the verge of leaving.'

5.4 Argument licensing

Three aspect markers displaying ACB—*-xiaqu*, *door* and OS—also exhibit valency effects: normally transitive verbs cannot license an internal argument in these constructions, as demonstrated by (26a)-(26c).

(26) a. *Tā hē -xiaqu (*kāfēi).*
3SG drink-CONT coffee

b. *Die dronk (*de koffie) door.*
3SG drank the coffee CONT
'They drank the coffee (*on).'

c. *Die staat op (*het spel) winnen.*
3SG stands on the game win
'They're about to win (*the game).'

Given that internal arguments are licensed within big VP, (26a)-(26c) suggest that *-xiaqu*, *door* and OS interrupt thematic role assignment by imposing their own (intransitive) theta grid on the embedded verb. This is in line with Barbiers' (1995) account of low modals in Dutch, which holds that the modal "directly imposes selectional restrictions on the DP-complement" (ibid.157), similarly interrupting argument structure buildup. (26a)-(26c) thus further support the idea that these markers merge within the inner aspect domain (as in (22)/(24)). *Kuài* doesn't affect valency in this way (23a), but its position was independently motivated by c-selection of Asp2P (23b). *Jiùyào*/OHPS and *jìxù/blijven* don't affect argument licensing at all.

5.5 Intervention effects

Recall that both *jiùyào* and *kuài* cannot be to the right of the Mandarin passive marker *bèi* (12), which we used as a *v*/Voice diagnostic. This is a problem for the analysis thus far—not for *jiùyào*, which we can simply situate above *v*/Voice, but certainly for *kuài*, which we said is inside the articulation of VP, well below *v*/Voice (see (24)). However, it may be possible to maintain this analysis in view of a specific intervention effect (Cheng & Sybesma 2004; Cheng 2019).

Cheng (2019) assumes that Mandarin verbal *-le* occupies two positions: (i) close to V⁰, where it's spelled out (see fn.7); and (ii) above *v*/Voice, where O(uter)-Asp(ect)P is standardly taken to be interpreted. She supports this analysis using intervention effects with the *wh*-adverbial *zěnme* 'how' (first noted by Tsai 2008). In general, *zěnme* can get a manner or causal ('how come?') reading. But when *-le* is present, only the causal reading is possible (27). Given

[14]The relative acceptability of (24d) becomes even clearer when we consider the reverse: **Die staat op [op het punt staan om te vertrekken]*, which is totally out. The same goes for (24c): **Tā kuài jiùyào líkāi le.*

that manner corresponds to low merger (around *v*/Voice) and the causal reading to high merger of *zěnme*, Cheng argues that *-le* blocks manner because its two positions form a chain that functions as an intervener for covert feature movement from *zěnme*'s low position to CP.

(27) *Akīu* *zěnme* *qù-le* *Táiběi?*
Akiu how go-LE Taipei
'How come Akiu went to Taipei?' (Not: 'In what way…?') [Cheng 2019:242, (3)]

Dutch *hoe* 'how' has the same manner/causal ambiguity as *zěnme*, so we can apply this test to compare Mandarin and Dutch.[15] It turns out that *kuài* (28a) and OS (29a) both block manner.[16] *Jiùyào* (28b) and OHPS (29b) don't. For Mandarin, the high/low position tied to causal/manner readings is visible because *zěnme* stays in-situ (28); the manner position is ungrammatical with *kuài* (28a) but not *jiùyào* (28b). In Dutch, *hoe* moves to CP, so here the contrast is interpretative: the manner reading is unavailable with OS (29a) but not OHPS (29b). Building on Cheng (2019), I therefore generalize the manner blocking associated with the *-le*-chain to *kuài* and OS (30): all are interveners for (covert feature) movement of *zěnme/hoe* to CP due to their dual positions.

(28) a. *Tā* *<zěnme>*$_{L}$ *kuài* *<*zěnme>*$_{R}$ *líkāi* *le?*
3SG how PROSP how leave LE
b. *Tā* *<zěnme>*$_{L}$ *jiùyào* *<zěnme>*$_{R}$ *líkāi* *le?*
3SG how PROSP how leave LE
L: 'How come they're about to leave?' / R: 'In what way are they about to leave?'

(29) a. *Hoe* *staat* *die* *op* *vertrekken?*
how stands 3SG on leave
'How come they're about to leave?' (Not: 'In what way…')
b. *Hoe* *staat* *die* *op* *het* *punt* *te* *vertrekken?*
how stands 3SG on the point to leave
'How come they're about to leave?' / 'In what way are they about to leave?'

(30) [$_{CP}$ … [$_{O\text{-}AspP}$ le/kuài/OS [… [$_{v/VoiceP}$ zěnme/hoe [$_{Asp3P}$ le/kuài/OS [$_{Asp2P}$ … [$_{VP}$ V^{o}]]]]]]]]

Since *kuài* can only appear in the higher position to the left of passive *bèi* (recall (12)), this chain is the mirror image of the type instantiated by verbal *-le*, which is spelled out low. If this analysis is on the right track, then chains may vary with respect to which of the two positions is overt.

5.6 Conclusion

Bringing all evidence from this section together, (31) indicates the proposed positions of the coercing (prospective *jiùyao* and OHPS; continuative *jìxù* and *blijven*) and non-coercing (prospective *kuài* and OS; continuative *-xiaqu* and *door*) aspect markers along the clausal spine.

[15]Causal *hoe* seems to be associated with younger speakers of Dutch (late 20s, early 30s); my Dutch informants around the age of 60 preferred the unambiguous wh-word *hoezo* 'how come' for causal questions.

[16]This is not due to *le* in (30a), because it's not verbal but sentence-final *le*. This is clear from its clause-final position in, for instance, *Tā kuài xǐ-wán zǎo* ***le*** 'they're about to finish showering' (Chief 2007:6) and in (30a).

(31) [*jiùyào*/OHPS [$_{v/\text{VoiceP}}$ [*jìxù/blijven* … [*kuài*/OS [$_{\text{Asp2P}}$ [$_{\text{Asp1P}}$ [*-xiaqu/door* [$_{\text{VP}}$ V^{0}]]]]]]]]
H-Asp L-Asp — Inner Aspect
s-selection (Coercion) — c-selection (Aspectual Coercion Blocking)

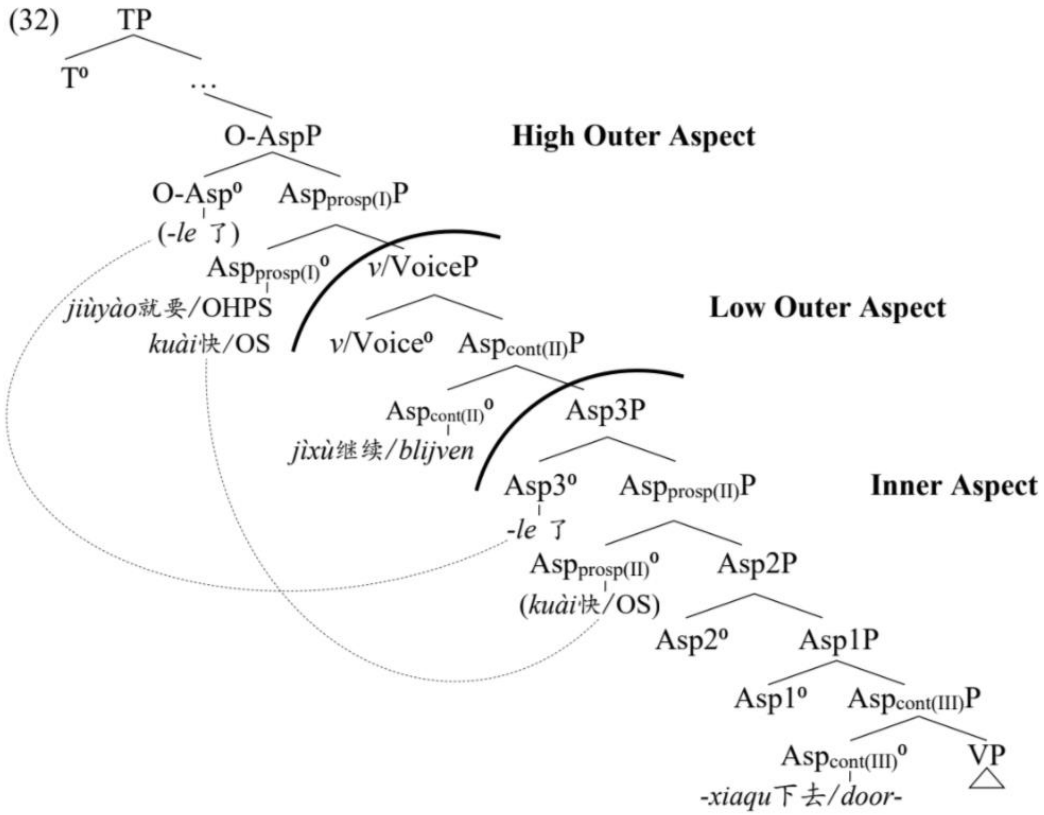
Using Fukuda's (2012) terminology, I'm arguing that ACB effects are independent from H-Asp and L-Asp, both of which s-select for situation type and, hence, may coerce. Instead, I propose that ACB effects are a reflex of merge inside the inner aspect domain, when the syntactic correlates of situation structure are still visible to the viewpoint aspect marker. *Kuài*, OS, *-xiaqu* and *door* thus c-select for situation type and block coercion, regardless of interpretability, exactly as we have seen.[17]

A novel general claim underlying (31) is that there's a "privileged boundary" (Ramchand 2018:43) not just at the *v*P edge, but also within *v*P: a cutoff point between the internal articulation of big VP, where a configuration of functional projections computes situation type, and an intermediate domain, where little *v* has not yet merged, but the inner-aspectual phrase structure is no longer visible for viewpoint aspect constructions entering the derivation. This reduces ACB to complement size: coercers select minimally the full, computed extension of big VP; non-coercers select one or more subtrees responsible for part of that computation.

The overview structure in (32) demarcates the three domains for viewpoint aspect in a broader structural context, indicating where our continuative and prospective constructions merge relative to clausal waymarks such as TP, *v*/VoiceP and verbal *-le*. The representation in (32) adopts Sybesma's (2017) Asp3P for the spell-out position of verbal *-le* and Cheng's (2019) second position of verbal *-le* in O-AspP, and marks the manner-blocking intervention chains between dual positions with dotted lines (following Cheng 2019).[18]

[17] On the assumption that grammaticalization is correlated with upward movement (Roberts & Roussou 1999), corpus data on Dutch prospectives from Bogaards & Wierenga (submitted) offer converging evidence for the lower position of OS vs. OHPS in (33). On standard proxy measures for grammaticalization (types÷tokens) and productivity (hapaxes÷tokens), OS measures considerably lower than OHPS: 12.3% (OS) vs. 61% (OHPS) on grammaticalization; 6.7% (OP) vs. 45.7% (OHPS) on productivity. An interesting empirical question is whether the same pattern holds for the other Dutch and Mandarin constructions, and—abstracting away from these languages—whether there's a general correlation between ACB effects and these measures.

[18] Labels for the viewpoint aspect projections are in the style of Cinque (1999, 2001), who labels projections above and below *v*/Voice, respectively, Asp$_{(I)}$P and Asp$_{(II)}$P. Since I'm arguing for two distinct continuative projections below *v*/Voice, (32) features a third continuative projection: Asp$_{\text{cont(III)}}$P.



From bottom to top, I term the domains in (32) Inner Aspect (following Travis 2010), Low Outer Aspect and High Outer Aspect (in the spirit of Fukuda's 2012 L-Asp and H-Asp).

In essence, the designation of a distinct inner aspect domain for viewpoint aspect markers boils down to a formal restatement of the 19th-century idea that verbal particles modify Aktionsart; it's also reminiscent of Slavic aspectual morphology, which has been characterized as "grammatical Aktionsart" (see Boogaart 2004). It's an open question whether this account can extend to these languages—and more generally.

The present proposal is predicated on a specific style of verbal decomposition that derives achievements from syntax (Sybesma 2017, i.a.). Otherwise, the proposal doesn't account for the non-coercing prospectives, in particular *kuài*. The "unique selling point" of this model of decomposition is thus Asp2P, for which there is a growing body of crosslinguistic evidence.

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Null-operator-based free relatives: a case study on Mandarin free relative*

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1. Introduction

Free relatives (FRs), also known as headless relatives, differ from headed relative clauses in that they lack an external head. Previous discussions of FRs primarily focus on wh-fronting languages (Bresnan and Grimshaw 1978; Groos and van Riemsdijk 1981; Jacobson 1995; among others), whose FRs are introduced by overt wh-expressions such as *what* and *who*, as in (1).

(1) a. I only ate [**what** he cooked]_FR.
b. I only admit [**who** he recommended]_FR.

It has long been thought that there are no wh-in-situ FRs and that no wh-in-situ language has wh-based FRs (de Vries 2005; Comrie 2006; Šimík 2018; among others). However, the recent work by Demirok (2017) challenges this claim, arguing that Tsez, a Northeast Caucasian language, has a wh-in-situ FR. Against this backdrop, this paper introduces another type of FRs in wh-in-situ languages to the discussion: Mandarin FR. As shown in (2), a Mandarin FR obligatorily ends with the sentence-final marker *de*. Furthermore, distinct from their counterpart English FRs in (1), where the relativized elements are overt wh-expressions, the relativized elements in Mandarin FRs are always phonologically null.

(2) a. wo zhi chi [ta zuo de][1]_FR
I only eat he cook DE
'I only ate what he cooked.'

b. wo zhi luqu [ta tuijian de]_FR
I only admit he recommend DE
'I only admitted who he recommended.'

This paper argues that Mandarin FR has two morphosyntactic properties: (i) it involves a null operator undergoing relativizations by a syntactic movement and (ii) it requires an additional nominal marker *de*. These findings further indicate that the wh-word and null-operator relativization strategies, which are available to headed relatives, also apply to FRs.

The rest of this paper is organized as follows. Section 2 introduces the distribution of Mandarin FRs and claims that this construction is productive. Section 3 argues that Mandarin FRs are not headed relative clauses with an elided head. This claim is based on their differences in what can function as relativized elements, whether non-canonical objects can be relativized, whether indirect objects can be relativized, and whether multiple modifications are allowed. Section 4 suggests that Mandarin FRs are similar to wh-expression-introduced FRs in the sense that their relativized elements are both

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[1] Abbreviations used in this paper: CL classifier; ASP: aspect; FP: final particle; Q: question marker.

syntactically dislocated, but they differ in whether an additional nominal marker is required. Section 5 introduces the syntactic derivation of Mandarin FRs and compares it with those of English FRs and headed relatives. Section 6 concludes.

2. Mandarin FRs are productive

Mandarin FRs are usually found as the subjects of copular sentences in the literature (Li and Thompson 1981; Zhu 1982; among others), as in (3).

(3) a. [ta kan de] shi xiaoshuo
he read DE be novel
'What he read was novels.'

b. [ta he de] shi niunai
he drink DE be milk
'What he drank was milk.'

Besides, Mandarin FRs can also appear in other constructions and syntactic positions. First, Mandarin FRs can freely appear in negation sentences and *zhi* 'only'-sentences, as in (4) and (5). When FRs appear in these two types of constructions, there is no restriction on the choice of verbs.

(4) **Negation sentences**

a. wo ting bu-dong [ta shuo de]
I listen not-understand he say DE
'I don't understand what he said.'

b. zheli mei-you [wo xihuan de]
here not-have I like DE
'There is nothing I like here.'

(5) **Zhi 'only' sentences**

a. wo zhi kan [ta yan de]
I only watch he act DE
'I only watch what he acts on.'

b. wo zhi zuo [laoshi yaoqiu de]
I only do professor require DE
'I only do what professors ask for.'

Second, Mandarin FRs can occur in any nominal position as long as the FR's verb can imply the lexical meaning of the silent relativized noun. For example, the verbs *cook, come for exams, draw, come for interviews* in (6a)-(6d) are lexically specific enough so that the meanings of the silent relativized elements can be easily retrieved. The examples in (6a)-(6d) also show that the positions of FRs in the matrix clauses and the positions of silent relativized elements in FRs are not restricted. Specifically, FRs could be either the subject or the object of matrix clauses ((6a-6b) vs. (6c-6d)) and the silent relativized elements can also be either the subject or object within FRs ((6a) and (6c) vs. (6b) and (6d)).

(6) a. [Zhangsan (zuotian) zhu de] dou hen haochi
Zhangsan yesterday cook DE all very tasty
'What Zhangsan cooked (yesterday) was all tasty.' [matrix subject/embedded object]

b. [(zuotian) lai kaoshi de] dou guo le
yesterday come take-exam DE all pass FP
'Who came to take exams (yesterday) all passed.' [matrix subject/embedded subject]

c. wo kan le [Zhangsan (zuotian) hua de]
I look ASP Zhangsan yesterday draw DE
'I had a look at what Zhangsan drew (yesterday).' [matrix object/embedded object]

d. wo jiedai le [(zuotian) lai caifang de]
I greet ASP yesterday come interview DE
'I greeted who came for interviews (yesterday).' [matrix object/embedded subject]

To conclude, Mandarin FRs are productive: they are not restricted to specific constructions and can appear in multiple positions in the matrix clause, and their silent relativized nouns can also occur in more than one position within FRs.

3. Mandarin FRs are not headed relatives with elided heads

The headed relative clauses in Mandarin use a homophonous morpheme *de* to link CPs with their head nouns in the order of CP + *de* + N, as shown by the examples in (7), (2)'s headed relative clause counterparts. Given both headed relative clauses and FRs take the marker *de*, a natural analysis of Mandarin FRs is that Mandarin FRs are headed relative clauses with elided heads, whose heads are the words semantically corresponding to things, persons, and places.

(7) a. wo zhi chi [ta zuo de dongxi]
I only eat he cook DE thing
'I only ate the things he cooked.'

b. wo zhi luqu [ta tuijian de ren]
I only admit he recommend DE person
'I only admitted the persons he recommended.'

Although both headed relatives and FRs use the marker *de*, I argue that FRs cannot be simply analyzed as headed relatives with elided heads because of four major differences between FRs and headed relatives.

First, the relativized elements in Mandarin FRs can only be retrieved as persons and things and cannot be retrieved as places, times, tools, reasons and methods, even if a supporting context is provided. In contrast, the heads in Mandarin headed relative clauses are less restricted, which could be persons, things, places, times, tools, reasons and methods. The exemplifying contrasts of reasons and methods are shown in (8-9).

(8) a. *wo tingdao le [ta likai de]
I hear ASP he leave DE

Intended: 'I heard the reason why he left.'

b. *wo zhidao [ta tou dongxi de]
I know he steal things DE
Intended: 'I know the method he used to steal things.'

(9) a. wo tingdao le [ta likai de yuanyin]
I hear ASP he leave DE reason
'I heard the reason why he left.'

b. wo zhidao [ta tou dongxi de fangfa]
I know he steal things DE method
'I know the method he used to steal things.'

Note that the contrast between headed relatives and FRs cannot be explained by that only nouns denoting persons and things can be elided while other head nouns cannot take a null form. As shown in (10a) and (10b), null head nouns for methods and reasons are independently possible in possessive constructions (Aoun and Li 2003).

(10) a. [ta xiu che de fangfa] bi [wo de] hao
he fix car DE method compare I DE good
'The way he fixes cars is better than mine.' (Aoun and Li 2003: 181)

b. [ta bu neng lai de yuanyin] wo zhidao; [ni de] ne
he not can come DE reason I know you DE Q
'The reason why he cannot come, I know; how about yours?' (Aoun and Li 2003: 182)

Second, headed relative clauses can be headed by non-canonical objects, while FRs cannot relativize non-canonical objects. In Mandarin, a non-canonical object follows a verb, like a direct object, but it does not denote a theme, but an instrument, a location, and so on (Lin 2001; Zhang 2018; among others). As in (11a) and (11b), the nouns brush-pen and canteen appear in direct object positions and denote the instrument and location of their relevant events respectively. These non-canonical objects can be bare or preceded by a demonstrative word and a classifier.

(11) a. ni xie (na zhi) mao-bi
you write that CL brush-pen
'You write with a brush-pen (that bursh-pen).'

b. ni chi (na jia) shitang
you eat that CL canteen
'You eat in canteens (that canteen).'

When it comes to relativizations, Mandarin FRs cannot relativize non-canonical objects even if a supporting context is provided while the relativization in their corresponding headed relatives is possible, as in (12).

(12) a. *wo yao chi [ni zuotian chi de]
I want eat you yesterday eat DE
Intended: 'I want to eat in the place where you ate yesterday.'

b. wo yao chi [ni zuotian chi de shitang]
I want eat you yesterday eat DE canteen
'I want to eat in the canteen where you ate yesterday.'

Third, the indirect objects of FRs cannot be relativized (Li and Thompson 1981) as in (13a), while the relativization of indirect objects is possible for the headed relative clauses as in (13b).

(13) a. *wo kandao le [wo jiao (ta) jufa de]
I see ASP I teach him syntax DE
Intended: 'I saw who I taught Syntax.'

b. wo kandao le [wo jiao ta jufa de ren]
I see ASP I teach him syntax DE person
'I saw the person who I taught Syntax.'

Careful readers might notice that resumptive pronouns appear in the example of headed relative clauses and may be concerned that (13a) and (13b) are not strict minimal pairs. However, obligatory resumptive pronouns in headed relatives do not undermine the contrast between FRs and headed relative clauses, as FRs remain deviant even if resumptive pronouns are added.

Fourth, headed relative clauses allow multiple modifications for one single head noun, but FRs disallow multiple modifications. As in (14a), the head noun *friends* in headed relatives can have two *de*-modifiers. The friends that this conjunctive relative clause refer to are a group of friends who has two properties: I have contact with them and they live in Beijing. If FRs are headed relatives with elided heads, the FR counterpart in (14b) with the same interpretation should also be possible, contrary to the fact.

(14) a. wo you lianxi de zhu (zai) beijing de pengyou
I have contact DE live in Beijing DE friend
'(My) friends who I have contact with and live in Beijing.'

b. *wo you lianxi de zhu (zai) beijing de
I have contact DE live in Beijing DE
Intended: 'Those who I have contact with and live in Beijing.'

In sum, the aforementioned four differences between FRs and headed relative clauses indicate that Mandarin FRs cannot simply be analyzed as headed relative clauses with elided heads.

4. Morphosyntactic syntactic properties of Mandarin FRs

This subsection argues that Mandarin FRs have two mophosyntactic properties: (i) the relativized elements undergo movements, in parallel with the wh-expression in English FRs; (ii) the additional marker *de* functions as a nominal marker.

4.1 Relativization by null-operator(op) movement

Although the relativized elements are phonologically null in Mandarin, three pieces of evidence show that the relativized element does move, in parallel with overt wh-expressions in wh-fronting FRs.

First, the relativization in Mandarin FR is island-sensitive. As shown in (15) and (16), the relativizations of the elements within adverbial clause islands and relative clause islands are not possible, where *e* refers to the relativized element.

(15) *wo kandao le [Zhangsan yinwei meiyou dedao e gandao nanguo de]
I see ASP Zhangsan because not get feel sad DE
'I saw what Zhangsan felt sad because he didn't get.' [adverbial clause island]

(16) *wo chi le [Zhangsan yaoqing le hui zuo e de ren de]
I eat ASP Zhangsan invite ASP can cook DE person DE
'I ate what Zhangsan invited the person who can cook.' [relative clause island]

Second, preposition-stranding is not allowed in the relativization of Mandarin FRs as in overt topicalizations. It is known that Mandarin does not allow preposition stranding for overt topicalization movements, as shown by the contrast in the pre-topicalization and post-topicalization examples in (17a) and (17b) respectively.

(17) a. wo gen Zhangsan bu shou
I with Zhangsan not familiar
'I am not familiar with Zhangsan.'

b. *Zhangsan, wo gen t bu shou
Zhangsan I with not familiar
'Zhangsan, I am not familiar with.'

Similar to overt topicalization movements, the relativization resulting in prepositional stranding is not grammatical for FRs, as in (18).

(18) *Zhangsan jiandao le [wo gen e bu shou de]
Zhangsan see ASP I with not familiar DE
Intended: 'Zhangsan saw who I am not familiar with.'

Third, the relativization of indirect objects and applicative objects in Mandarin FRs is deviant, as shown in (19a) and (19b) respectively. This deviance is also observed in their overt counterpart English wh-movements, as in (20) and (21).

(19) a. *wo kandao le [wo jiao (ta) jufa de]
I see ASP I teach him syntax DE
Intended: 'I saw who I taught Syntax.'

b. *wo he le [ni he le e san ping jiu de] jiu
I drink ASP you drink ASP three CL wine DE wine
Intended: 'I drank wine on who you drank three bottles of wine on.'

(20) ?/* Which woman do you think I should give/buy perfume? (Baker 1997:92)

(21) * Who did you bake a cake?

Having demonstrated that the relativized element undergoes movement, we need to address the question of what exactly moves in Mandarin FR. My answer to this question is a phonologically null category that lacks any semantic features or content moves. This null-category hypothesis is supported by the similarity between the relativized elements in FRs and overt pronouns, both of which are incapable of being non-canonical objects.

A non-canonical object is never an overt pronoun in Mandarin (Zhang 2018). As shown in (22a) and (22b), the overt pronoun *ta* 'it' cannot refer back to its non-canonical object antecedent. Zhang (2018) suggests that non-canonical objects as a kind-classifying element must have lexical semantic or root features. Since overt pronouns don't have any lexical semantic or root features, they cannot be used as a non-canonical object.

(22) a. A: wo shui na ge shafa, ni ne
I sleep that CL sofa you Q
'I sleep on that sofa, and how about you?'

B: *wo ye shui ta
I also sleep it

(Zhang 2018: 1422)

b. A-Qi xie na zhi maobi, *wo ye xie ta
A-Qi write that CL brush-pen I also write it
Intended: 'A-Qi writes with that brush-pen, and so do I.' (Zhang 2018: 1422)

As shown in (12), which is repeated here as (23), Mandarin FRs similarly cannot relativize non-canonical objects. Based on this contrast, I argue that what is relativized in Mandarin is a null category without any semantic features or contents, much like pronouns.

(23) a. *wo yao chi [ni zuotian chi de]
I want eat you yesterday eat DE
Intended: 'I want to eat in the place where you ate yesterday.'

b. wo yao chi [ni zuotian chi de shitang]
I want eat you yesterday eat DE canteen
'I want to eat in the canteen where you ate yesterday.'

To summarize, island sensitivity and the disallowance of preposition stranding indicate that the relativized elements in Mandarin FRs undergo movements. The movements in Mandarin FRs pattern with wh-movements, evidenced by their similar deviance and ungrammaticality of indirect object and applicative object movements. Drawing on the fact that neither the moved elements in Mandarin FRs nor pronouns can be non-canonical objects, I further argue that the elements undergoing movements in Mandarin FRs are phonologically null categories without any lexical semantic roots or features.

4.2 The morpheme *de* as a nominal marker

I argue that the obligatory marker *de* in FRs is a nominal marker in nature. This claim is supported by that the marker *de* can be independently (without a following noun) used to nominalize syntactic objects

of different sizes, including bare verbs, and verb phrases (VPs).

The marker *de* can attach to bare verbs to denote entities. As in (24), the bare verbs *eat* and *wear* are attached by the marker *de* and the derived expressions denote the things with the property of being eaten and worn.

(24) (yi xie) chi-de/ chuan-de
one CL eat-DE wear-DE
'what could be eaten (=food)/worn (=clothing)'

The marker *de* can also attach to a bare VP to derive an occupational reading. As in (25a) and (25b), the derived VP-*de* expressions refer to the people who take drawing pictures and singing songs as their occupations.

(25) a. Zhangsan shi (yi ge) [chang-ge de]
Zhangsan be one CL sing-song DE
'Zhangsan is a singer.'

b. Zhangsan shi (yi ge) [hua-hua de]
Zhangsan be one CL draw-picture DE
'Zhangsan is a painter.'

One may wonder if the derived VP-*de* expressions in (25) are adjectives rather than nouns, since adjectives can also generally follow copular verbs. I argue that VP-*de* expressions are not adjectives because they can occur with classifiers, as shown in (25b). In contrast, cannonical adjectives cannot be preceded by classifiers, as demonstrated in (26).

(26) *Zhangsan hen yi ge congming
Zhangsan very one CL smart
'Zhangsan is smart.'

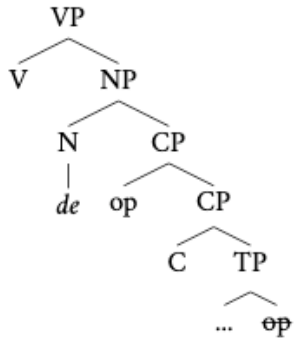
Given that the marker *de* can independently function as a cross-categorical nominal marker, capable of taking a bare verb and a VP as its base to transform them into nouns, it is reasonable to assume that *de* can also take a CP as its base to derive FRs.

5. The syntactic analysis of Mandarin FRs and implications

Implementing what have been argued for in Section-4, I propose that Mandarin FRs involve a null operator undergoing an A'-movement to [Spec,CP] and an nominal head *de* is externally merged to transform the category from CP to NP[2]. The syntactic derivation is illustrated in (27).

[2] I assume that Mandarin is a NP language.

(27)



The findings of Mandarin FRs further reveal that cross-linguistic FRs can have not only wh-expressions as their relativized elements but also null operators. The idea of null operators and overt wh-expressions as parallel strategies is not new for relative clauses. For example, English headed relative clauses use both strategies (Chomsky 1973), as shown in (28).

(28)

a. I saw the building [which$_i$ you mentioned t_i].

b. I saw the building [op$_j$ that you mentioned t_j].

A natural hypothesis for these two strategies is that both the null-operator and overt wh-expression strategies are available for the derivation of relative clauses in general. However, different languages and different relative clauses may employ different strategies depending on other independent constraints or restrictions. I leave a detailed investigation of these interactions for future research.

6. Conclusion

This paper examined Mandarin free relatives. Unlike English FRs, Mandarin FRs are not introduced by overt wh-expressions. Instead, they are marked by the sentence-final morpheme *de*. I first argued that Mandarin FRs are productive and distinct from their headed relative counterparts, based on several distinctions between them. These distinctions include the range of relativized elements, the ability to relativize non-canonical objects, the ability to relativize indirect objects, and the allowance of multiple modifications.

Additionally, I observed that Mandarin FRs possess two key morphosyntactic properties: (i) their relativized elements undergo movement, similar to the movement of wh-expressions in English FRs, and (ii) they require the additional nominal marker *de*. Based on these findings, I proposed that Mandarin FRs are derived through the movement of a null operator and the nominal categorical transformation conducted by the morpheme *de*. This analysis of Mandarin free relatives leads to the claim that both null-operator and overt wh-word strategies are available in free relatives, paralleling the strategies found in headed relatives.

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Right Dislocation in Chinese: Consequences of Comp-to-Spec Movement*

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1. Overview

Chinese is a typical SVO and head-initial language. RDs have been noted to appear in several Chinese dialects and variants, including Mandarin Chinese (Chao, 1986; L. Y.-L. Cheung, 2009; L. Y. Cheung, 2005; Packard & Shi, 1986), Cantonese (L. Y. Cheung, 2005; T. M. Lee, 2017), Classical Chinese (Yang & Yang, 2002), etc. Commonly found in colloquial and informal speech, certain information is linearly postponed and dislocated sentence-finally. Holding the attested word order and head-directionality parameter setting, one may find that right dislocation (RD) is unexpectedly challenging the assumed structure. Not going beyond the SVO setting, previous accounts have attempted to interpret the apparently rightward movement through many approaches (L. Y.-L. Cheung, 2009; L. Y. Cheung, 2005; T. M. Lee, 2017); however, no account can decently capture all the patterns in Chinese RDs.

Cross-linguistically, RD is the result of certain kinds of movement, rather than a specific syntactic operation. The motivations for RD across languages are thus different. Therefore, it would be harder to draw a unified account by simply referring to proposals for RDs in other languages. In the paper, I will, first of all, scrutinize the problems of word orders in Chinese, with the examination of canonical orders and non-canonical ones from cases with Sentence-final Particles (SFPs) and RDs. The analysis will then be used to examine previous proposals for Chinese RD, also coming with insights from other languages. I will offer a unified account under copy theory, considering Chinese mono-clausal RDs to be the Pronounced Low Copy (PLC). The present account should have contributions to the puzzling word orders involving SFPs and RDs in Chinese.

2. The puzzling word orders in Chinese

2.1. Canonical word order

In non-RD cases, the canonical word order of Chinese is attested to be SVO as in (1a). The OSV order is also observable, while it is analyzed that such an OSV order undergoes object shift, as shown in (1b). Chinese is a topic-prominent language, the surface OSV order is attributed to object topicalization (Ernst & Wang, 1995; Huang, 1998; Shyu, 1995; among others). The fronted object is realized after an A-bar movement from the Object position to an A-bar position, mostly to the Topic position (=Spec, TopP). In some cases, focalization is also the reason for object-fronting. An object will then be moved to Focus (Spec, FocP). The major difference between these two A-bar movements is the final landing site in the A-bar movement,

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either Topic (Spec, TopP) or Focus (Spec, FocP). The former is regarded as old information, while the latter is considered to be new or emphasized information, in the syntax-discourse interface. As Chinese is an underlyingly SVO language, the word orders different from SVO are assumed to be the outcomes for some kinds of movement or fronting.

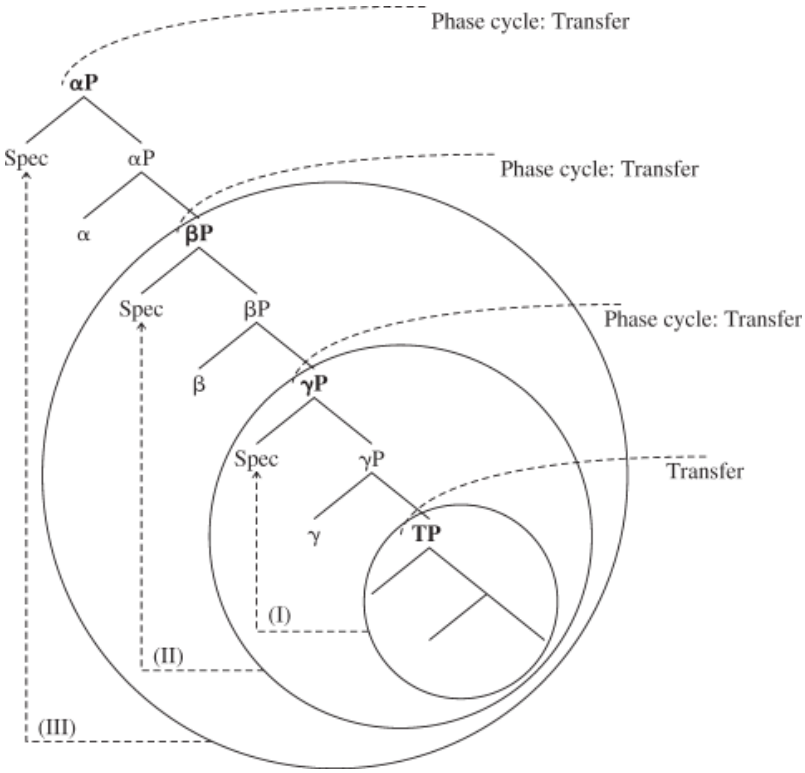
(1) Canonical order

a. S+V+O	b. O+S+V (object topicalization)
Ta chi wan-can	Yu wo hen shi-huan chi
he eat dinner	fish I very like eat
'He ate dinner'	'I like to eat fish very much'

2.2. C-elements in sentence-final: SFP

In attested canonical word orders (either SVO or OSV), a challenging issue is the insertion of SFPs. Under the split CP hypothesis, a CP is broken down into many minor layers. As a discourse-oriented language (Huang, 1984), Chinese left peripheries are rather complex. Aside from projections for information structures (e.g., TopP, FocP), SFPs are also proved to be C-elements as well. The linear position of SFPs has been a headache for syntacticians for several decades, since they are unexpectedly found at the end of sentences. A high projection (CP) is assumed to be found linearly in front of a lower projection (TP/VP), if the word order of the language is SVO. Why can a C-element appear at the right edge of a sentence?

(2) Cyclic Comp-to-Spec movement (Pan, 2021, 2022)



Some argue for head-final parameter settings in some split CPs like SFP, while this kind of analysis will lead to a consequence that Chinese becomes a language with mix-headed

parameter settings, which is not preferable but rare. In the consistently head-initial setting, the apparent head-final linear order is thought to be the result of cyclic Comp-to-Spec (C2S) movements (Hsieh & Sybesma, 2011; Julien, 2002; Pan, 2021, 2022; Simpson & Wu, 2002; Sybesma, 2013; Takita, 2009; Tang, 1998), as in (2). SFPs are C-heads, where Comp, CP (=TP) will be fronted to Spec, CP to derive a canonical word order. Pan (2022) further proposes that each SFP has an EPP feature to satisfy, so the C2S movement as well as the linear S+V+O+SFP order are derived to meet the requirement of linearization, with the Internal Merge of TP with CP. In his proposal, each split CP with an SFP is a phase and will be sent to Spell-out respectively, after they meet the requirement of linearization. There can be not only one SFP in a sentence, so it is possible to have cyclic C2S movements and cyclic linearization as well as multiple Spell-out in Chinese left peripheries.

2.3. Non-canonical word order: RD cases

Aside from SFPs, non-canonical word orders in Chinese are also found in RD cases. We discover several patterns of word orders, as in (3). Interestingly, a mono-clausal RD must come with at least one SFP. The relative position of RD should be in the back of all the SFPs in the sentence.

(3) Non-canonical word orders in RD cases

a. subject RD: V + O + SFP + S
chi fan le ma ta
eat meal SFP SFP he
'Has he had a meal (already)?'

b. object RD: S + V + SFP + O
chi fan le ma ta
eat meal SFP SFP he
'Has he had that meal?'

c. adverbial RD: S + V + O + SFP + Adverbial
ta chi fan le ma jin-tian
he eat meal SFP SFP today
'Has he had a meal today?'

d. adverb RD: S + V + O + SFP + Adverb
ta chi fan le ba chi-shi
he eat meal SFP SFP actually
'Actually, he should have had a meal already'

In (3a), the subject is right dislocated, which contributes to a non-canonical V+O+SFP+S order seemingly from the canonical S+V+O+SFP order (=1a). In (3b), the non-canonical V+O+SFP+S order in subject RD appears to come from the canonical S+V+O+SFP, with the object right-dislocated at the sentence-final, even behind SFPs.

In (3c), the temporal adverbial jin-tian 'today' is right-dislocated from a position in the front to a position at the sentence-final. The temporal adverbial in Chinese can be located between Subject and Verb or between Topic and Subject. Temporal adverbials have been assumed to be a canonical projection at Spec of Finite Phrase (Spec, FinP), of which projections

are higher than TP but lower than A-bar positions in CPs (e.g., TopP, FocP) . The possible occurrence of temporal adverbials at sentence finals may again offer an insight that RD is tied to the operation of left peripheries.

In (3d), we see the adverb chi-shi 'actually' can be right-dislocated. To discuss adverb RDs requires the combination of semantics and syntax. Accounts of adverb distribution usually, as seen in Ernst (2001), do not prescribe specific positions for adverbs. Instead, these theories propose that any adverb can be linked to any projection, as long as its specific semantic conditions match and are fulfilled. Overall, at least some adverbs in non-sentence-final positions are possible to be right-dislocated at sentence-finals.

Among these possibilities of RDs in Chinese, the idea of object RDs can be problematic. If Chinese mono-clausal RD is a left-peripheral phenomenon, how can a right-peripheral element, namely an object within VP, be placed there? The potential way to validate the possibility is that the apparent object RD is actually not a real object. Topic prominence in Chinese triggers the topicalization of objects, from Comp, VP to Spec, TopP. Before the object has been right-dislocated, topicalization may have been applied. Therefore, the non-canonical word order for object RD (S+V+SFP+O) originated from not S+V+O+SFP but O+S+V+SFP. In short, an A-bar dependency should have been established before a sentence has undergone RD.

In addition, evidence in favor of the analysis can also come from the absolute definite reading of object RD. The so-called object RD in (3b) can never have an indefinite reading. It is limited to be definite in any case. Such a behavior is paralleled to Topic, which can only have definite or type reading as well. The common ground of object RD and topic further offers a sharp point of view that the apparent object RD is, in fact, a topicalized object RD.

2.4. Doubling: Non-canonical & canonical order

RD is not just a one-way ticket to set an item at a non-canonical, sentence-final position. In RD cases, RD items can have two copies in the same sentence. One is the non-RD copy in the front part of a sentence, while the other is the RD copy at the end of the sentence. The co-occurrence of RD and non-RD copies is termed doubling (cf. Cann, Kempson, & Otsuka, 2002; Cheng & Vicente, 2013; T. T.-M. Lee, 2021).

(4) Doubling in Chinese RD

a. Subject RD: S + V + O + SFP + S
ta chi fan le ma ta
he eat meal SFP SFP he
'Has he had a meal (already)?'

b. Object RD: S + V + O + SFP + O*
ta chi fan le ma fan
ta eat meal SFP SFP meal
'Has he had that meal?'

c. Topicalized object RD: O + S + V + SFP + O
fan ta chi le ma fan
meal he eat SFP SFP meal
'Has he had that meal?'

In (4a), the subject RD can have a non-RD copy, which demonstrates a non-canonical S+V+O+SFP+S order of subject doubling. The object RD can have two copies in a sentence, but the licensed condition of a non-RD object is limited. In (4b), object doubling in S+V+O+SFP+O is always ill-formed, where O represents an unmoved object in its base-generated site. On the contrary, O+S+V+SFP+O is grammatical (=4c). The positional identification of the non-RD copy in object RD cases gives a similar insight into the re-interpretation of the so-called object RD; this is, an object RD is actually topicalized object RD. Only the non-RD copy of a topicalized object can co-occur with the RD copy. An real object copy is certainly incompatible with doubling.

In (5), the grammatically of temporal adverbial doubling can rely on some pragmatic conditions with contexts. To appear temporal information twice can be weird, if it is not of importance in an utterance. It would be acceptable when the temporal concept is necessary to give precise information about time. In (5a), the doubling of the temporal adverbial jin-tian 'today' is not as good as only one of them appears. Unless it is important to convey the information that it is today that he is annoying, (5a) would not be considered good enough. On the other hand, (5b) is, on many occasions, acceptable and appropriate. It can be used to, for example, double-check whether or not the listener has had some food before the utterance time. Temporal information, such as jin-tian 'today,' is of paramount importance to show a clear statement that what the speaker is asking is about today.

(5) Doubling of temporal adverbial RD

a. #jin-tian ta hen fan ei jin-tian
today he very annoying SFP today
Intended: 'he is very annoying'

b. jin-tian ni eat fan le ma jin-tian
today you eat meal SFP SFP today
'Have you had a meal for today?'

Similar to the doubling of temporal adverbials, the doubling of adverbs is also context-sensitive. In (6a), the manner adverb chi-shi 'actually' is legal for doubling, in a scenario where the speaker originally thought she was not smart enough before the speaking time, while the fact the speaker is aware of is unexpectedly better than his imagination. A decent context can license the doubling of 'actually' so as to emphasize the twist of his image of her. By contrast, the epistemic adverb huo-shyu 'maybe' is not so good for doubling. It is not decent to state the possibility of guessing through the epistemic modal adverb again and again. Doubling, as in (6b), ends up being redundant.

(6) Doubling of adverb RDs

a. Ta chi-shi shi yi-ge can-ming ren ei chi-shi
He actually is one-CL smart person SFP actually
'What a smart person he actually is!'

b. # Huo-shyu ta-de chia hen you-qian ba huo-shyu
Maybe her family very rich SFP maybe
Intended: 'Maybe her family is rich (I guess)!'

Cases of doubling with RD and non-RD items illustrate a crucial comparison between the canonical orders and the derived non-canonical orders. (Un-)grammaticality of NP/DPs in doubling shed light on the original non-RD positions of Chinese RD items. Object RD is again proved to be topicalized object RD instead.

3. Interpretations of RD

Intimate relations between RD and left peripheries have sparked several accounts to explain how RD works in Chinese. Cheung (2009) proposed that RD is the result of phrasal focalization. Lee (2017, 2020) argues that the cooccurrence of defocalization and focalization contributes to Chinese RD. An insight from Dutch RD offers insight into PF deletion in the coordinate structure. In spite of several proposals to derive Chinese RD, none of them can explain all the data well. I will overview two major proposals and point out their problems in this section.

3.1. Cheung's (2009) focalization analysis

C2S movements, at some points, are similar to object topicalization/focalization. An A-bar movement could raise the sentential object from Comp, VP to Spec, TopP or to Spec, FocP. Cheung (2009) combines two ideas together, proposing that RDs are attributed to focalization. The canonical chunk (i.e., non-RD part) undergoes similar C2S fronting, while RD is left. Such fronting as focalization goes around C2S.

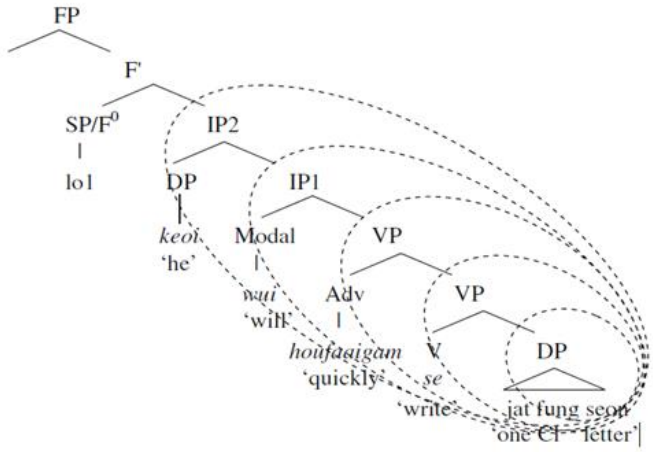
To be more specific, three parts are identified in Chinese mono-clausal RDs, including the pre-SFP part, SFPs, and the post-SFP part. In canonical derivations for the [S+V+O]+SFP order, [S+V+O] is moved from the back of the SFPs to the front, like [S+V+O]+SFP+[S+V+O]. In RD cases, S+V+O is considered to be incompletely fronted. In subject RD cases, only V+O is fronted, creating a derivation like [V+O]+SFP+S+[V+O], so the subject is left behind SFPs and right-dislocated, after the fronting of V+O.

Cheung's (2009) proposal relies on the focalization of different chunks, as in (7). He stabilizes the focalization analysis based on the prosodic divergence between pre-SFP and post-SFP parts. It is found that the post-SFP part (i.e., RD) is usually unstressed and less focused prosodically. Therefore, by contrast, the pre-SFP part can be assumed to be focalized and relatively receive more stress and focus.

In subject RD cases, focalization applies to the part lower than the subject. The focalization analysis can have some problems: First, it cannot well capture object RD cases. It is hard to leave objects right-dislocated, as objects are the last item in the S+V+O order. Though we have discussed in Section 2 that object RDs are actually topicalized object RDs. This cannot remedy the analysis, since the landing position of the fronting is Focus (Spec, FocP), which is lower than Topic (Spec, Topic).

Aside from the unpredictability of object RD, doubling cannot be captured as well. RD is considered to be left after the focalizing fronting. The remaining item will become the RD. However, there can be non-RD and RD copies co-occurring in the same sentence. The focalizing analysis simply moves some chunks away to become pre-SFP parts, but does not deal with the possibility of co-occurrence.

(7) Focalization in the Comp-to-Spec movement (Cheung, 2009)



Last, the structural height of the fronting and the distribution of SFP go beyond Pan's (2021, 2022) analysis. As the landing site of the C2S fronting, FocP is considered to be intimately incorporated with SFPs. SFPs are thus analyzed to be the head of FocP, so the occurrence of C2S movement and focalization can occur together. However, Focus (Spec, FocP) is proved to be located not above all SFPs. In Pan (2021, 2022), FocP is only above low SFPs, such as S.AspP and OnlyP, while high SFPs, like the ones in Attitude Phrase (AttP) and Force Phrase (ForceP), are above Focus. Therefore, the generally assumed hierarchy in Cheung (2009) should be revised. What's more, if we consider the motivation of the C2S fronting in RD is focalization, we need to explain why RD can be derived with many different kinds of SFP, either lower or higher than FocP.

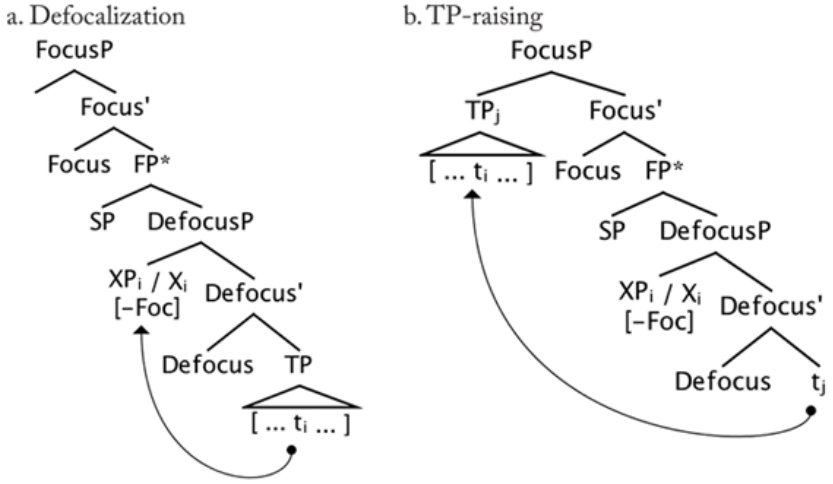
3.2. Lee's (2017) analysis: Defocalization & Focalization

Cheung (2009) notes that the post-SFP part as RD is prosodically less focused. Lee (2017, 2020) follows the idea, analyzing the non-focused part (i.e., RD) undergoes defocalization before the pre-SFP part (i.e., TP) has been fronted to the Spec of FocP to receive a focus; this is to say, not only pre-SFP parts but also post-SFP parts is considered to be moved as well. The assumed structural height is FocP > SFP > DefocP > TP.

Defocalization applies and the RD item can be moved out. The analysis solves the unpredictability of object RDs in Cheung (2009). Like subject RDs, an object can be moved out from a position within TP/VP to Defocus (Spec, DefocP). The remaining part after defocalization is then required to move to Focus (Spec, FocP), forming a prosodic contrast to Defocus.

The adaption of defocalization solves the above-mentioned problem of object RD derivations, while there are three major problems still left: First, doubling can't be predicted. No matter whether the post-SFP part has been delocalized or not, the landing site remains behind SFPs. The derivation of a non-RD copy in the pre-SFP part is not possible. The appearance of two copies altogether is not well explained. Second, faced with the similar problem to Cheung (2009), the structural height of SFPs is not well explained. Lee (2017) argues that SFPs can be iterated so as to derive multiple SFPs, which is incompatible with Pan's (2022) argument of Chinese split CPs.

(8) Delocalization & TP-raising (Lee, 2017)

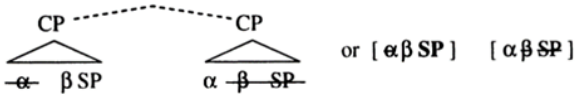


Last, the semantic formulation of Defocus can be problematic. The idea of Defocus does not seem to be universal, even though T. T.-M. Lee (2020) attempts to defend the idea of defocalization by considering RDs to bear [-Foc] or [-Noteworthiness] features. Since they are not prosodically focused, they are not of importance in the discourse. Overall, the semantic foundation of defocalization/Defocus is not widely understood or acceptable. At least, we may say that even though prosodically non-focused, RD may not be a real defocalized item.

3.3. An insight from other languages: PF Deletion

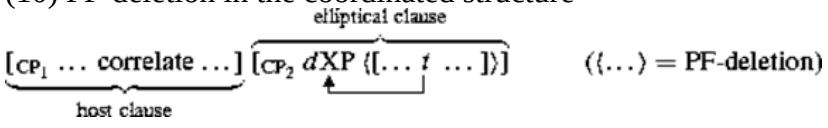
By taking data from Dutch, Ott and De Vries (2016) assume there are two copies of CP, as in (9). Economy considerations allow one copy to be left. In non-RD sentences, the entire set of the first CP is preserved; for RD sentences, α-part is realized in PF at the second CP. Ott and De Vries (2016) consider that two copies are likely to be in a coordinated structure.

(9) Derivation of RD in a coordinated structure



There are assumed to be two CP conjuncts. First, a leftward movement makes the RD item to be in the front within CP2. This is to capture the island sensitivity and avoid an incomplete ellipsis. Second, the remaining part within CP2 undergoes ellipsis by identifying an anaphoric link between the two conjuncts. The correlated part is PF-deleted, which is similar to copy deletion, as in (10).

(10) PF-deletion in the coordinated structure



The analysis Ott and De Vries (2016) assume involves PF-deletion of the repeated parts. I consider that the Chinse C2S movement triggers a similar licensing environment. The copy at

Comp, CP, and the copy at Spec, CP (after the C2S movement) are paralleled to two conjuncts in a coordinate structure. I will explain more in the next section, by proposing an alternative perspective in viewing Chinese RDs.

4. Copying in cyclic Linearization: the proposal

Taking a view of PF-deletion from RDs in other languages, I am developing an alternative proposal to capture the choice of PF-deletion in Chinese RDs. The obligatory co-occurrence of SFP and RD gives an insight into copy preservation/deletion. I will assume the Chinese mono-clausal RD to be a PLC after the C2S movement.

4.1. SFP & Copy preservation

The obligatoriness of the appearance of SFP in Chinese RDs is not a coincidence. For a head-initial language, Chinese SFPs as C-heads trigger Comp-to-Spec (C2S) movement to derive SVO+SFP order from SFP+SVO order, as in (11a). Comp, YP (i.e., XP) is moved to Spec, YP. Pan (2022) argues each SFP has an EPP feature to satisfy, and that one of the approaches is Internal Merge. As EPP features on SFPs are satisfied, we can derive a sentence in a canonical order like (11b). Comp, CP (i.e., TP) is fronted to Spec, CP, to satisfy the EPP feature on the SFP. After Internal Merge (i.e., Move), there will be two chunks of copies: one is the high copy of the moved TP; the other is the unmoved TP as the low copy. Adopting the concept of moving as copying, the consequence of the C2S movement leads us to a problem of copy preservation, alternatively, copy deletion. In the canonical cases, the low copy at Comp, CP is deleted while the high copy (Spec, CP) is pronounced, so as to derive the S+V+O+SFP order.

Such C2S movement offers us an important insight into the derivation of RD. RD can be the consequence of the movement and copy preservation, which we assume to be like (11c). In (11c), the subject RD may be thought to be the residue of C2S movement, where the pronounced subject is left after SFP. The observation is similar to previous analyses (Cheung 2009, Lee 2017); however, recall the cases of doubling. Such a view can be problematic because RD and the non-RD constituent can co-occur. In solving the availability of doubling with RD, we argue that doubling actually implies that RD is not the residue of C2S movement like what those who support RD as (de-)focalization are arguing. Instead, we can consider that there are two copies that speakers can choose to pronounce. In canonical use, the high copy at Spec, CP is typically pronounced, while in RD cases, the low copy at Comp, CP is partially pronounced instead. Under doubling, it is possible to pronounce both the high copy (non-RD constituent) and the low copy (RD) altogether.

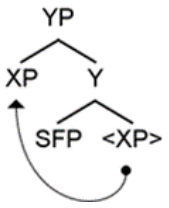
Under Copy theory (Chomsky, 1993; see also Boskovic & Nunes, 2007), I consider Chinese RD to be a PLC in the paper. It is assumed that the preservation or deletion of copies after the C2S movement gives rise to Chinese RD. Chinese SFPs are the heads of split CPs. To derive the linearly sentence-final position, the Internal Merge of XP (which means Comp, CP here) with one of the split CPs (=YP) (in which an SFP is headed) is necessary (Pan 2022). When deriving such order in (4c), we see the subject (Spec, TP) in the unmoved chunk of Comp, CP is apparently left.

One may consider only projections lower than TP to be fronted under the C2S movement (Cheung 2009), thus the subject is left; however, I argue that what we copy remains the whole TP, rather than just certain projections lower than TP. From cases of doubling, we can figure out what we are actually doing with Chinese RD is the choice of pronounced copies. Doubling can be well captured as we consider the co-occurrence of the high and low copies. RD is not purely the residue but the PLC after C2S movement.

(11) C2S movement & RD

a. Internal Merge of XP to YP

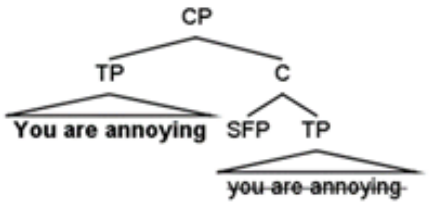
XP moves from Comp, YP to Spec, YP



b. Canonical order: S+V+O+SFP

Ni	hen	fan	ei
you	very	annoying	SFP

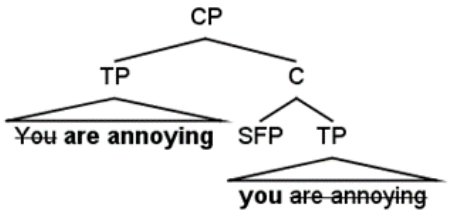
'You are annoying!'



c. Subject RD: V+O+SFP+S

Hen	fan	ei	ni
very	annoying	SFP	you

'You are annoying!'



4.2. Violation of Linearization.

The most important condition yielding the accessibility of RD elements from phasing is the violation of linearization. C2S movement is triggered by the EPP feature and is implemented to fulfill the requirements of linearization. As there can be multiple SFPs in Chinese, there will be cyclic C2S movements involving a series of copying, deletion of copies, phasing, and spell-out. Derivation of SFP is actually the successive process of linearization and preparation for spell-out, in which low copies may survive. T. T.-M. Lee (2021) notes that a low copy may be suspended if it violates linearization requirements imposed by Cyclic Linearization (cf. Fox & Pesetsky, 2005). The base-generation of Chinese SFPs violates linearization before EPP features have been satisfied by the C2S movement. Accordingly, the derivation of SFP fits the PLC analysis, explaining why SFP is necessary for Chinese RD: without SFP, there is no such

C2S movement, hence not licensing the emergence of RD as PLC.

It should be noted that the choice of RD is not arbitrary. Only the remaining accessible constituent, outside the already phased phases, can be suspended for choice of pronunciation, not to violate the Phase Impenetrability Condition (PIC) (Chomsky, 2008). To be accessible, the item needs to be moved to the Specifier of the ongoing phased phase. The conditions of each type of mono-clausal RD can be subtly different. (a) Subject (Spec, TP) can be right-dislocated since it escapes at least from v*P phase. (b) Object RD is not allowed, because of the situation of object (Comp, VP) within v*P phase, unless it is moved outside v*P, escaping from the phase. We see that (3b) and (4c) are grammatical since an A-bar movement for object NP (i.e., object topicalization) applies. (c) RDs of adverbial (specifier or adjunct) or adverbs (adjunct), like RD of a subject (specifier), are not ruled out by the PIC.

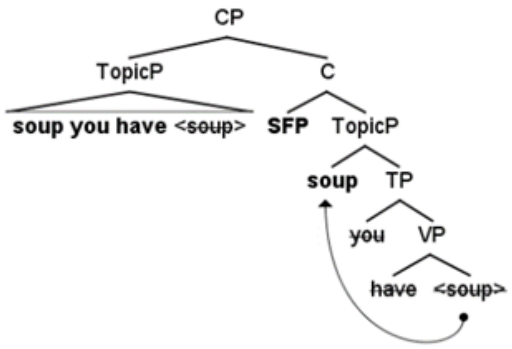
4.3. Deriving complex RDs

To right-dislocate object NP like (3b) or (4c), topicalization should apply before C2S movement, helping object NP escape from v*P phase; thus, the apparent O+S+V order is surfaced, with TopicP derived. Consider SFP with C2S movement. TopP is moved to Spec, CP, with a set of low copies at Comp, CP. RD occurs when speakers make a choice of PLC. We will end up getting the surface order like (O)+S+V+SFP+(O). Note here again that O represents a topicalized object, which should be definite.

(12) Doubling of topicalized object RD: S+V+SFP+O

Tang	ni	he	ma	tang?
soup	you	drink	SFP	soup

'Do you (want to) have that soup?'



5. Conclusion

The paper re-examines the non-canonical word orders in Chinese which involves the derivation of Chinese SFPs and RDs. By considering a detailed interaction between the operation of head-initial SFPs and RD, we argue that the mono-clausal RD is the PLC, which is the by-product of cyclic C2S movement when deriving SFPs. By considering SFPs within Chinese split CPs and A-bar dependency of topicalized objects, the paper accounts for the derivation of Chinese RD as well as some undiscovered consequences of C2S movement in cyclic linearization. In compliance with PIC, constituents escaping from the inaccessibility after phasing (mostly in Specifier or Adjunct) may become RDs.

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Uncovering Hidden Structures in BCMS: The Case of Negative Imperatives

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1. Introduction

In this paper I investigate a special form of negative imperatives in Bosnian, Croatian, Montenegrin, Serbian (BCMS), which I label *analytic negative imperatives* (ANI).[1] I show that in many cases seemingly mono-clausal ANIs are in fact bi/multi-clausal, involving optionally silent verbs like *dozvoliti* 'allow', or *desiti se* 'to happen'. This explains why negative concord licensing is (unexpectedly) unavailable in certain ANIs. In Section 2 I introduce the basic facts regarding negative imperatives in BCMS, and in Section 3 I present the main puzzle of the paper. I propose my analysis in Section 4 and in Section 5 I conclude the paper.

2. Negative Imperatives in BCMS: Some Background

There are two ways of forming negative imperatives in BCMS (e.g., Despić 2020 and references therein):

(a) In simple imperatives, the imperative inflection is on the main verb in both positive and negative contexts, as illustrated in (1). This type of negative imperative is in general not possible with perfective verbs, as (1d) shows (see Despić 2020 for an account of this phenomenon).

(1) IMPERFECTIVE
a.✓Jed-*i* tu jabuku!
Eat-IMPERF-IMP-2 that apple
'Eat that apple!'
c.✓**Ne** jed-*i* tu jabuku!
Not eat-IMPERF-IMP-2 that apple
'Do not eat that apple!'
PERFECTIVE
b. ✓Pojed-*i* tu jabuku!
Eat-PERF-IMP-2 that apple
'Eat that apple!'
d. *__Ne__ pojed-*i* tu jabuku!
Not eat-PERF-IMP-2 that apple
'Do not eat that apple!'

(b) In analytic imperatives, the imperative inflection is located on the auxiliary *moći* 'can, be able', directly attached to the negative particle *ne* (*ne-moj*), and the main verb can take either the uninflected, infinitive form, as shown in (2) or the subjunctive form, inflected for present tense as illustrated in (3).

[1] For helpful discussion of the material presented here (and related ideas), I want to thank Wayles Browne, Željko Bošković, Mia Gong, Neda Todorović, and the audience at GLOW in Asia 14. All errors are mine.

This type of clause is also known as *da*-clause (e.g., Progovac 1993a, b, Stjepanović 2004, Todorović and Wurmbrand 2020 etc.). Also, analytic imperatives require negation and are unlike regular negative imperatives compatible with both aspectual forms.

(2) ANI with INFINITIVE
Ne*moj* [INF pojesti tu jabuku]!
Neg-can-IMP-2 eat-PERF.INF that apple
'Do not eat that apple!'

(3) ANI with DA-CLAUSE
Ne*moj* [*DA-CL* da pojedeš tu jabuku]!
Neg-can.IMP.2 da eat-PERF.PRS.2 that apple
'Do not eat that apple!'

The two types of complements of **ne**-*moj* in (2)-(3) are also found in simple future tense constructions:

(4) FUTURE TENSE with INFINITIVE
Milan **će** [INF raditi]
Milan will work-INF
'Milan will work.'

(5) FUTURE TENSE with DA-CLAUSE
Milan **će** [*DA-CL* da radi]
Milan will da work-PRS-3-S
'Milan will work.'

They can also be used in restructuring context with verbs like *želeti* 'want':

(6) *want* with INFINITIVE
Milan **želi** [INF raditi]
Milan want-PRS-3 work-INF
'Milan will work.'

(7) *want* with DA-CLAUSE
Milan **želi** [*DA-CL* da radi]
Milan want-PRS-3 da work-PRS-3-S
'Milan wants to work.'

I follow here Todorović and Wurmbrand's (2020) (T&W) analysis of BCMS *da*-clauses. T&W propose that BCMS *da*-complements come in three sizes: (i) ***v*Ps**: tenseless complements of *try, begin, manage*. (ii) **TPs**: future irrealis complements of *decide, plan*, whose event must occur in the future with respect to the matrix event, and (iii) **CPs**: propositional complements of *claim, believe, think*, which have their own tense properties independent of the matrix tense. This is illustrated for English infinitival complements in (8), and for BCMS *da*-clauses in (9):

(8) a. Leo tried/began/managed **[$_{vP}$** to eat (*tomorrow)]. tenseless: **vP**
b. Leo decided/planned **[$_{TP}$** to eat (tomorrow)]. irrealis, future: **TP**

c. Leo claimed **[CP** to be eating (*tomorrow)]. propositional: **CP**

(9) a. TENSELESS: **vP**
Jovan je pokušao **[vP** da čita knjigu].
Jovan is tried da read. IMPERF-PRS-3-S book
'Jovan tried to read the book.'
b. IRREALIS, FUTURE: **TP**
Jovan je odlučio **[TP** da čita knjigu].
Jovan is decided da read.IMPERF-PRS-3-S book
'Jovan decided to read the book.'
c. PROPOSITIONAL; SIMULTANEOUS: **CP**
Jovan je tvrdio **[CP** da čita knjigu].
Jovan is claimed da read-IMPERF-PRS-3-S book
'Jovan claimed to be reading the book.'

As T&W point out, if finiteness were (solely) a matter of the CP domain, BCMS embedded clauses should be non-transparent and behave like the 'strongest' boundaries, finite CPs. However, this is not the case. As shown in Progovac (1993a, b, 1994, 1996), Stjepanović (2004), tenseless and future complements (their *S-complements*) show certain size reduction effects, whereas propositional complements (their *I-complements*) are non-transparent. Some of the teste that show this are clitic climbing, Negative Concord Item (NCI) licensing, *wh*-ordering etc. For example, (10) shows that **CP** complements (unlike ***v*P** and **TP** complements) do not allow NCI licensing by the matrix negation (see also Bošković 2009 for NCI-licensing in BCMS).

(10) a. TENSELESS: **vP**
Jovan **ni**je pokušao **[vP** da čita ✓**ništa**]. ✓NCI Licensing
Jovan not-is tried da read. IMPERF-PRS-3-S anything
'Jovan did not try to read anything.'
b. IRREALIS, FUTURE: **TP**
Jovan **ni**je odlučio **[TP** da čita ✓**ništa**]. ✓NCI Licensing
Jovan not-is decided da read.IMPERF-PRS-3-S anything
'Jovan did not decide to read anything.'
c. PROPOSITIONAL; SIMULTANEOUS: **CP**
Jovan **ni**je tvrdio **[CP** da čita ***ništa**]. *****NCI Licensing
Jovan not-is claimed da read-IMPERF-PRS-3-S anything
'Intended: Jovan did not claim to be reading anything.'

Now notice that the complements of *nemoj* in (2)-(3) must be smaller than CPs, since they allow the NCI licensing:

(11) ANI with INFINITIVE ✓NCI Licensing
Ne*moj* [INF pojesti ✓**ništa**]!
Neg-can-IMP-2 eat-PERF.INF anything
'Do not eat anything!'

(12) ANI with DA-CLAUSE ✓NCI Licensing
Ne*moj* [*DA-CL* da pojedeš ✓**ništa**]!
Neg-can.IMP.2 da eat-PERF.PRS.2 anything
'Do not eat anything!'

I will assume that infinitive complements are simple *v*Ps (e.g., T&W) and, following Veselinović (2019), that *da*-complements are MoodPs, which are somewhat bigger than *v*P. As shown in (13), I assume that both Mood and Asp are specified for φ-features. The φ-feature probe on Asp agrees with the subject (hence the full φ-agreement on the verb, which moves to Asp), and Mood specified for φ-features is spelled out as *da*.

(13) [$_{MoodP}$ Mood *da* [$_{AspP}$ Asp [$_{vP}$ Subject [$_{v'}$*v* VP]]]].
[φ] [φ]

I also assume that MoodPs can be licensed either by restructuring verbs, like *želeti* 'want', or by a fully finite T, as in (5). Given the NCI-licensing facts from (11)-(12), and the parallelism between ANIs and the future tense constructions in (4)-(5), in Despić (2020) I proposed (14) as the structure of ANIs:

(14) [$_{CP}$ [$_{Neg}$ Neg (ne) [$_{TP}$ T (moj) [$_{MoodP}$/[$_{vP}$ …]]]]

On this analysis, both *moj* and *ću* are in T and take either *v*P (infinitive) or MoodP (*da*-clause) as their complements.

3. The Puzzle

Consider now the structure in (15), which is quite productive. It raises two challenges since: (a) it is not clear where the thematic role of the addressee comes from, and, (b) *nemoj* appears to take a proposition/full, finite CP as its complement. In other words, *moj* has the 2nd person imperative inflection, but it is not clear how the addressee (which the inflection marks) participates in the main even of eating, as the external argument of *pojesti* 'eat' is *Marko*.

(15) Ne*moj* [$_{CP}$ da je Marko pojeo kolače dok sam ja na poslu]!
Neg-IMP-2 da is Marko eat-PST.PART-3 cookies while am I at work
'≈ Don't let it happen so that Marko has eaten the cookies while I am at work.'

Furthermore, the NCI-licensing clearly shows that the complement of *nemoj* in (15) is a CP. Negation cannot license the NCI in the subject position of 'eat'; instead, the 'long-distance' NPI *iko* is used (a simple indefinite *neko*, or a free-choice *bilo ko* may also be used).

(16) **Ne***moj* [$_{CP}$ da je ***niko**/✓iko pojeo kolače dok sam ja na poslu]!
Neg-IMP-2 da is anyone eat-PST.PART-3 cookies while am I at work
'≈ Don't let it happen so that anyone has eaten the cookies while I am at work.'

The main verb in the complement of *nemoj* in (15)-(16) is in past tense, and consists of a fully finite auxiliary verb *je* and the participle *pojeo*. In (12), on the other hand, there is no auxiliary verb and the main verb in the complement of *nemoj* takes the fully finite present tense form *pojedeš*. Now the size of these complements may vary, depending on the embedding verb, as (9)-(10) show – they can be either *v*Ps, TPs, or CPs. In (12), as the NCI-licensing shows, the *da*-clause must be smaller than CP (it

is a MoodP on the current analysis). But in this example the embedded verb and *moj* both inflect for 2nd person, singular features of the addressee. However, one can construct examples where the present tense *da*-clause complement has different agreement from *moj*, as in (17), in which the main verb *pojede* agrees for 3rd person, singular features. In such cases the 3rd person embedded subject is optionally present:

(17) Ne*moj* [CP da (Marko) pojede kolače dok sam ja na poslu]!
Neg-IMP-2 da Marko eat-PRS-3 cookies while am I at work
'≈ Don't let it happen so that Marko eats the cookies while I am at work.'

In this case, however, negation in *nemoj* cannot license the NCI in the *da*-clause, indicating that we are dealing with a full CP-complement (as in (10c)):

(18) a. Ne*moj* [CP da (Marko) pojede ***ništa**/✓išta]!
Neg-IMP-2 da Marko eat-PRS-3 anything
'≈ Don't let it happen so that Marko eats anything.'
b. Ne*moj* [CP da (Marko) **ne** pojede ✓**ništa**]!
Neg-IMP-2 da Marko not eat-PRS-3 anything
'≈ Don't let it happen so that Marko doesn't eat anything.'

The NCI can be licensed in the *da*-clause only by a local, *da*-clause-internal negation, but this is now a double negation meaning, as (18b) illustrates. All of this leads us to conclude that *da*-clause complements to *nemoj*, which have different agreement from *nemoj*, must be CPs. Furthermore, it can be shown that even cases like (3)/(12), in which *nemoj* and the embedded verb completely match in inflectional properties, the *da*-clause can be a CP. Consider first (19), which can be felicitously used as a warning not to eat anything over there (e.g., since the food will be poisoned). Since the NCI can be licensed here, we can conclude that the *da*-clause is smaller than a CP (e.g., a MoodP).

(19) **Ne***moj* [MoodP da jedeš ✓**ništa** tamo]! ✓NCI Licensing
Neg-can-IMP-2 da eat-PRS-2 anything there
'Do not eat anything over there!'

But (20) is minimally different from (19) in that it in addition only has the adverb *nekim slučajem* 'by some accident' located between *nemoj* and *da*.

(20) **Ne***moj*, nekim slučajem, [CP da jedeš ***ništa**/ ✓išta tamo]! ***NCI Licensing
Neg-can-IMP-2 some accident da eat-PRS.2 anything there
'Do not, by some accident, eat anything over there!'

The unavailability of the NCI licensing strongly suggests that the *da*-clause in (20) is a CP. And like (18b), only the *da*-clause internal negation may license *ništa* in the object position, which again results in a double negation meaning:

(21) **Ne***moj*, nekim slučajem, [CP da **ne** jedeš ✓**ništa** tamo]!
Neg-can-IMP-2 some accident da not eat-PRS.2 anything there
'Do not, by some accident, not eat anything over there!'

In the next section I propose my analysis of these facts.

4. Analysis

The use of the adverb *by some accident* in (20) makes the warning compatible with the meaning in which the addressee is not aware that a certain state of affairs can occur, and the warning is to avoid that state of affairs. This is not the meaning of (19), in which the addressee is in control of her/his actions; here the command is not to perform a certain action. These are two fundamentally different types of structures. I propose that (20) underlyingly looks, in fact, like (22) and has two hidden verbs *dozvoliti* 'to allow' and *desiti se* 'to happen':

(22) **Ne***moj* ~~[CP dozvoliti [CP da se desi~~ [CP da jedeš ***ništa**/ ✓išta tamo]!
Neg-can-IMP-2 allow da refl. happen da eat-PRS.2 anything there
'Do not allow it to happen that you eat anything over there!'

Thus, the special property of ANIs is that they can optionally drop such verbs, but note that it is always possible to pronounce them. Importantly for our purposes, neither *dozvoliti* 'allow' nor *desiti se* 'to happen' are restructuring verbs, like *želeti* 'want'. *Desiti se* combines with *da*-clauses, but it is not a restructuring verb, even when it combines with a simplest *da*-clause, which indicates that *da*-clause here is a CP:

(23) RESTRUCTURING:
Ne želim [da pojedem **ništa**]
Not want-PRS-1 da eat-PRS-1 anything
'I don't want to eat anything.'

(24) *Desiti se* 'to happen'
***Ne** desi se [CP da pojedem **ništa**].
Not happen-PRS-3 da eat-PRS-1 anything
'It doesn't happen that I eat anything.'

Since *desiti se* 'to happen' always introduces a CP, we can directly explain why the NCI in the *da*-clause cannot be licensed by the negation of *nemoj* – there is a hidden CP boundary between the two. This type of explanation can be extended to (15) and (16), which have the underlying structure of (22). At the same time, we can resolve the issue of where the addressee gets its thematic role from in such structures – it has the external thematic role of *dozvoliti* 'allow', which makes most sense semantically given what these sentences mean.

Finally, I would like to point out that this process of omitting verbs seems to be more general in BCMS, which is independently supported by Veselinović (2019), who shows convincingly that it underlies the root/epistemic ambiguity in BCMS. Consider the contrast between (25a) and (25b) below. On the surface they seem to differ only in the order of *mora* 'must' and *da*.

(25) a. Mora da Ana uči. (epistemic, #deontic)
Must da Ana study-PRS-3-S
'It must be that Ana is studying.'
b. Ana mora da uči. (#epistemic, deontic)
Ana must da study-PRS-3-S

'Ana must study.'

But as Veselinović (2019) shows, the sentence-size tests like NCI licensing indicate that there is a CP boundary between *mora* and the *da*-clause. In addition, *biti* 'be' can always be pronounced in (25a), and given that *biti* selects for the CP-size *da*-clause, it becomes clear that the structure of (25) should be like (26). Even though they appear mono-clausal, they are underlyingly bi-clausal. I propose that this kind of structural illusion also happens in (20). The *da*-clause after *ne-moj* here is really a CP, which is selected by the underlyingly present, covert verb *desiti se* 'to happen' (which is in turn selected by *dozvoliti* 'allow').

(26) (epistemic, #deontic)
[$_{TP}$ [$_{ModP}$ Mora **[**~~$_{vP}$ (biti)~~ **[**$_{CP}$ da [$_{TP}$ Ana [$_{AspP}$ [$_{vP}$ … uči]]]]].
must be that Ana study

(27) (#epistemic, deontic)
[$_{TP}$ Ana [$_{ModP}$ mora [$_{MoodP}$ da [$_{AspP}$ [$_{vP}$ … uči]]]]].

5. Conclusion

In this paper I explored a special form of negative imperatives in BCMS which I labeled *analytic negative imperatives* (ANI). This form is interesting since the imperative inflection is 'displaced' from the main verb to the auxiliary *moj*, which I propose is in T. In the most general case ANIs are mono-clausal and *moj* in T combines either with infinitives (*v*P) or *da*-clauses (MoodPs). However, I showed that in many cases seemingly mono-clausal ANIs are in fact bi/multi-clausal, involving optionally silent verbs like *dozvoliti* 'allow' and *desiti se* 'to happen', which are both CP-selecting verbs. Consequently, negation in *nemoj* cannot license an NCI inside of the *da*-clause, since there is a hidden CP-boundary between them. Finally, I suggested that this process of omitting verbs, making bi-clausal structures appear mono-clausal, might be more general in BCMS, since it also underlies the root/epistemic ambiguity in BCMS, as shown by Veselinović (2019).

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Superraise only if you hyperraise

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In this paper I will present the novel typological observation in (1) and provide an account for it.

(1) *Only hyperraising languages may allow superraising.*

In other words, superraising (SR) is only allowed in languages that allow hyperraising (HR). Note that this is a one-way correlation: HR languages may lack SR, but SR languages are predicted to have HR.

The paper is organized as follows. Section 1 presents an overview of the phenomena under discussion and acknowledges a link between them (that SR languages must have HR). Section 2 offers a crosslinguistic surview of HR and SR languages and shows that the latter are a subset of the former; with examples from particular languages provided exemplifying the phenomena. Section 3 motivates the theoretical framework that will be adopted in the analysis, namely, the dynamic approach to the satisfaction of the EPP developed in Bošković (2024). Section 4 presents the proposal, namely, that SR is only allowed in languages where the object may satisfy EPP. Sections 5 and 6 evaluate empirical consequences of the proposal - that objects undergoing SR must be able to occupy a higher position in clause structure (in the IP/EPP domain) (section 5), and that subjects in HR languages are higher than subjects in non-HR languages. Section 7 concludes.

1. Overview

Both HR and SR refer to an argumental DP (A-)raising out of a finite clause. HR corresponds to "raising from the subject position of a tensed (or finite) clause" (Ura 1994:65, emphasis added), whereas SR, way less common crosslinguistically, is "the operation by which an NP (or DP) is moved up beyond the subject of a clause to an A-position in a higher clause"[1] (Ura 1994:05, emphasis added). The *hyper-* and *super-* prefixes are used to mark the contrast with (vanilla) raising constructions such as English (2b) in which movement takes place from a non-finite clause.

(2) a. *It seems* [*that John is a genius*]
b. *John seems* [*to be a genius*]

Notably, English disallows both HR (3b) and SR (4b).[2]

(3) a. *It seems* [*that John likes Mary*]
b. **John seems* [*that* t *likes Mary*]

(4) a. *It seems* [*that it was told John* [*that Mary is happy*]]
b. **John seems* [*that it was told* t [*that Mary is happy*]]

[1] Movement is either overt or covert.

[2] Their ungrammatical status was usually predicted to hold universally as they would instantiate violations to the *Specified Subject Condition* and the *Tensed-S Condition* (Chomsky 1973). For SR, a violation of the *Relativized Minimality Condition* (Rizzi 1990) would also be involved.

Constructions like (3b) and (4b) have been widely attested in other languages for decades, and many analyses have been proposed. The generalization in (1), however, to the best of my knowledge, has not yet been observed. Such one-way correlation, which implies that SR languages correspond to a subset of HR languages, relates to an additional crosslinguistic observation, namely, the relative rareness of SR when compared to HR. Here, I will argue that an argumental DP may only move out of a finite CP if it satisfies EPP in a position above Spec,IP[3]. This position will be identified as Bošković's (2024) Spec,A/A'P, which I claim serves as the launchpad for both HR and SR.

The proposal can be summarized as follows: HR is way more common than SR crosslinguistically because SR requires the object to satisfy the EPP **instead** of the subject (which is in itself quite rare). Therefore, a language displaying SR but no HR would be a language where **in the normal case** the object would satisfy EPP and the subject **could not**, which can be taken to be impossible under the assumption that whatever allows objects to satisfy EPP in a language must also allow subjects to.

2. The landscape

In this section I present a list of the languages that have been claimed to have both superraising and hyperraising.[4] Languages with a C superscript are claimed to display *covert* SR.

SR language	**Ref.**	**HR?**
Alutor^{C}	Mel'čuk & Savvina (1978), Mel'čuk (1988), Ura (1994)	Ura (1994)
Arabic		
Moroccan Arabic	Wager (1983), Massam (1985), Ura (1994)	Ura (1994)
Standard Arabic	Massam (1985), Salih (1985a,1985b), Ouhalla (1994), Al-Janabi (2022)	Ura (1994)
Berber	Massam (1985)	Ura (1994)
Blackfoot	Massam (1985)	Ura (1994)
Chichewa	Trithart (1977), Ura (1994)	Ura (1994)
Chukchee^{C}	Mel'čuk (1988), Ura (1994)	Ura (1994)
Cree	James (1984), Massam (1985), Ura (1994)	Ura (1994)
Dinka	van Urk (2015)	van Urk (2015)
Fijian	Massam (1985), Ura (1994)	Massam (1985)
Greek	Massam (1985)	Ura (1994)
Ilokano	Massam (1985)	-
Innu-aimûn	Branigan & MacKenzie (B&MK) (2002)	B&MK (2002)
Japanese^{C}	Ura (1994)	Ura (1994)
Kimuthambi	Kaburo (2022)	Kaburo (2022)
Kipsigis	Jake & Odden (J&O) (1979), Massam (1985), Fong (2018)	J&O (1979), Fong (2018)
Korean	Ura (1994)^{C}, Yoon (2007)	Ura (1994)
Lisu	Ura (1994)	Ura (1994)

[3] I am using IP for ease of exposition, but Spec,IP should be understood as the position regular DP subjects satisfy EPP in languages like English; cf. *Mary left* (Spec,AgrSP or Spec,TP).

[4] Although the list is intended to be exhaustive, some languages may of course have been left unnoticed. If the reader is aware of any other language that has been claimed to display both phenomena (or SR only), I welcome them to reach out.

Lusaamia	Carstens & Diercks (C&D) (2009)	C&D (2009)
Lubukusu	C&D (2009)	C&D (2009)
Malagasy	Massam (1985)	Ura (1994)
Mandarin Chinese[5]	Ura (1994), Jonah Lin (2011)	Ura (1994), Chen (2023)
Nez Perce^{C}	Deal (2017)	Deal (2017)
Niuean	Seiter (1978, 1980), Massam (1985), Ura (1994)	Ura (1994)
Quechua	Lefebvre & Muysken (1982), (Massam 1985), Ura (1994)	Ura (1994)
Zacapoaxtla Nahuatl	Massam (1985)	-

With the exception of Ilokano and Zacapoaxtla Nahuatl, for which I haven't find works on HR, all languages that have been argued to have SR were also argued to have HR. Such a typological gap should not be taken as accidental, and an account must be provided. It is also worth noticing that only 14 languages were listed as having SR in Ura (1994), whereas over a hundred were listed as having HR, which is very telling of the relative rareness of the former. In the remaining of this section, I briefly discuss some language particular cases.

2.1. Moroccan Arabic (MA)

In (5a) we have a finite sentence embedded under the raising predicate *ttshab* (and no raising), with (5b) corresponding to its superraising version, where the embedded object raises past the embedded subject up to the matrix clause preceding the complementizer *belli*. (5c,d) show hyperraising of the embedded subject.

(5) a. ttshab-li [belli šaf-∅-ha muhend **mmi** fsefru]
seemed(3SG)-to.me COMP saw-3SGM-3SGF Mohend my.mother in.Sefrou
'It seemed to me that Mohand saw my mother in Sefrou'

b. ttshab-et-li **mmi**$_k$ [belli šaf-∅-ha muhend *t*$_k$ fsefru] (SR)
seemed-3SGF-to.me my.mother COMP saw-3SGM-3SGF Mohend in.Sefrou
'It seemed to me that Mohand saw my mother in Sefrou' (Ura 1994:12)

c. ttshab-li [belli žat **mmi**]
seemed(3SG)-to.me COMP came-3SGF my.mother
'It seemed to me that my mother came'

d. ttshab-et-li **mmi** [belli žat *t*] (HR)
seemed(3SGF)-to.me my.mother COMP came-3SGF
'It seemed to me that my mother came' (Ura 1994:67)

Note that Moroccan Arabic is a VSO~SVO language with both subject and object agreement on the verb (Harrell 1962, Wager 1983, Kortobi 2002). When SR or HR takes place (5b,d), the matrix verb agrees with the raised argument (and the embedded verb retains its agreement).

[5] See Shi (1990) for an alternative view.

Also note that Wager (1983:190) argues that raising verbs like *ttshab* in MA take CP complements. This shows the availability of both HR and SR in MA.

2.2. Standard Arabic (SA)

Ouhalla (1994) argues that both subject and object (A-)raise past the finite CP in SA to a matrix object position, with the matrix verb assigning accusative to the raised argument.[6] SR is illustrated in (6a), and HR in (6b).

(6) a. dhanan-tu laalib-a [ʔanna Zaynab-a ta-'rifu-hu] (SR)
believed-1SG student-ACC COMP Z.-ACC 3SGF-know-him
'I believed that Zaynab knew the student'

b. dhanan-tu laalib-a [ʔanna-hu qaabal-a l-mudarris-a] (HR)
believed-1SG student-ACC COMP-he(ACC) met-3SG the-teacher-ACC
'I believed that the student had met the teacher' (Ouhalla 1994:67)

2.3. Fijian

(7a) presents the non-raising baseline, and (7b) shows raising of the embedded object to the matrix clause. Note that this language displays a form of agreement (proper agreement) between the verb and the object.

(7) a. au kila *pro* [ni vinakata-i **iko** ko Timaima]
I think EXPL SUBJ.3SG want-PROPAGR you PROP.ART T.
'I think that Timaima likes you'

b. au kila-i **iko**$_k$ *pro* [ni vinakata-(*i) t$_k$ ko Timaima] (SR)
I think-PROPAGR you EXPL SUBJ.3SG want-(*PROPAGR) PROP.ART T.
'I think that Timaima likes you' (Massam 1985:93,95)

Note that movement of the object *iko* triggers agreement on the matrix verb. Ura (1994:21) crucially argues against a prolepsis analysis of (7b), where *iko* would bind a *pro* object in the embedded clause: he claims that if we had *pro* instead of the trace in (7b), object-verb agreement should be allowed as in (7a).[7]

2.*4. Mandarin Chinese* (*MC*)

(8a) corresponds to the non-raising baseline with a clause embedded under the raising predicate *keneng*, with (8b) and (8c) corresponding to their superraising and hyperraising counterparts, respectively.[8]

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[6] See also Al-Janabi (2022) for more on non-vanilla raising in SA.

[7] One might wonder whether a lower copy shouldn't be triggering the same effect. But not necessarily: if we think of languages that allow long distance agreement skipping the subject such as Hindi (Yadav p.c.), a *pro* analysis wouldn't be able to account for the lack of agreement in the embedded clause.

[8] Data with no reference in the text were collected in personal sections with native speakers.

(8) a. keneng [Zhangsan reng-le **nei kuai rou** gei ta]
likely Z. toss-ASP that piece meat to 3SG
'It is likely that Zhangsan has tossed that piece of meat to him' (Ura 1994:16)

b. **nei kuai rou** keneng [Zhangsan reng-le *t* gei ta] (SR)
that piece meat likely Z. toss-ASP to he
'It is likely that Zhangsan has tossed that piece of meat to him'

c. **Zhangsan** keneng [reng-le nei kuai rou gei ta] (HR)
Z. likely toss-ASP that piece meat to 3SG
'It is likely that Zhangsan has tossed that piece of meat to him'

Importantly, Li (1990) argues that *keneng* is a raising predicate in MC. One of the arguments involves preservation of idiomatic readings under movement, which also shows such movement is not A' left dislocation (see also discussion in Ura (1994). It has also been pointed out in Hou (1979) that the DP preceding *keneng* has subject properties, which is expected under a raising account. Jonah Lin (2011) argues that raising from finite clauses is allowed in MC. Finally, (9) shows that the object can be in the matrix position, with *zuotian* ('yesterday') taking scope over the matrix predicate.[9]

(9) a. keneng zuotian [Zhangsan reng-le **nei kuai rou** gei ta]
likely yesterday Z. toss-asp that piece meat to 3sg
'Yesterday it was likely that Zhangsan has tossed that piece of meat to him'
(*yesterday* > *likely*)

b. keneng **nei kuai rou** zuotian [Zhangsan reng-le gei ta] (SR)
likely that piece meat yesterday Z. toss-asp to 3sg
'Yesterday it was likely that Zhangsan has tossed that piece of meat to him'
(*yesterday* > *likely*)

3. Theoretical background: EPP positions

My proposal builds on Bošković (2024) contextual approach to the EPP, in which the EPP is not satisfied in a fixed position: its locus varies according to the syntactic context. The idea is that there is an EPP domain (10, in bold), with EPP being satisfied in the highest projection of the domain, which ranges from A/A'P to IP. One of the consequences of this account is that if A/A'P is not available, EPP will be satisfied in the Spec of IP (henceforth the contextuality of the approach).[10]

[9] With the *zuotian keneng* order (with or without SR), my consultant has only allowed *likely* > *yesterday*. The *keneng zuotian* order is more permissive, crucially including the reading in (9b).
[10] IP is split into AgrSP and TP in his system. The split plays no role in this discussion.

(10) [CP **[A/A'P** **[IP**

The A/A'P corresponds to a low left periphery position between CP and IP that hosts, e.g., locally moved *wh*-subjects (as in *who left?*), with other *wh*-XPs moving to Spec,CP.[11] Crucially, it is argued that the EPP is satisfied in Spec,A/A'P in such cases. The arguments provided for A/A'P show that *who* in *who left?* is neither in Spec,CP nor in Spec,IP - it must be in a projection in between shown to display mixed A and A' properties. For instance, the interaction of *wh*-movement and topicalization in (11) shows that *wh*-subjects and *wh*-objects do not land in the same position.

(11) a. Mary wonders which book, for Kim, Peter should buy.
b. *Mary wonders which student, for Kim, should buy that book. (Bošković 2024:7)

Note that the *wh*-subject in (11b) cannot land above the topic *for Kim*, whereas the *wh*-object can (11a), which indicates that the former is lower than the latter. Also, it is argued that *who* is not in Spec,IP (and doesn't go through it). One of the arguments is given below. Consider West Ulster English (12).

(12) a. Who was arrested all *t* in Duke Street?
b.*They were arrested all *t* last night.
c. What did he say all *t* that he wanted? (McCloskey 2000)

The *wh*-subject in (12a) patterns with the *wh*-object in (12c) rather than with the DP subject in (12b) in that it allows a floating quantifier. If *who* were in Spec,IP (or if it were to move through it), we would expect (12a) to be bad on a pair with (12b), which shows that the quantifier cannot be stranded under movement to IP. Another argument for the *who*-is-not-in-Spec,IP claim concerns the scope facts in (13).

(13) a. Who loves everyone? (*who>everyone*; **everyone>who*)
b. Someone loves everyone. (*someone >everyone*; *everyone>someone*)
(Bošković 2024:3)

The impossibility of inverse scope in (13a) indicates that *who* is higher than *someone* (in Spec,IP). Were *who* also in Spec,IP, there would be no reason for the bleeding of QR in (13a), taken to be involved in (13b) to derive the inverse scope reading. So, by showing that *wh*-subjects are neither in Spec,CP nor in Spec,IP, Bošković proposes that it is in the intermediate Spec,A/A'P position (10).[12] Also, since *who* doesn't go through Spec,IP, it follows that the EPP must be satisfied there in such cases (whereas a regular DP subject as in *Mary left* would satisfy the EPP in Spec,IP).

Regarding the mixed A and A' properties of this projection, Bošković (2024) observes that the long-noticed observation that extraction from subjects *wh*-islands is less degraded than extraction from non-subject *wh*-islands can be accounted for under this analysis; the sentence ??*what do you wonder how she bought?* is worse than ?*what do you wonder who bought?*). Considering that *wh*-movement to an A'-position across an A'-Spec is disallowed (Rizzi 1990), Bošković claims that in the case of

[11]This is not a local *wh*-subject exclusive position. Bošković (2023) provides arguments that Spec,A/A'P is also the position for V2-subjects in Germanic languages, *only*-subjects, overt imperative subjects, locative inversion, CP-subjects, *there*-subjects (as in *there arrived a woman at the station*), Singlish non-agreeing subjects, Defaka focus subjects, and Chinese/Japanese subjects.

[12]Independent evidence is provided in Dias (2023) for the A/A'P projection in discussing ellipsis cases in Brazilian Portuguese that are restricted to locally moved *wh*-subjects. There is also provided arguments based on Brazilian Portuguese for the mixed A and A' nature of this position.

extraction from subject *wh*-islands the crossed position wouldn't be a pure A'-position, but a mixed A/A' position, therefore the degrees of grammaticality mentioned above.

The role of this particular approach to the EPP in accounting for the observed facts will become clearer when the proposal is presented in the next section, where the availability of non-vanilla raising will be tied to the to the availability of the A/A' position in the language.

4. The proposal

My proposal takes into account the analysis of Japanese scrambled objects in OSV constructions as developed in Miyagawa (2003) and Saito (2011). But first consider (14).

(14) Zen'in-ga sono tesuto-o uke-nakat-ta.
all-NOM that test-ACC take-NEG-PST
'All did not take that test.' (**not>all, all>not*) (Miyagawa 2003)

Saito (2011) argues that the subject in (14) is higher than in English, which is in Spec,IP (see note 10), and that EPP in Japanese is satisfied in a low left periphery position, which Bošković (2024) interprets as being Spec,A/A'P and I assume here. Now, object scrambling gives rise to (15).

(15) Sono tesuto-o$_i$ zen'in-ga t_i uke-nakat-ta.
that test-ACC all-NOM take-NEG-PST
'That test, all didn't take.' (*not>all, all>not*) (Miyagawa 2003)

Importantly, the scrambling above makes the inverse scope reading available. Miyagawa (2003) and Saito (2011) argue that it is the scrambled object that satisfies EPP in such sentences, going to the same position of the subject in (14). The subject, now in a lower position (within IP), can then scope under the negation, QR-ed to IP. Here, this amounts to saying that the object moves to Spec,A/A'P and the subject to Spec,IP. I therefore propose that *the EPP position Spec,A/A'P is the launchpad for both superraising and hyperraising*. So, *only DPs satisfying EPP in the Spec of A/A'P may raise out of a finite clause*. We can now propose an account for the typological gap described in (1) - that no SR language lacks HR.

(1) *Only hyperraising languages may allow superraising.*

If Spec,A/A'P launches both SR and HR, having a SR language without HR would require a language in which the object satisfies EPP (and the subject **could not**). The rarity of SR with respect to HR can therefore be tied to the rarity of objects satisfying EPP instead of the subject. Note the role of the EPP in accounting for the typological "shyness" of SR: simply claiming they both use the same launchpad position wouldn't predict any subject/object asymmetry neither the inexistence of a SR-but-no-HR language. Bringing the EPP into the picture enables us to make sense of both crosslinguistic observations. Being rare to have the object satisfy the EPP and being impossible to have a language where only the object satisfies the EPP nicely capture the crosslinguistic observations.

In more general terms, **only elements satisfying EPP on Spec,A/A'P may leave a finite clause** (to perform either HR or SR). That SR languages are a subset of HR languages follows from there being no language (to the best of my knowledge) in which objects satisfy the EPP but subjects

cannot.[13] Also note that improper movement is no longer an issue here: a subject or an object moving from the A/A' position to an A-position in the matrix clause will not lead to an unexpected A'-A chain link.[14]

Now this proposal makes a clear prediction: objects performing superraising must depart from an EPP position **above** the subject (the Spec,A/A'P), which would be pushed down to the inflectional domain (as we saw happens in Japanese). In the next section I will evaluate this prediction for some of the languages listed in section 2.

5. Superraising higher objects

5.1. Nez Perce (Sahaptian)

Deal (2017) argues that both objects and subjects covertly raise to the matrix clause in Nez Perce, with the effect of raising seen in the fact that both matrix and embedded verbs show agreement.

(16) a.*SR:*

'Aayat-onm	hi-nees-nek-se	[	watiisx	mamay'ac-na	Angel-nim
woman-ERG	3SUBJ-**O.PL**-think-IMPF		1.day.away	**children**-ACC	A.-ERG
hi-naas-wapayata-ya	]				
3SUBJ-**O.PL**-help-PERF					

'The woman thinks Angel helped the children yesterday'

b.*HR:*

Taamsas-nim	pee-nek-se	[Angel-nim	hi-naas-wapayata-ca	mamay'as-na][15]
T.-ERG	3.**3**-think-IMPF	**A.-ERG**	**3SUBJ**-O.PL-help-IMPF	children-ACC

'Taamsas thinks Angel is helping the children' (Deal 2017:8-9)

Deal shows that (16) above do indeed involve movement (she crucially claims it is not prolepsis). One of the arguments regards islandhood, to which cross-clausal agreement is sensitive:

(17) a.*SR:*

*'Aayato-nm	hi-nees-nek-se	[ke kaa	mamay'ac	hi-pa-paay-no'],
woman-ERG	3SUBJ-**O.PL**-think-IMPF	when	**children**.NOM	3SUBJ-S.PL-arrive-FUT
hi-lloy-no'	qiiwn			
3SUBJ-be.happy.FUT	old.man.NOM			

Int.: 'the woman thinks that when the kids arrive, the old man will be happy'

b.*Prolepsis:*

?'Aayato-nm	mamay'as-na$_i$	hi-nees-nek-se	[	ke kaa	*pro*$_i$	hi-pa-paay-no'],
woman-ERG	children-ACC	3SUBJ-O.PL-think-IMPF		when	3PL	3SUBJ-S.PL-arrive-FUT
hi-lloy-no'	qiiwn					
3SUBJ-be.happy.FUT	old.man.NOM					

'The woman thinks that when the kids arrive, the old man will be happy' (Deal 2017:4)

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[13]The fact such languages seem inexistent is an independent matter for which I have no account for. But it seems that a language where only objects could satisfy EPP seems would disallow even simple intransitive constructions like *Mary left.*

[14]Though it is usually claimed that HR and SR target A-positions in the matrix clause (they are crucially not A'-movement), a system with an A/A' projection opens the possibility to having such movements target the mixed Spec.

[15]*pee-* marks agreement with both 3rd person subject and 3rd person object (Deal 2017:3).

Nez Perce has flexible word order in both matrix and embedded clauses. Interestingly, when undergoing superraising, the object must show up in the first position (note the OSV order in 16a). Crucially, Deal argues this is an instance of A-movement. In her analysis, the object becomes accessible from "the highest A-position in the embedded clause" (p.8), which she assumes to be Spec,TP. Under the contextual EPP approach, I take this position to be Spec,A/A'P.

5.2. Tsez (Nakh-Daghestanian)

In Tsez, the matrix verb may agree with the embedded object (absolutive agreement) (18).[16] On a pair with Nez Perce, Tsez long distance agreement (LDA) is also island constrained (17). Note that Tsez's basic word order is SOV).

(18) eni-r [uz-a magalu b-ac'-ru-li] b-iy-xo
mother-DAT boy-ERG bread.III.ABS III-eat-PST.PRT-NMLZ III-know-PRES
'The mother knows the boy ate the bread'

(19) *[kid y-ay-zal] eni-r xabar y-iy-s
girl.II.ABS II-arrive-when mother-DAT news.III.ABS II-know-PST.EVID
(Polinsky & Postdasm 2001:606-7)

Polinsky & Potsdam (2001) claim that in LDA constructions the object must (covertly) front to a topic position. (20) independently shows that the language exhibits leftward scrambling.

(20) bikori$_k$ uza hibored t_k zek'si
snake boy stick hit
'The boy hit the snake with a stick' (Polinsky & Postdasm 2001:589)

Importantly, the authors observe that the fronted object in (20) need not be interpreted as a topic (p.598), discouraging a left-dislocation account. I take this to indicate that objects can move for EPP reasons in Tsez, which would then make them available for (covert) superraising as in (18). (also remind that this position, being A/A', is compatible with topic features).

5.3. Korean

It has been argued that Korean displays both SR and HR, exemplified in (21a) and (21b), respectively.

(21) a. ku chayk-ik$_k$ Chelswu-eyuyhay [Hemingway-ka t_k ssu-ess-ta-ko] mit(e)-ci-n-ta
that book C.-by H.-NOM write-PST-DCL-COMP believe-PAS-PRS-DCL
'That book is believed (by Chelswu) to have been written by Hemingway' (Yoon 1998:121)

b. Mary-nun John-ul$_k$ cen-pwuthe [t_k taytanha-ta-ko] sayngkakhay wass-ta
M.-NOM J.-ACC long-ago.since great-DCL-COMP think have-DCL
'Mary has thought since a long time ago that John is great' (Hong & Lasnik 2010:282)

In (21b), the subject would satisfy the EPP in Spec,A/A'P before leaving for the matrix clause. Yoon (2007) has actually argued that subjects undergoing HR in Korean are higher than the regular subject position. In (21a), the object would satisfy EPP in Spec,A/A'P. Here, this means that the subject is

[16] Alternatively, agreement can target the clausal complement (IV agreement) (Polinsky & Postdasm 2001:605).

pushed to Spec,IP, so we should witness the same scope effects of Japanese. This prediction is borne out.

(22) a. manhun salam-i ku capcil-ul ilk-ci ani hayssta
many people-NOM that magazine-ACC read-CL NEG did
'Many people didn't read the magazine' (many > not; *not>many)
b. ku capcil-ul$_k$ manhun salam-i *t* ilk-ci ani hayssta
that magazine-ACC many people-NOM read-CL NEG did
'Many people didn't read the magazine' (many > not; not>many)

Notably, the inverse scope reading becomes available in the OSV construction.

5.4. Japanese

Ura (1994) claims that Japanese displays covert superraising, expressed by the possibility of the embedded object exhibit accusative in dative subject constructions, where the source of accusative must be from the matrix predicate (23a) (cf. 23b). (the same is observed for these constructions in Korean)

(23) a. Boku-wa [John-ni piano-o/-ga hik-er-u to] omow-u
I-TOP J.DAT piano-ACC/-NOM play-can-PRES COMP think-PRES
'I think that John can play the piano'
b. John-ni piano*-o/-ga hik-er-u
J.DAT piano*-ACC/-NOM play-can-PRES
'John can play the piano' (Ura 1994:27-8)

Regarding arguments for DP movement into the matrix clause, Ura (1994) shows that the embedded object can have scope over the dative subject, it cannot sit within a subject or a complex NP island, and it also shows binding effects. Finally, dative subject constructions exhibit the same scope effects observed in 5.2 when the object is scrambled (note that inverse scope becomes available when scrambling (i.e., object satisfying EPP in Spec,A/A'P; see section 4) takes place.

(24) a. ooku-no hito-ni kono mondai-ga toke-nai
many-GEN people-DAT this problem-NOM solve-NEG
'Many people didn't solve the problem' (many> neg;*neg>many)
b. kono mondai-ga ooku-no hito-ni *t* toke-nai
this problem-NOM many-GEN people-DAT solve-NEG
'Many people didn't solve the problem' (many> neg; neg>many)

5.5. Mandarin Chinese (MC)

Jonah Lin (2011) claims that EPP drives movement in MC (EPP cannot be reduced to feature checking) and observes that only finite clauses allow object shift, whose effect is producing an SOV clause (25).

(25) a. Zhangsan chi-le hanbao (SVO, no object shift)
Z. eat-PERF burger
'Zhangsan ate the burger'

b. Zhangsan hanbao chi-le (SOV, object shifts)
Z. burger eat-PERF
'Zhangsan ate the burger' (Jonah Lin 2011:60)

Assuming with the author that movement is connected to the EPP, we then expect object shift to be possible under predicates such as *keneng* under the proposal that object satisfying EPP feeds superraising. This is indeed attested (26)[17].[18]

(26) a. Zhangsan keneng [*t* zhunbei-le wancan]
Z. be.likely.to prepare-PERF dinner
'Zhangsan may have prepared the dinner'
b. Zhangsan keneng [*t* wancan zhunbei-le]
Z. be.likely.to dinner prepare-PERF
'Zhangsan may have prepared the dinner' (Jonah Lin 2011:61)

5.6. Dinka (Nilotic)
Dinka observes a construction in which a fronted object triggers verbal agreement instead of the subject.

(27) yîin ø-cí môc tîiŋ
you 2-PRF.OV man.GEN see.NF
'The man has seen you' (van Urk 2015)

Also relevant here are Bantu OVS sentences where the verb agrees with the object, which has been analyzed as satisfying EPP (cf. Ura 1995, Ndayiragije 1999). An account in the lines proposed here can be pursued for Bantu SR languages (reported at least for Lusaamia, Lubukusu and Kimuthambi) featuring the relevant OVS constructions, again showing the connection between EPP and non-vanilla raising.

6. Hyperraising higher subjects

The proposal developed here predicts hyperraising subjects depart from a position higher than Spec,IP (namely Spec,A/A'P). Assuming QR is involved in the inverse scope reading in (13), repeated below (28), we thus expect the subject of HR languages to disallow inverse scope.

(28) a. Who loves everyone? (*who>everyone*; **everyone>who*)
b. Someone loves everyone. (*someone >everyone*; *everyone>someone*)
(Bošković 2024:3)

This is indeed attested for several HR languages: (an example from Brazilian Portuguese is given below)

(29) *Scope-rigid hyper-raising languages*
Finnish (Zimmermann 2003)
Georgian (Borise & Polinsky 2018)
Greek (Baltazani 2002)

[17]It is worth mentioning that such object shift (in the complement clause) is not always allowed, being prohibited under root modal predicates and *hui* ('will'), for instance (p.61).
[18]Object shift in Mandarin Chinese is likely tied to topicalization (Jonah Lin 2011:60,ftn11), which is fully compatible with the A/A' approach.

Hmong (Creswell & Snyder 2000)
Hungarian (Kiss 2002, den Dikken 2017)
Japanese (Hoji 1985)
Kabardian (Minor 2005)
Kinande (Baker, 2003)
Korean (Kim 2008)
Lubukusu (Carstens et al. 2010, Diercks 2013)

Mandarin Chinese (Huang 1982)
Persian (Shafiei & Storoshenko 2017)
Sinhala (Chou & Hettiarachchi 2016)
Spanish (Alexiadou & Anagnostopoulou 1998, Fernández-Salgueiro 2005, Pires & Nediger 2018)
St'át'imcets (Matthewson 1999, Davis 2020)
Tamil (Sarma, 2003)
Turkish (Altinok, 2017)

(30) Alguém ama todo mundo
someone loves everyone (someone>everyone; *everyone>someone)

Notice that BP, a HR language (Altinok, 2017), patterns with the *wh*-subject in (28) in disallowing inverse scope, not with the regular subject. Here, this is explained by the subject being higher than IP, therefore bleeding QR (like in Japanese; cf. section 4).

7. Conclusion

In this work I have presented a novel typological generalization, namely, that only hyperraising languages may allow superraising (the latter being a subset of the former) and have proposed an account that ties such cases of non-vanilla raising to the EPP being able to be satisfied in a position above Spec,IP (Spec,A/A'P). The typological possibilities are depicted in the table below, with *L3* being an impossible language.

(31) *SR iff HR*

	HR	***SR***	**e.g.,**
L1	✓	✓	Korean
L2	✓	✗	Brazilian Portuguese
* *L3*	✗	✓	*unattested*
L4	✗	✗	English

This analysis provides evidence for a contextual approach to the EPP, and also unifies SR with HR by showing they are connected in a principles way: they share the same launchpad position. More precisely, this work establishes when hyperraising or superraising should be expected in a language: one has to consider where EPP is satisfied (Spec,IP? Spec,A/A'P?) and which argumental DP (subject? object?) may do it.

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Asymmetric Extraction from Coordination in English and Mandarin Chinese

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1 Introduction

Extraction from coordination has posed a longstanding issue within generative syntax. Since Ross's 1967 observation that neither a conjunct nor an element of a conjunct can move out of a coordinate structure, there have been various exceptions to those constraints, with Across-The-Board (ATB) movement (Williams, 1978; Citko, 2005; Zhang, 2009; Pan, 2011; Salzmann, 2012) as the most well-known as systematic one, as well as more language-specificcases, such as first conjunct extraction in Japanese (Oda, 2021). In this paper, we focus on cases of Asymmetric Extraction (AE), which involves extraction from one conjunct. We start with a comparative study of AE between English and Mandarin Chinese (MC), eventuallyfocusing on MC. We present novel data from MC and conclude that AE (and wh-movement more generally) in MC is related to interpretive constraints on the extracted wh-DP.

AE from a conjunct in English is firstly observed by Ross (1967) and further explored by Goldsmith (1985), Lakoff (1986), and among the others:

(1) a. [What$_i$] did Harry [[go to the store] and [buy t$_i$]]?
b. [How much$_i$] can you [[drink t$_i$] and [still stay sober]]?
c. That's [the stuff$_i$] that the guys in the Caucasus [[drink t$_i$] and [live to be a hundred]]. (Lakoff, 1986)

The constraints on AE licensing are nuanced and complex. The general consensus on the licensing of AE is that the conjuncts in coordinate structures establish certain discourse relations (e.g. temporal ordering) and it is these relations that contribute to the licensing of AE. In this paper, for space reasons, we will only focus on the type of coordination in (1a)and refer interested readers to Altshuler and Truswell, 2022 for a detailed treatment of each type. Examples like (1a) are dubbed **Type A** scenarios which instantiate a conventionalised event in which the initial conjunct serves as the background of the following event denotedby the non-initial conjunct. Crucially, it allows AE from either conjunct as shown below:

(2) a. [What city$_i$] did Mary [[go to t$_i$] and [buy a modernist painting]]?
b. [What modernist painting$_i$] did Mary [[go to NYC] and [buy t$_i$]]?
(Altshuler & Truswell, 2022)

In English, apart from the discourse condition, there is a referential NP restriction on the extractees from the **non-initial conjunct** (Postal, 1998; Levine, 2001; Altshuler & Truswell, 2022). (3) shows that in general, the extractee must be nominal and adverbial elements are excluded:

(3) a. *[How accurately$_i$] did the witness [[go to the court] and [give evidence t$_i$]]?
b. [Which evidence$_i$] did the witness [[go to the court] and [give t$_i$ to the judge]]?

The extractee must also be referential, as shown in (4). Degree or quantity nominals are disallowed and only referential ones are permitted:

(4) a. *[How much money$_i$] did you [[go to the gallery] and [spend t$_i$ on that modernist painting]]?
b. [What modernist painting$_i$] did you [[go to the gallery] and [buy t$_i$]]?

AE from the initial conjunct is more free, and the referentiality restriction does not hold:

(5) a. [How much money$_i$] did you [[take t$_i$ out of the bank] and [buy that modernist painting]]?
b. [How accurately$_i$] can a witness [[give evidence t$_i$] and [still seem unreliable]]?

What this means is that there is a multistage process of licensing AE. First, the entire linguistic context must be amenable to AE. This includes the broader discourse relational constraints described above. Second, once generalised extraction is permitted, there is an asymmetry between extraction from initial vs non-initial conjuncts. Specifically, extraction from initial conjuncts is free, whereas extraction from non-initial conjuncts only allow ref- erential nominals. The constraints on referentiality and argument/adjunct asymmetry on extractees is a characteristic of selective islands (Pesetsky, 1987; Szabolcsi & Zwarts, 1993; Abrusán, 2014), which lead Postal (1998) and Altshuler and Truswell (2022) to conclude that the non-initial conjunct is a weak island but the initial conjunct is not an island for AE.

Most of the discussion on AE focuses only on English, with only a few investigations on other languages (see Mayr and Schmitt (2017) for German, Kubota and Lee (2015) for Japanese and Korean). On the other hand, in those languages, the discussion mainly aims to explore the correlation between discourse relation and extraction patterns, in line with what has been said for English.

This paper aims to make a novel contribution to this issue by looking at the issue of AE in MC from a different angle. We show new data from MC that exmplifies AE phenomena. MC is a particularly interesting language for study because it is a wh-in-situ language, but unlike Japanese and Korean, the other wh-in-situ languages that have been studied with respect to AE, MC lacks scrambling, straightforwardly ruling it out as the motivation for wh-fronting. Moreover, wh-fronting in MC has been attested since Xu and Langendoen (1985) and recent studies have shown that it is tied to the discourse properties of either the wh-phrase or the functional projections of the left periphery (Wu, 1999; Cheung, 2008; Pan, 2009, 2011; Cheung, 2014; Pan, 2014; Pan, 2019). As such, wh-fronting in MC is a marked strategy and we expect it to exihibit different restrictions on AE, compared to English.

The discourse property of the wh-phrase in MC is not straightforwardly comparable with that of English. While there is a clear distinction between which-type and bare wh-phrase in English in terms of referentiality (Pesetsky, 1987), this distinction between the MC counter-parts is less clear: na+CL+NP ‘which NP’ is referential, shenme+NP ’what NP’ is sometimes referential, while bare shenme ‘what’ is not referential. While MC has been observed to obey certain constraints on referentiality in licensing wh-fronting (e.g. Contextual Constraint in Pan, 2009), referentiality is neither necessary nor sufficient. For example, amount wh-phrases

headed by ji and duoshao ‘how many’ are not referential but as we see below, can undergo wh-fronting. These constructions are comparatively understudied, and the analysis presented serves to broaden our understanding of AE as well as the licensing of non-scrambling wh-movement in canonically wh-in-situ languages.

We ultimately conclude that under a Type A scenario, AE is possible from either conjunct just like English but the restrictions on the extractees are different from that of English: the general licensing condition of AE from either conjunct requires the extractee to select a member from a contextually salient set, which is also the requirement for overt wh-fronting in MC (Pan, 2011; Pan, 2019; Ren & Yan, 2024). Additionally, AE from the non-initial conjunct further requires the extractee to be anaphoric to a domain-restricted set that is a proper subset to the one mentioned previously. We will call these two conditions the Referential constraint and the Specificity constraint respectively. We wrap up by comparing again the extractability of wh-phrases from coordinate structures in English and MC and arguing that while extraction from coordinate structures in both languages involve weak islands, English islands are demonstrably weaker than MC ones.

2 Asymmetric Extraction in Mandarin Chinese

2.1 AE from the Initial Conjunct

We turn now to AE from coordinate structures in MC. Extraction under Type A scenarios(initial conjunct serves as contextual background for non-initial conjunct) is briefly mentionedin Zhang (2009), in which a demonstrative phrase can be extracted from the initial conjunct:

(6) [Na-fen baozhi$_i$], Akiu [[kan-le t_i] bingqie [hai zuo-le biji]].
that-CL newspaper A. read-PERF and also make-PERF note
‘Akiu read that newspaper and also made notes.’

When the fronted phrase is a wh-phrase, complex wh-phrases (7) can be fronted but bare wh-phrases (8) cannot. We also observe the fronting of non-referential quantity wh-phrases in (7b):

(7) a. [Na-ge chengshi$_i$] / [shenme chengshi$_i$], Zhangsan [[qu-le bingiqe
which-CL city what city Z. go-PERF and
[mai-le yi-fu xiandai hua]]?
buy-PERF one-CL modernist painting
‘Which city / what city did Zhangsan go to and buy a modernist painting?’

b. [Duoshao-ge chengshi$_i$] / [ji-ge chengshi$_i$], Zhangsan [[qu-le t_i
how.many-CL city how-many- CL city Zhangsan go-PERF
bingqie [mai-le yi-fu xiandai hua]]?
and buy-PERF one-CL modernist painting
‘How many cities did Zhangsan go to and buy a modernist painting?’

(8) *[Shenme$_i$], Akiu [[kan-le t_i] bingqie [hai zuo-le biji]]?
what A. read-PERF and then make-PERF note
‘What did Akiu read and then made notes?’

A common argument against AE is that movement out of the conjunct is only apparent. Specifically, the analysis involves clausal coordination instead of vP coordiation and in the second

clause, there is a *pro* subject instead of a prononced one. The wh-phrase then moves only to the left edge of the initial conjunct and there is no movement out of theconjunct itself:

(9) [$_{ConjP}$ [$_{conj1}$ [Na-ge chengshi$_i$], Zhangsan qu-le t$_i$] bingqie [$_{conj2}$ *pro* mai-le yi-fu xiandai hua]]?

We reject the analysis of (9) as the underlying structure of AE from the initial conjunct. For (9) to be valid, the coordination itself involve CP (or at least a clausal projection in the left periphery) coordination, given that the initial conjunct is a wh-question and the Coordination-of-Likes (Chomsky, 1957; Grosu, 1973; Williams, 1978; Bošković, 2020), i.e., only the constituent of the same category can be coordinated, holds. Empirically, there are two points that suggest CP coordination is not responsible. First, CP coordination allows aseparate event interpretation as noted by Bjorkman (2013, 2014) and Altshuler and Truswell (2022):

(10) a. The newspaper reported that [[$_{TP}$ a new government was elected] and [$_{TP}$ therewas a riot]].
b. The newspaper reported [[$_{CP}$ that a new government was elected] and [$_{CP}$ that there was a riot]].

While (10b) can be interpreted as involving the reporting of two distinct events, (10a) canonly have a Type A interpretation in which there was only one reported complex event, wherethe first conjunct forms the contextual background for the second. Given that AE from theinitial conjunct is only possible under the Type A scenario, it is unlikely that a structure like (9) is correct for the MC cases.

Second, if (10) involves CP coordination, an overt thematic subject in the non-initial conjunct is expected (Bjorkman, 2013). However, Neither MC nor English allows an overt subject in the non-initial conjunct in the case of AE from coordination:

(11) a. Here's [the Whisky$_i$] which [I went to the store] and [(*I) bought t$_i$].
b. [Na-ge chengshi$_i$], Zhangsan [[qu-le t$_i$] bingqie [(*ta) mai-le yi-fu
which-CL city Z. go-PERF and he buy-PERF one-CL
xiandai hua]]?
modernist painting
'Which city did Zhangsan go to and he bought a modernist painting?'

In a nutshell, we argue that these coordinate structures involve the coordination of two verbal categories lower than TP, to the exclusion of the subject. Therefore, AE from the initial conjunct involves true movement out of the coordinate structure.

2.2 AE from the Non-initial Conjunct

We know turn to extraction from the non-initial conjunct. Recall that in English, movement from a non-initial conjunct extraction is more restricted than movement from an initial conjunct—only referential nominals can move. To our knowledge, AE from the non-initial conjunct has not been documented in MC. Our data show that the MC counterpart of (1a)is possible when the fronted phrase is a Demonstrative phrase:

(12) [Na-ping jiu$_i$], [[Zhangsan qu-leshang dian] bingqie [mai-let$_i$]].
that-CL alcohol Z. go-PERF store and buy-PERF
'That bottle of alcohol, Zhangsan went to the store and bought.'

When the fronted phrase is replaced by a wh-phrase, we observe that a bare wh-phrase cannot undergo AE:

(13) *[Shenme$_i$], Zhangsan [[qu-le huazhan] bingqie [mai-le t$_i$]]?
what Z. go-PERF gallery and buy-PERF
'What did Zhangsan go to the gallery and buy?'

As for referential wh-phrases, there is a bit more nuance. Recall that *na*+NP 'which+NP' phrases are referential (and D-linked) but *shenme*+NP 'what+NP' is optionally referential.We observe that *na*+NP is the preferred candidate for AE:

(14) [Na-fu hua$_i$]/ ??[shenme hua$_i$], Zhangsan [[qu-le huazhan] bingqie
which-CL painting what painting Z. go-PERF gallery and
[mai-le t$_i$]]?
buy-PERF
'Which painting /what painting did Zhangsan go to the gallery and buy?'

Finally, when we look at amount wh-phrases, which are inherently non-referential, *ji*+CL+NPis preferred but *duoshao*+CL+NP is dispreferred:

(15) [Ji-fu hua$_i$] / ??[Duoshao-fu hua$_i$], Zhangsan [[qu-le huazhan]
how.many-CL painting how.many-CL painting Z. go-PERF gallery
bingqie [mai-le t$_i$]]?
and buy-PERF
lit.'How many paintings did Zhangsan go to the gallery and buy?'

The AE pattern from the non-initial conjunct in MC challenges the notion that it is referentiality that licenses AE. *na*+CL+NP and *shenme*+NP as both are referent-denoting NPs and should be expected to be of equal grammaticality. Even if we can explain away the difference between them, the difference between the two types of amount wh-phrases cannot be accounted for as they are inherently non-referential. We therefore conclude that the referentiality is not the core property that licenses AE in MC. Rather, referentiality is somethingthat arises from the property that truly licenses AE. This property is best expressed as a type of domain narrowing, which we turn to now.

3 The licensing condition on AE from coordination

3.1 Referential Constraint

It is well known that MC is canonically wh-in-situ and that in order to license wh-fronting, certain discourse properties must be met. Pan (2014) and Cheung (2014) discuss some of the effects of fronted wh-phrases. One is that a fronted wh-phrase has obligatory wide scopeand behaves like a topical existential quantifier:

(16) [Na-ben shu$_i$], mei-ge xuesheng dou mai-le t$_i$?
which-CL book every-CL student all buy-PERF
'Which (unique) book did every student buy?' (∃ > ∀ / *∀ > ∃)

The fronted wh-phrase also expresses a strong existential commitment and does not tolerate existential presupposition failure in the form of a negative answer to a fronted question:

(17) a. Q: [Na-ben shu$_i$]/ [Shenme shu$_i$], ni mai-le t$_i$?
which-CL book what book you buy-CL
'Which book/what book did you buy?'
b. #A: Wo mei mai renhe shu.
I NEG buy any book
'I didn't buy any book'

Pan (2014) further notes that the difference between a complex *na*+CL+NP and a bare wh-phrase is that only *na*+CL+NP invokes a contextually salient set which the wh-phrase is anaphoric to (D-linking in terms of Pesetsky (1987)), but bare wh-phrases do not. Ren and Yan (2024) show that a bare wh-phrase is not felicitous within a D-linked environment (19) but *na*+CL+NP requires it (18), while *shenme*+NP is felicitous in both D-linked and non-D-linked environments:

(18) *Context:* Zhangsan told Lisi that he went to the bookshop downtown yesterday. Lisi asked him the following question:
Q: Ni mai-le [shenme] / [shenme shu]/ #[na-ben shu]?
you buy-PERF what what book which-CL book
'What / what book / #which book did you buy?'

(19) *Context:* Zhangsan told Lisi that he went to the bookshop downtown yesterday and bought a book. Lisi asked him the following question:

Q: Ni mai-le #[shenme] / [shenme shu] / [na-ben shu]?
you buy-PERF what what book which-CL book
'#What / what book / which book did you buy?'

As a first attempt, we call this constraint on wh-fronting the Referential Constraint, whichonly licenses the extraction of wh-phrases that are amenable to a D-linked interpretation.This is sufficient to explain why bare wh-phrase cannot be extracted from either conjunct in (8) and (13) as it is inherently non-D-linked.

(20) Referentiality Constraint (first attempt)
Only D-linked wh-phrases can be fronted.

As mentioned previously, however, referentiality is neither sufficient not necessary. This can be seen with the fronting of amount wh-phrases. According to Yang et al. (2021), amount wh-phrases give rise to a quantity reading but not a referential one:

(21) Q: Ni mai-le [duoshao-ben shu_i] / [ji-ben shu_i]?
you buy-PERF how.many-CL book how.many-CL book
'How many books did you buy?'
A1:*I bought Jane Eyre, Sherlock Holmes, and Core Syntax. *Referential reading*
A2: Three books. *Quantity reading*

Crucially, amount wh-phrases can be fronted and when they are, they also express strong existential commitment, disallowing a zero or negative answer:

(22) Q: [Duoshao-ben shu_i]/ [ji-ben shu_i], ni mai-le t_i?
how.many-CL book how.many-CL book you buy-PERF
'How many books did you buy?'
A: #Wo mei mai renhe shu.
I NEG buy any book
'#I didn't buy any book.'

Another important point is that in-situ amount wh-phrases are compatible with both D-linked/non-linked contexts, which suggests that the Refentiality Constraint, in its current form, is not relevant here:

(23) *Context*: Zhangsan told Lisi that he went to the bookshop downtown yesterday. Lisi asked him the following question:

Q: Ni mai-le [duoshao-ben shu]/ [ji-ben shu]?
you buy-PERF how.many-CL book how.many-cl book
'How many books did you buy?'

(24) *Context*: Zhangsan told Lisi that he went to the bookshop downtown yesterday and bought some books. Lisi asked him the following question:

Q: Ni mai-le [duoshao-ben shu] / [ji-ben shu]?
you buy-PERF how.many-CL book how.many-CL book
'How many books did you buy?'

The pattern of amount wh-phrases strongly indicates that they can be D-linked even though they are not referent-denoting. This suggests that the way to interpret referentiality in thiscontext is not in to be understood in the standard sense of making reference to entitiesor individuals in the universe of discourse. Rather, referentiality here involves picking out members of a contextually salient set and this set may include individuals but in the caseof quantity expressions, they do not. To reconcile these two types, we assume that numbers and quantities in MC can be treated as abstract entities (Qi & He, 2019; He & Zhang, 2021) that are organised in a (partially ordered) set. It is this set that enables a type of "pseudoreferentiality"—a quantity expression can pick out a member or members of this set and it is this anaphoric relation that satisfies the Referential Constraint. In essence, this is the interpretive contribution that fronted quantity phrases make.

(25) Referentiality Constraint (final version)
Only referential or pseudoreferential wh-phrases can be fronted.

Recall that the initial conjunct in English, as well as in MC, is not an island but movementout of the initial conjunct does require discourse conditions to be met. This condition is basically the Referential Constraint. With it, the AE pattern from the initial conjunct can be fully accounted for: all the wh-phrases mentioned above satisfied the referential constraintexcept the bare wh-phrase, which is inherently neither referential nor pseudoreferential.[1] As mentioned previously, AE from non-initial conjuncts, however, is movement out of a weak island, and the Referential Constraint on its own is not sufficient to license extraction andwe require an extra constraint. We turn to this now.

3.2 Specificity Constraint

AE from a non-initial conjunct is complex, leading to a further asymmetry between *na*+CL+NP and *shenme*+NP, and between *duoshao*+CL+NP and *ji*+CL+NP. It must be said here that the judgements are nuanced and there is considerable speaker variation but the based on the informants (from both the North and South of China) we consulted, the patterns we show here are generally robust what varies is the perceived strength of the marginality/infelicity of the dispreferred examples. Nevertheless, in order to explain the general observed pattern, we argue that their differences lay in the subtle referential properties that each wh-phrase encodes. The discussion in the subsection aims to address the data non-initial conjunct AE in section 2.2, a subset of which is repeated below:

(26) [Na-fu hua$_i$] / ??[shenme hua$_i$], Zhangsan [[qu-le huazhan] bingqie
which-CL painting what painting Z. go- PERF gallery and
mai-le t$_i$]]?
buy-PERF
`Which painting / what painting did Zhangsan go to the gallery and buy?'

(27) [Ji-fu hua$_i$] / ??[duoshao-fu hua$_i$], Zhangsan [[qu-le huazhang]
How.many-CL painting how.many-CL painting Z. go-PERF gallery
bingqie mai-le t$_i$]]?
and buy-PERF
`Which painting / what painting did Zhangsan go to the gallery and buy?'

We ultimately argue that the contrast arises because of the subtle differences in referentiality between *na* 'which' vs *shenme* 'what', and *ji* vs *duoshao* 'how many' wh-phrases. Because the data is complex and in order to maximise clarity, we focus on the referential properties of the wh-phrases by presenting them in simple wh-questions. It should, however, be understood that the Specificy Constraint that we articulate here is the licensing condition for non-initial conjunct extraction.

We start with the observation that show referentiality alone is insufficient. Given a context that requires a D-linked interpretation, only *na*+CL+NP is felicitous, while *shenme*+NP is infelicitous:

[1] It is generally accepted that bare nouns in Chinese are mass-denoting and must be individuated through classifiers. This explains why bare wh-words can be used in a wh-in-situ question but not wh-fronted ones. Wh-in-situ questions permit both individual and kind answers. Fronted wh-questions, however, require the fronted wh-phrase itself to be (pseudo)referential, and permit only referential answers, which is why bare wh-phrases cannot be fronted.

(28) *Context:* Zhangsan told Lisi that he went to the bookshop yesterday, meaning tobuy all the books in the *A Song of Ice and Fire* collection. However, the books were more expensive than expected and he ended up buying only one of them. Lisi asksthe following question:

Q1: [Na-ben shu$_i$], ni mai-le t$_i$?
which-CL book you buy- PERF
'Which book did you buy?'
Q2: [Shenme shu$_i$], ni mai-le t$_i$?
what book you buy-PERF
'What book did you buy?'

'Which'-type wh-phrases, e.g. *na*+CL+NP are inherently D-linked, making reference to a while the domain-restricted set that is derived contextually. (28) provides a context which invokes a restrictive set of books from the collection (five books currently). This evokes a sharp contrast with (19) above with *shenme shu* 'what book' above that invokes a set of any book(s) in the bookshop, i.e. there is an explicit set restriction on (28) but not on (19).To put this more precisely, the cardinality of the set of answers to a 'which NP' question is smaller than or equal to the cardinality of the set of answers of a 'what NP' question. The answer to 'which NP' question is also strictly referential in MC, and must be a specificindividual from a set that is understood by speaker and hearer.

If we extend this notion to cases of pseudoreferentiality involving amount wh-phrases, we see a similar pattern. Interestingly, because the "reference" here involves numbers (quantity) not individuals, the restriction on available answers involves numbers. Specifically, the answerto a fronted *duoshao* question has no upper bound but as a lower bound of one. This encapsulates the strong existential commitment as mentioned above:

(29) Q: [Duoshao-ben shu$_i$], ni mai-le t$_i$?
how.many-CL book you buy-PERF
'How many books did you buy?'
A: *Zero books / one book / thirteen books/three hundred books

More interestingly, the answer to a fronted *ji* question, has both an upper and lower bound, and is felicitous only when the answer is a number that denotes a relatively small amount (approximately n < 10+)[2]:

(30) Q: [Ji-ben shu$_i$], ni mai-le t?
How.many- CL book you buy- PERF
'How many books did you buy?'
A: One book / ?thirteen books / #three-hundred books

For speakers that have this contrast, the difference is further illustrated in (31) and (32). The two contexts are in minimal contrast in terms of the number of books. While (31) induces there

[2] This is another case where we find speaker variation. Some speakers strictly interpret *ji* as involvingsmall numbers, while for others, there is less of a difference between *ji* and *duoshao.*

is a small number of books that Zhangsan bought, both amount-wh-phrasesare felicitous. When (32) induces there is a large number of books that Zhangsan bought, only *duoshao*+CL+NP is felicitous but not *Ji*+CL+NP.

(31) *Context:* Lisi sees Zhangsan step out of a book store with some books in his hands. Lisi asks him the following:
Q: [Duoshao-ben shu$_i$], ni mai-le t$_i$?
how.many-CL book you buy-PERF
'How many books did you buy?'
Q: [Ji-ben shu$_i$], ni mai-le t$_i$?
how.many-CL book you buy-PERF
'How many books did you buy?'

(32) *Context:* Lisi sees Zhangsan step out of a bookstore with a large box of books. Lisi asks him the following:
Q: [Duoshao-ben shui], ni mai-le ti?
how.many- CL book you buy- PERF
'How many books did you buy?'
Q: #[Ji-ben shui], ni mai-le ti?
how.many- CL book you buy- PERF
'How many books did you buy?'

Given this distribution, *ji*+CL+NP requires a restrictive set of numbers which it can be anaphoric to, where there is no such set restriction for *duoshao*+CL+NP. In a sense, this is parallel to the situation we observed above with D-linking, but applied to sets of numbers or quantities. We do not have space to explore the detailed differences between the two typesof amount phrases but we posit that the difference between these two amount wh-phrases originates from the structural difference between *ji* and *duoshao*.

Without going into too much detail, we can observe some basic differences. Under ellipsis, *ji* is similar to a simplex cardinal that requires the presence of a classifier, while *duoshao* behaves like a complex cardinal which allows the deletion of the classifier:

(33) a. Zhangsan du-le si-ben shu, Lisi du-le **san** / **ji** *(ben)]?
Z. read-PERF four-CL book L. read-PERF three how.many CL
b. Zhangsan du-le si-ben shu, Lisi du-le **san-bai** / **duoshao** (ben)?
Z. read-PERF four-CL book L. read-PERF three-hundred how.many CL

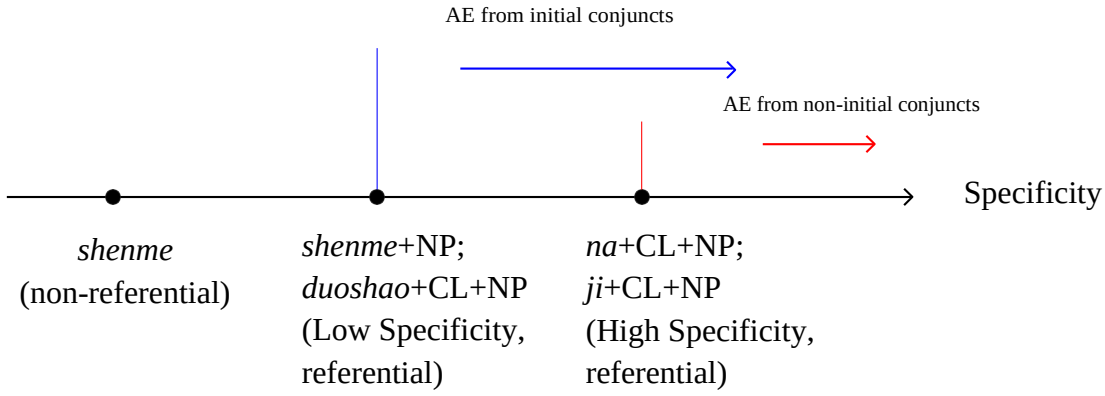
Essentially, *ji* parallels with *na* 'which' in the sense that there is a small set of numbers and the answer has to pick out a specific number from this set; and so while *duoshao* can be translated as 'how many', *ji* has a literal meaning closer to 'which number'. In both cases of*na* 'which' vs *ji*, the relevant property is what we call the Specificity Constraint:

(34) Specificity Constraint
a. Only high specific wh-phrases can be moved from non-initial conjuncts.

b. Highly specific wh-phrases invoke answer sets that are a subset of the answers sets of other wh-phrases.

To summarise, *na*+CL+NP 'which NP' and *ji*+CL+NP 'which number of NP' wh-phrases are highly specific, whereas *shenme*+NP 'what NP' and *duoshao*+CL+NP 'how many NP' are oflow specificity. AE from coordinate structures is subject to two constraints: the Referential Constraint licenses extraction from any conjunct (and possibly wh-fronting in general) in requiring the wh-phrase to be (psuedo)referential. This explains why bare wh-phrases cannotfront. Extraction from the non-initial conjunct additionaly requires the Specificity Constraint to be met. In this case, the extracted wh-phrase must be highly specific. This idea is expressedin the diagram in (35) below:

(35)



4. Conjunct Island Strength: A Comparison

Based on the above data set, we observe that AE from coordination in MC is slightly more restrictive than that of English: While wh-fronting from the initial conjunct is free in English, that movement is subject to the referential constraint in MC; when wh-fronting from the non-initial conjunct is subject to the referential NP constraint in English, that movement is further restricted by the specificity constraint in MC. The following table summarises the constraints on AE from coordination in MC and English:

AE from coordination	English	MC
initial conjunct	Free	referential constraint
non-initial conjunct	referential NP constraint	referential constraint specificity constraint

Table 1: The constraint on AE from coordination

We argue that their difference lies in the cost on wh-fronting in both languages. In English, wh-movement comes for free as it is a wh-fronting language. In MC, wh-movement is costly as it is a wh-in-situ language and wh-fronting is driven by the discourse propertyof the wh-phrases. This is why even though there is no barrier to wh-fronting (i.e., initial conjunct), the two languages show different patterns on extraction.

When wh-fronting faces a weak island, which is argued to be discourse-sensitive (Pesetsky, 1987; Szabolcsi & Zwarts, 1993), an extra effort needs to be made for wh-fronting. This is whyonly referential wh-phrases can be extracted from the non-initial conjunct in English. The situation is

different in MC given that the wh-phrases already bear some discourse properties given the prerequisite on fronting. We have two options here: either the non-initial conjunct is a stronger weak island than that of English, which requires additional effort other than the one in English for the wh-phrase to be extracted, or it has the same island strength asthe English has. The AE pattern from the non-initial conjunct in MC indicates it is the former case. In a nutshell, wh-fronting in MC is more costly than that in English in both weak island and non-weak island contexts. Assuming the set of constraints on wh-phrases is the cost of wh-fronting, we rank the island strength of each conjunct in both languages as follows:

(36) Conjunct Island Strength: (> stands for 'stronger')
non-initial conjunct in MC > non-initial conjunct in English = initial conjunct in MC > initial conjunct in English

5 Conclusion

This article has presented novel data on asymmetric extraction from coordination in Man- darin Chinese and makes a comparison with English in terms of the extraction pattern. Asymmetric extraction from coordination is possible in Mandarin Chinese under the Type A scenario but the extraction pattern is different from that of English: Bare wh-phrase cannot be extracted from either conjunct and there is an asymmetry among referential-denoting wh- phrases and amount-denoting wh-phrases in terms of extraction from the non-initial conjunct.We argue that Mandarin Chinese has a more restrictive constraint on asymmetric extraction from coordination than English: a referential constraint that requires the wh-phrase to be D-linked and a Specificity constraint that requires the D-linking set to be restrictive. We ascribe the different behaviour of the wh-phrases in both languages to the island strengthof the conjuncts. Being a weak island, both conjuncts in Mandarin Chinese is a stronger barrier than those in English. As such, wh-fronting from conjuncts in Mandarin Chinese is more effortful than the extraction in English.

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Toward Elaboration of Box System: ATB and Improper Movement*

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1. Introduction

Since Ross (1967), the Across-The-Board (ATB) phenomenon has been extensively discussed in the literature. One of the interesting properties of ATB *wh*-questions is that there is an argument/adjunct asymmetry with respect to the availability of identity and non-identity readings. The purpose of this paper is to point out novel data on Japanese ATB *wh*-questions (Section 2) and explain the availability of identity/non-identity readings of ATB *wh*-questions by elaborating Chomsky's (2023) *Box System*. We propose that when a θ-marked *wh*-element undergoes Internal Merge (IM) to a phase edge, the θ-marked *wh*-element is boxed obligatorily if it is Case-marked, whereas it is boxed optionally if it is not Case-marked (Section 3), and argue that the possible readings of ATB *wh*-questions follow as a natural consequence of our elaborated Box System, along with an independently motivated ellipsis operation (Section 4). We also show that our proposal provides a new analysis of improper movement (Section 5).

2. ATB *Wh*-Questions

2.1. An Argument/Adjunct Asymmetry

It has been pointed out by, among others, Munn (1992, 1999) that there is an argument/adjunct asymmetry with the interpretations of English ATB *wh*-questions as shown in (1) and (2):

(1) Which boy did John meet ***e*** and Mary like ***e***?
   a. John met Bill and Mary liked Bill. (identity)
   b. #John met Bill and Mary liked Frank. (non-identity)

(2) Where did Mary vacation ***e*** and Bill decide to live ***e***? (Munn 1999: 421)
   a. Mary vacationed in Paris and Bill (also) decided to live in Paris. (identity)
   b. Mary vacationed in Paris and Bill decided to live in Toronto. (non-identity)

The *wh*-argument *which boy* in (1) allows only an identity reading, which is indicated by the fact that (1a) is a felicitous answer to (1) whereas (1b) is not.[1] The *wh*-adjunct *where* in (2), on the other hand, allows not only an identity reading like (2a) but also a non-identity reading like (2b) (see Munn 1999: 421 for other relevant examples).

The argument/adjunct asymmetry with the availability of identity/non-identity readings is also

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[1] There are speakers who find a non-identity reading possible in *wh*-argument ATB questions such as (1) and (3). In this paper, following Chomsky (2019: 1:00:45-), we will assume in the *wh*-argument ATB question that the identity reading, not the non-identity reading, is the interpretation derived from ATB movement, and will not discuss other factors other than the ATB interpretation.

observed in Japanese, as shown by (3) and (4):

(3) *Dono hon-o* John-wa tosyokan-kara ***e*** kari, Bill-wa syoten-de ***e*** katta no?
which book-acc John-top library-from borrow, Bill-top bookstore-at bought Q
'Which book did John borrow from the library and Bill buy at the bookstore?'
a. John-wa tosyokan-kara *1984 -o* kari, Bill-mo syoten-de *1984-o* katta.
John-top library-from 1984-acc borrow, Bill-also bookstore-at 1984-acc bought
'John borrowed *1984* from the library and Bill also bought it (= *1984*) at the bookstore.'
b. #John-wa tosyokan-kara *1984-o* kari, Bill-wa syoten-de *Emma-o* katta.
John-top library-from 1984-acc borrow, Bill-top bookstore-at Emma-acc bought
'John borrowed *1984* at the library and Bill bought *Emma* at the bookstore.'

(4) Dono mati-de Bill-ga ***e*** kyuuka-o tori, Mary-ga taisyoku-go ***e*** sugosita no?
which city-at Bill-nom vacation-acc take, Mary-nom retirement-after spent Q
'In which city did Bill vacation and Mary spend after retirement?'
a. Bill-ga Pari-de kyuuka-o tori, Mary-mo taisyoku-go Pari-de sugosita.
Bill-nom Paris-in vacation-acc take, Mary-also retirement-after Paris-in spent
'Bill vacationed in Paris and Mary also spent in Paris after retirement.'
b. Bill-ga Pari-de kyuuka-o tori, Mary-ga taisyoku-go Hong Kong-de sugosita.
Bill-nom Paris-in vacation-acc take, Mary-nom retirement-after Hong Kong-in spent
'Bill vacationed in Paris and Mary spent in Hong Kong after retirement.'

(3) is an ATB *wh*-question of the *wh*-argument *dono hon-o* 'which book,' and (4) is an ATB *wh*-question of the *wh*-adjunct *dono mati-de* 'in which city.' In the *wh*-argument ATB question (3), only an identity reading like (3a) is possible whereas a non-identity reading like (3b) is not. In the *wh*-adjunct ATB question (4), on the other hand, not only an identity reading like (4a) but also a non-identity reading like (4b) is possible. These facts indicate that the argument/adjunct asymmetry with the ATB interpretation is also observed in Japanese.

2.2. Novel ATB Data from Japanese

One might say that the key factor that determines the possible readings of an ATB *wh*-question is whether a *wh*-element is θ-marked or not, since the *wh*-elements that allow only the identity readings are θ-marked, while the *wh*-elements that allow both the identity and non-identity readings are non-θ-marked. If this generalization is on the right track, a non-identity reading should never be possible in the ATB *wh*-question of a θ-marked *wh*-element. Examples like (5) illustrate, however, that this generalization is not on the right track:[2]

(5) (kinoo-no kenka-nituite) Nan-to John-wa ***e*** sinziteite, Mary-wa ***e*** omotteiru no
(yesterday-gen fight-about) what-that John-top believe, Mary-top thinks Q
'(About a fight that happened yesterday) What is it that John believes and Mary thinks?
a. John-wa [Bill-ga tataita to] sinziteite, Mary-mo [Bill-ga tataita to] omotteiru.
John-top Bill-nom hit that believe, Mary-also Bill-nom hit that thinks
'John believes that Bill hit and Mary also thinks that Bill hit.'
b. John-wa [Bill-ga tataita to] sinziteite, Mary-wa [Tim-ga tataita to] omotteiru.
John-top Bill-nom hit that believe, Mary-top Tim-nom hit that thinks

[2] It should be noticed here that *to* 'that'-clause and *nan-to* 'what-that' can never be Case-marked like **nan-to-o*.

'John believes that Bill hit and Mary thinks that Tim hit.'

(5) is an ATB *wh*-question of the θ-marked clausal *wh*-argument *nan-to* 'what-that.' Nevertheless, not only the identity reading (5a) but also the non-identity reading (5b) is allowed. Hence, we cannot attribute the key factor determining the possible readings of ATB *wh*-questions only to θ-marking.

Then one might claim that the key factor that determines the possible readings is whether *wh*-elements are Case-marked or not, since the *wh*-elements that allow only the identity readings are Case-marked, while the *wh*-elements that allow both the identity and non-identity readings are non-Case-marked. If this generalization is on the right track, a non-identity reading should never be possible in the ATB *wh*-question of a Case-marked *wh*-element. Examples like (6) illustrate, however, that this generalization is not on the right track, either:[3]

(6) Nani-o John-wa ***e*** sawagi, Mary-wa ***e*** yorokondeiru no?
what-acc John-top fuss Mary-top be.pleased Q
'Why is John fussing and Mary happy?'
a. John-wa [inu-o kau node] sawagi, Mary-mo [inu-o kau node]
John-top dog-acc have because fuss, Mary-also dog-acc have because
yorokondeiru.
be.pleased
'John is fussing because he has a dog and Mary is also happy because she has a dog.'
b. John-wa [inu-o kau node] sawagi, Mary-wa [dekakeru node]
John-top dog-acc have because fuss, Mary-top go.out because
yorokondeiru.
be.pleased
'John is fussing because he has a dog and Mary is also happy because she goes out.'

(6) is an ATB *wh*-question of the accusative Case-marked *wh*-adjunct *nani-o* 'what-acc' meaning *why* (Kurafuji 1996, 1997). Nevertheless, not only the identity reading (6a) but also the non-identity reading (6b) is allowed. Hence, we cannot attribute the key factor determining the possible readings of ATB *wh*-questions solely to Case-marking, either.

Table 1 summarizes our observation:

Table 1

Examples	*wh*-types	θ	Case	Identity	Non-identity
English (1)	*which boy*	+	+	✓	#
English (2)	*where*	-	-	✓	✓
Japanese (3)	*dono hon-o* 'which book'	+	+	✓	#
Japanese (4)	*dono machi de* 'in which city'	-	-	✓	✓
Japanese (5)	*nan-to* 'what-that'	+	-	✓	✓
Japanese (6)	*nani-o* 'what' meaning *why*	-	+	✓	✓

[3] Kurafuji (1996, 1997) argues that accusative *wh*-adjuncts have a structural Case. Assuming this, one might wonder how *-o* (accusative Case) is assigned by the intransitive verb *sawagu* 'make a noise' to *nani* 'what' meaning *why*. However, Nakao and Obata (2009) argue that accusative *wh*-adjuncts have an inherent Case, not a structural Case. It should be noted that our analysis is valid irrespectively of whether the accusative *wh*-adjunct is structurally or inherently Case marked.

These facts suggest that both θ-marking and Case-marking, rather than either θ-marking or Case-marking alone, play a key role in determining the possible readings of ATB *wh*-questions. We therefore propose the following descriptive generalization based on the facts summarized in Table 1:

(7) An ATB *wh*-question only allows an identity reading when the *wh*-element is both θ- and Case-marked.

Before providing an explanation for (7), the next section first introduces Chomsky's (2023) Box System and then elaborates the system to deal with non-θ-marked elements.

3. Box System

3.1. Chomsky's (2023) Box System

Assuming that I-language is a system of thought, Chomsky (2021, 2023) argues that there are two categories of thought relevant to language structure and use, *i.e.*, the θ-based propositional system and the discourse/information-related clausal system. This property is called Duality of Semantics. Given that the primary syntactic structure-building operation is Merge, Chomsky argues that External Merge (EM) provides θ-structures (the propositional system) and Internal Merge (IM) is associated with discourse/information-related functions (the clausal system). Putting aside phase-internal raising like raising to the Spec of I(nfl) and object raising, EM and IM correspond with A- and A'-systems respectively. Chomsky argues that there is evidence such as a ban on improper movement that the A- and A'-systems must be segregated not to interact with each other.

To implement segregation of A- and A'-systems, Chomsky (2023: 8) proposes that "IM creates an element that has no further interactions with the EM-generated structures that constitute the propositional domain or with operations that apply there." According to Chomsky, such an element is created by applying IM to a phase edge and putting it in a "box." The boxed element is separated from the ongoing derivation, immune to θ-marking and inaccessible to Merge, although its terms are accessible to other operations such as Agree, Labeling, and Anaphora at later phases. In the box system, therefore, movement of a *wh*-element in the narrow syntax virtually terminates, once it is IM-ed to the "lowest phase" edge. This makes a significant departure from the traditional approach to overt *wh*-movement phenomena in languages like English. Traditionally it has been assumed that *wh*-movement of a *wh*-element takes place phase-by-phase to the SPEC of C with a Q-feature (C_Q). But in the Box System, such a successive-cyclic *wh*-movement no longer exists. This, in effect, means that in a *wh*-question, IM never fills SPEC-CP, an A'-position, with a Syntactic Object (SO). In the Box System, instructions for *wh*-scope interpretation at the Conceptual-Intentional (CI) interface and *wh*-spell-out under Externalization at the Sensory-Motor (SM) interface are provided by an operation called "access." In a *wh*-question, C_Q accesses a boxed *wh*-element for instructions, and for the interfaces to interpret the *wh*-question appropriately, C_Q has to contain semantic features for *wh*-scope interpretation, relevant phonological features for spell-out, and so on.

With these in mind, let us consider how a simple *wh*-question is derived in the Box System, taking *what did you buy?* as an example. First, EM merges *buy* and *what*, deriving the VP structure $\{_{VP}$ *buy, what}* (where a label is assigned to the structure just for exposition). By the VP structure, a θ-role is assigned to *what*. Then, EM merges the VP structure and the phase head *v**, deriving the *v**P structure $\{_{v*P}$ *v**, $\{_{VP}$ *buy, what}}* (where we ignore object raising to SPEC-VP for <φ,φ> labeling assumed in Chomsky 2013, 2015). By the *v**P structure, a θ-role is assigned to a subject (Chomsky 2023: 9) (in what follows, we ignore the derivation of the

subject, for ease of exposition). When IM merges *what* to the *v**P phase edge, *what* is put in a box, being separated from the ongoing derivation, as represented in (8):

(8) {$_{v^*P}$ what, {$_{v^*P}$ *v**, {$_{VP}$ buy, what}}}

In (8), *what* is IM-ed to the *v**P phase edge and put in a box, not to interact with the EM-structure. The boxed *what* does not undergo movement/IM any further. As the derivation proceeds, the C_Q is introduced:

(9) {$_{CP}$ C_Q … {$_{v^*P}$ what, {$_{v^*P}$ *v**, {$_{VP}$ buy, what}}}}

Here C_Q accesses the boxed *what* for instructions and get features relevant for interpretations at the interfaces (hereafter, access is indicated by a dotted line). In (10) below, the C_Q with relevant feature instructions of *what* is indicated by *"what$_3$"*, where the subscript numerals are assigned just for expository purposes:

(10) {$_{CP}$ C_Q-"what$_3$" … {$_{v^*P}$ what$_2$, {$_{v^*P}$ *v**, {$_{VP}$ buy, what$_1$}}}}

With the C_Q getting the feature instructions of *"what$_3$*" through access to the boxed *what*, *what* can take scope in the matrix SPEC-CP. It is important to remember that *what* can never appear in the matrix SPEC-CP in such a form of SO as IM generates. Since the boxed element is inaccessible to Merge, what exists around the C_Q is not the SO *what* but only the relevant features of *what*.

From (10), to derive the sentence, the phonological features of *"what$_3$"* have to be spelled-out at SPEC-CP, while the copies of *what*, *i.e.*, *what*$_1$ at the object position of *buy* and *what*$_2$ at the phase edge position of *v**, must be deleted. To make it possible, Chomsky (2021, 2023) argues that "structurally identical" elements that are in a "c-command configuration" ("cc-configuration") are interpreted as identical copies at the CI interface, while the lower copies of identical elements are deleted at the SM interface by the universal economy-based rule under Externalization. Thus in (10), *what*$_{3,2,1}$ are interpreted as identical copies as the CI interface, and the lower copies *what*$_{2\sim1}$ are deleted at the SM interface, since *what*$_{3\sim1}$ are in a cc-configuration, as shown in (11) (henceforth, spell-out is indicated by boldface and deletion by strikethrough):

(11) {$_{CP}$ C_Q-"**what$_3$**" … {$_{v^*P}$ ~~what$_2$~~, {$_{v^*P}$ *v**, {$_{VP}$ buy, ~~what$_1$~~}}}}

In this way, the Box System derives a *wh*-question without recourse to successive cyclic *wh*-movement/IM.

In what follows, we first point out that boxing is closely related to θ-marking, or more generally, Θ-Theory that an argument cannot receive more than one θ-role. We then elaborate the Box System by investigating the behavior of non-θ-marked *wh*-elements, which Chomsky does not deal with.

3.2. An Elaboration

In the Box System, Chomsky (2023) proposes that Merge should follow the guiding principles

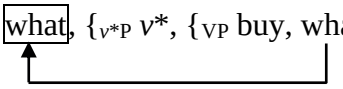
that he calls "Principle [S]" and "Principle [T]":

(12) Principle [S]
"The computational structure of language should adhere as closely as possible to SMT."

(13) Principle [T]
"All relations and structure-building operations (SBO) are thought-related, with semantic properties interpreted at CI."

Principle [S] requires among other things that Merge should be binary, and Principle [T] that Merge should be θ-related. Regarding Principle [T], Chomsky (personal communication) says: "The phrase 'semantic property' can be understood to cover both receiving and assigning theta role, and also the secondary semantic properties of surface subject (and its VP counterpart)." Under Principles [S] and [T], therefore, EM selects X and Y from the workspace (WS) and/or the lexicon (LEX), and forms a θ-structure {X, Y}, where one member assigns a θ-role and the other member receives that θ-role. IM selects one member, say X, in WS and a term Y of X, and then forms a binary structure {X, Y}, where the term Y must be θ-marked. In other words, Merge is θ-related in that EM, whose range is θ-related, yields a θ-structure and IM, whose application domain is θ-related, applies to the θ-marked member of a θ-structure.

With these in mind, let us return to the derivation of (8), where boxing by IM takes place. The relevant derivation is repeated in (14):

(14) $\{_{v^*P}$  $\}\}$

Here, *what*, a θ-marked term of *v**P, is IM-ed to SPEC-*v**P and put in a box. Under a strict interpretation of Principle [T], *what* must be θ-marked before it is selected by IM. As noted above, the object θ-role is assigned within the VP structure, *what* being θ-marked by the verb *buy*, "eligible" for IM. What is crucial to recall here is that the *v**P phase edge also counts as a θ-position for the external argument (Chomsky 2023: 9). If *what* were not boxed in the *v**P phase edge, it would be susceptible to θ-marking, unless barred by stipulation. The resultant structure would violate Θ-Theory, since it would receive two θ-roles by the VP structure and the *v**P structure. Hence, for the θ-marked *what* not to violate Θ-Theory, it must be immune to θ-marking by being boxed by IM in the *v**P phase edge.

This indicates that θ-marking of a *wh*-element is closely related to the necessity of its boxing. In Chomsky's Box System analysis of *wh*-movement, since object argument *wh*-elements are θ-marked within the VP structure, they are obligatorily boxed in the *v**P phase edge, a θ-position, not to be assigned more than one θ-roles. We call such *wh*-elements [+θ] *wh*-elements. This consideration naturally leads us to expect that boxing is unnecessary for adjunct *wh*-elements, since they are not θ-marked. We call such *wh*-elements [-θ] *wh*-elements. From this consideration, we argue that the Box System has the following implication for boxing of a *wh*-element:

(15) When a *wh*-element is IM-ed to a phase edge, the *wh*-element is boxed if it is a [+θ] *wh*-element, whereas it is not boxed if it is a [-θ] *wh*-element.

Note that a [-θ] *wh*-element is not related to Θ-Theory and therefore not related to boxing

either.[4]

Even if Principle [T] is allowed to include [-θ] *wh*-elements, the above implication raises a question how [-θ] *wh*-elements are licensed. It is relevant to recall here that a [+θ] *wh*-element is licensed through access from C_Q to a boxed *wh*-element. If boxing is a necessary condition for access, this means that we cannot appeal to access to license unboxed [-θ] *wh*-elements. Therefore, we argue that an unboxed [-θ] *wh*-element is licensed by moving it to SPEC of C_Q by IM, as traditionally assumed in overt *wh*-movement:[5]

(16) A [+θ] *wh*-element is licensed through access from C_Q whereas a [-θ] *wh*-element is licensed through IM to the Spec of C_Q.

It follows that while a *wh*[+θ]-element ceases to be accessible to Merge once it is IM-ed to a phase edge, a *wh*[-θ]-element continues to be accessible to Merge.

Furthermore, although Chomsky's (2023) Box System assumes that only θ-marking plays an important role in boxing of an element, we propose that not only θ-marking but also Case-marking should contribute to boxing of an element:

(17) When a [+θ] *wh*-element is IM-ed to a phase edge, the [+θ] *wh*-element is boxed obligatorily if it is Case-marked, whereas it is boxed optionally if it is not Case-marked.

It should be noted that this proposal leaves intact Chomsky's box analysis of *wh*-movement, as the only *wh*-element he deals with is a Case-marked [+θ] *wh*-element. This proposal also leaves intact non-boxing of a [-θ] *wh*-element, since a [-θ] *wh*-element is not boxed irrespectively of whether it is Case-marked or not. There remains an important question of why [±Case] affects boxing of an element, to which we return below. In the next subsection, with this elaborated theory of the Box System, we provide an explanation for the generalization (7).

4. An Analysis of ATB *Wh*-Questions

4.1. An Analysis of the Argument/Adjunct Asymmetry

We assume with Chomsky (2023) that what is combined is determined by the freely available operation *FormSet* (FS), which can form order-free multi-membered sets, though we do not commit ourselves to any specific formalization here.[6] Given FS, an ATB *wh*-question have two possible derivations, depending on what categories are coordinated. Below we present an analysis under two derivations involving *v**P-coordination and CP-coordination, but our analysis holds under two derivations involving TP-coordination and CP-coordination too.

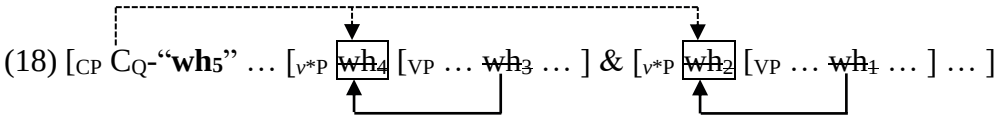
Let us first consider how our proposal can account for the interpretations of the ATB *wh*-questions in (1, 3) that only allow the identity readings. According to (17), Case-marked [+θ]

[4] Under the strict interpretation of Principle [T], one may wonder how [-θ] *wh*-elements like *wh*-adjuncts are accessible to Merge. On this matter, Chomsky (personal communication) suggests: "Principle T is loose enough so that adjuncts could be included: taking modification to be within the broader category of extended theta roles, including predication." Following Chomsky's suggestion, we regard [-θ] *wh*-elements as elements eligible for Merge. Although he leaves open how boxing is related to [-θ] *wh*-elements, this paper argues that [-θ] *wh*-elements are eligible for Merge but not boxed, as stated in (15).

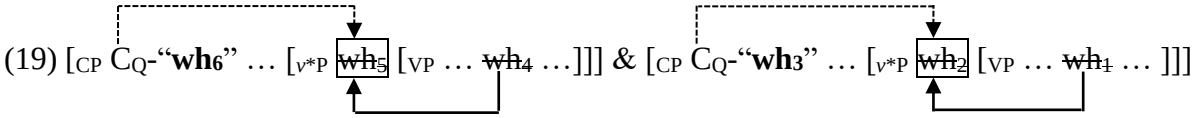
[5] This approach to licensing of a *wh*-element is reminiscent of unselective binding of Tsai (1994). According to Tsai's unselective binding, *in-situ wh*-arguments can be licensed by unselective binding without moving to SPEC-CP, while *in-situ wh*-adjuncts do not have this option, and must move to SPEC-CP to be licensed. Note that the applicability of unselective binding relies on the notion of *nominality, i.e.*, Case.

[6] For relevant discussion on FS, see Chomsky (2021, 2023) and Goto and Ishii (2022).

wh-elements, such as *which book* in (1) and *dono hon-o* 'which book-acc' in (3), are obligatorily boxed. The derivation under *v**P-coordination is schematically represented as follows:



In (18), wh_1 and wh_3 are introduced by EM in each conjunct and assigned a θ-role within each VP structure. Since they are Case-marked [+θ] *wh*-elements, they are obligatorily boxed by IM to SPEC-*v**P of each conjunct, as indicated by wh_2 and wh_4. In *v**P-coordination, C_Q is introduced at the matrix position and accesses the boxed wh_2 or wh_4 for feature instructions. The C_Q with relevant feature instructions is indicated by "wh_5." Given feature instructions of "wh_5," $wh_{5,4,3}$ and $wh_{5,2,1}$ are in a cc-configuration. Consequently, $wh_{5,4,3,2,1}$ are all interpreted as identical copies at the CI interface, and the lower copies $wh_{4\sim1}$ are deleted at the SM interface. The identity reading facts of the ATB *wh*-questions in (1, 3) follow from this derivation. Note that from this derivation, there is no way to derive an ATB *wh*-question with a non-identical reading. On the other hand, the derivation under CP-coordination is represented as follows:



For the same reason as (18), wh_1 and wh_4 in (19) are obligatorily put in a box by IM at SPEC-*v**P of each conjunct, as indicated by wh_2 and wh_5. (19) differs from (18) in that CPs are coordinated in (19), and therefore C_Q is introduced at the matrix position in each conjunct. The C_Q in the second conjunct accesses the boxed wh_2, and the C_Q in the first conjunct accesses the boxed wh_5, getting features relevant for interpretations at the interfaces, respectively. The C_Q in the second conjunct with relevant feature instructions is indicated by "wh_3," and the C_Q in the first conjunct with relevant feature instructions is indicated by "wh_6." Given the feature instructions of "wh_6" and "wh_3," $wh_{6,5,4}$ and $wh_{3,2,1}$ are in a cc-configuration. Consequently, $wh_{6,5,4}$ and $wh_{3,2,1}$ are each interpreted as identical copies at the CI interface, and their lower copies $wh_{5\sim4}$ and $wh_{2\sim1}$ are deleted at the SM interface. What is crucial here is that since the chain of $wh_{6,5,4}$, *i.e.*, $<wh_6, wh_5, wh_4>$, and the chain of $wh_{3,2,1}$, *i.e.*, $<wh_3, wh_2, wh_1>$, are not in a cc-configuration, they are not interpreted as identical copies, nor can deletion be applied to "wh_6" or "wh_3." Hence, in this case, "wh_6" and "wh_3" are spelled-out in the matrix SPEC-CP in each conjunct. This derives a non-ATB *wh*-question with a non-identity reading like *which boy did John meet and which boy did Mary like?* Hence, whether it be *v**P-coordination or CP-coordination, there is no way to derive an ATB *wh*-question with a non-identical reading, when the Case-marked [+θ] *wh*-elements are involved.

Let us next consider how we can account for the interpretations of the ATB *wh*-questions in (2, 4, 6) that allow both identity and non-identity readings. According to (17), [-θ] *wh*-elements, such as *where* in (2), *dono machi-de* 'in which city' in (4), and *nani-o* 'what-acc' in (6), are not boxed whether they are Case-marked or not. An ATB *wh*-question of [-θ] *wh*-element has two possible derivations, depending on what categories are coordinated. The derivation under *v**P-coordination is schematically represented as follows:

(20) [$_{CP}$ **wh$_5$** [C_Q [$_{v*P}$ ~~wh$_4$~~ [$_{VP}$ … ~~wh$_3$~~ …]] & [$_{v*P}$ ~~wh$_2$~~ [$_{VP}$ … ~~wh$_1$~~ …]] …]

In (20), although wh_1 and wh_3 are not assigned any θ-role, they are introduced by EM in each conjunct for modification, which is within the broader category of extended theta roles (see personal communication with Chomsky above). Under the standard assumption that *wh*-movement takes place phase-by-phase in conformity with the Phase-Impenetrability Condition (PIC), wh_1 and wh_3 are IM-ed to SPEC-*v**P of each conjunct, as indicated by wh_2 and wh_4. In *v**P-coordination, C_Q is introduced at the matrix position, and its SPEC is filled with the syntactic object (SO) wh_5 through IM of either wh_2 or wh_4. Since $wh_{5,4,3}$ and $wh_{5,2,1}$ are in a cc-configuration, $wh_{5,4,3,2,1}$ are all interpreted as identical copies at the CI interface, and the lower copies $wh_{4\sim1}$ are deleted at the SM interface. The identity reading facts of the ATB *wh*[-θ]-questions like (2, 4, 6) follow from this derivation. Note that from this derivation, there is no way to derive an ATB *wh*-question with a non-identity reading. On the other hand, the derivation of an ATB *wh*-question of [-θ] *wh*-elements under CP-coordination is represented as follows:

(21) [$_{CP}$ **wh$_6$** [C_Q [$_{v*P}$ ~~wh$_5$~~ [$_{VP}$ … ~~wh$_4$~~ …]]] & [$_{CP}$ **wh$_3$** [C_Q [$_{v*P}$ ~~wh$_2$~~ [$_{VP}$ … ~~wh$_1$~~ …]]]

For the same reason as (20), wh_5 and wh_2 in (21) are not put in a box in each conjunct. Just like the difference between (18) and (19) we noted above, (21) differs from (20) in that CPs are coordinated in (21), and therefore, C_Q is introduced at the matrix position in each conjunct. The SPEC of C_Q in the second conjunct is filled with the SO wh_3, and the SPEC of C_Q in the first conjunct is filled with the SO wh_6. Both wh_3 and wh_6 are created by IM. Since $wh_{6,5,4}$ and $wh_{3,2,1}$ are in a cc-configuration, $wh_{6,5,4}$ and $wh_{3,2,1}$ are each interpreted as identical copies at the CI interface, and the lower copies $wh_{5\sim4}$ and $wh_{2\sim1}$ are deleted at the SM interface. What is crucial here is that, as in the case of (19), since the chain of $wh_{6,5,4}$, *i.e.*, <wh_6, wh_5, wh_4>, and the chain of $wh_{3,2,1}$, *i.e.*, <wh_3, wh_2, wh_1>, are not in a cc-configuration, they are not interpreted as identical copies, nor can deletion be applied to wh_6 or wh_3. In this case, too, therefore, wh_6 and wh_3 are spelled-out in the matrix SPEC-CP in each conjunct. This derives non-ATB *wh*-questions with a non-identity reading like *where did Mary vacation and where did Bill decide to live?*

Here, we argue, essentially following Salzmann (2012a, b), that *where* in the second conjunct of *where did Mary vacation and where did Bill decide to live* can undergo *ellipsis* to derive the ATB *wh*-question in (2). Hence, an ATB *wh*-question of [-θ] *wh*-elements with a non-identity reading follows from CP coordination coupled with ellipsis. To make our analysis work, we need to ensure that ellipsis of a *wh*-element can only apply to (21), but, crucially, not to (19). If ellipsis were allowed to apply to (19) as well, an ATB *wh*-question of a Case-marked [+θ] *wh*-element with a non-identical reading would be derived, contrary to fact. However, it is important to notice here that the C_Q areas of the derivations in (19) and (21) are composed differently. While the C_Qs of (19) consist of feature instructions obtained through access ("wh$_6$" and "wh$_3$"), those of (21) consist of the SOs generated by IM (wh_6 and wh_3). This makes a significant difference with respect to the applicability of ellipsis. In the Box System, it is assumed that the lower copies identical with the higher element composed of features can undergo deletion if they are in a cc-configuration (see the discussion around (11)). Although such a cc-configuration condition is not imposed on ellipsis, ellipsis can only apply to identical

SOs generated by Merge. As illustrated by cases of sluicing, gapping, and VP ellipsis in (22a-c), the SOs generated by Merge in the second conjuncts, *i.e.*, *he ordered*, *ordered*, and *like spaghetti*, can be elided, although they are not in a cc-configuration with their identical counterparts marked by italics in the first conjunct:

(22) a. *He ordered* something, but I don't know what ~~he ordered~~. (sluicing)
b. John *ordered* pizza, and Mary ~~ordered~~ spaghetti. (gapping)
c. John may *like spaghetti*, and Mary may ~~like spaghetti~~, too. (VP ellipsis)

This consideration allows us to proceed the derivation (21) further as in (23):

(23) [$_{CP}$ **wh$_6$** [C$_Q$ [$_{v*P}$ ~~wh$_5$~~ [$_{VP}$ … ~~wh$_4$~~ …]]] & [$_{CP}$ ~~**wh$_3$**~~ [C$_Q$ [$_{v*P}$ ~~wh$_2$~~ [$_{VP}$ … ~~wh$_1$~~ …]]]

In (23), since *wh*$_3$ in the second conjunct and *wh*$_6$ in the first conjunct are identical SOs, *wh*$_3$ can undergo ellipsis, without being constrained by a cc-configuration. Thus, given ellipsis that can elide SOs that are not in a cc-configuration, an ATB *wh*-question of [-θ] *wh*-elements with a non-identity reading can be derived by applying ellipsis to the identical SO in the second conjunct (as in *where did Mary vacation and ~~where~~ did Bill decide to live?*).[7]

Let us finally consider how our proposal can account for the ATB *wh*-questions with non-Case-marked [+θ] elements in (5), which allow both identity and non-identity readings. According to (17), non-Case-marked [+θ] *wh*-elements like *nan-to* 'what-that' in (5) may or may not be boxed. Hence, when *nan-to* 'what-that' is boxed, its derivation proceeds in the same way as (1, 3), and its identity reading fact follows along the line of (18). On the other hand, when *nan-to* 'what-that' is not boxed, its derivation proceeds in the same way as (2, 4, 6), and its non-identity reading fact follows along the line of (23). In this way, the generalization (7) is explained as a natural consequence of the Box System, along with the ellipsis.

Here, one might say that, as shown in (23), if it is allowed to delete a *wh*-element that is not in a cc-configuration with its identical counterpart in the antecedent clause, then an example like (24B) should be acceptable (cited from Saito 2014: 9):

(24) A. Dare-ga Taiwan-e itta-ka shitte imasu-ka.
who-nom Taiwan-to went-Q know-Prog-Q
'Do you know who went to Taiwan?'
B. Iie. Demo, *(dare ga) Oranda-e itta-ka nara, wakarimasu.
No. But who-nom Netherlands-to went-Q if know
'No. But, if it's about who went to the Netherlands, I understand.'

In (24B), the interrogative *wh*-phrase *dare-ga* 'who-nom', which is not in a cc-configuration with its identical counterpart in the antecedent clause in (24A), is deleted. If a *wh*-element can be deleted without cc-configuration, then (24B) should be acceptable, contrary to fact. Therefore, one may say that deleting the interrogative *wh*-phrase is not allowed in general, and

[7] One might wonder why feature instructions of "wh$_6$" and "wh$_3$" in (19) cannot be elided "after" externalization takes place, as in (23). However, in the theory of derivational ellipsis (see Merchant 2001, Aelbrecht 2010, Goto 2013, Takahashi 2020, among others), which we will adopt, it is not possible that ellipsis applies "after" externalization because elliptic constituents are marked as such as early as in the syntactic component.

the unacceptability of (24B) is a counterexample to our deletion analysis of ATB questions in (23).

However, we point out that the generalization that a *wh*-phrase cannot be deleted is too strong. As in (24B.'), deletion of a *wh*-phrase is allowed if the Q-particle *-ka* is also deleted:

(24) B.' Iie. Demo, Oranda-e nara, wakarimasu.
No. But Netherlands-to if, know
(Lit.) No. But, if it's to the Netherlands, I understand.'

We argue that it is in principle be possible to delete the interrogative *wh*-phrase and claim that if we apply deletion to the interrogative *wh*-phrase that is not in a cc-configuration with its identical counterpart in the antecedent clause, both the interrogative *wh*-phrase and the C_Q-head must be deleted, as shown in (24B.'). This explains why in (2) the auxiliary *did* in the second conjunct must delete along with *where*.

4.2. Apparent ATB *wh*-questions

So far, we have only considered the cases in which the *wh*-phrase in an ATB question is singular and only the identity reading is allowed (see (1, 6)). What about when the *wh*-phrase in an ATB question is plural? As in (25), when the *wh*-phrase in an ATB question is plural, both identity and non-identity readings seem to be allowed even when the *wh*-phrase is an argument (we owe this observation to Daniel Seely, personal communication):

(25) Which books did you read ***e*** and he not read ***e***?

We suggest that examples like (25) are not ATB *wh*-questions but apparent ATB *wh*-questions which are derived from distributed coordination constructions like (26) by putting the two singular *wh*-phrases into one plural *wh*-phrase (see Bošković 2022: 1):

(26) Which book$_i$ and which magazine$_j$ did [John buy t_i] and [Bill read t_j] respectively?

Apparent ATB *wh*-questions are also observed in Japanese. (27) is an example of distributed coordination constructions pointed out in Boskovic (to appear, his (64)), and (28) shows that distributed coordination constructions are also possible with *wh*-phrases:

(27) Niku-to sake-o sorezore Taroo-ga tabe-te Hanako-ga nonda.
meat-and sake-Acc respectively Taro-Nom eat-and Hanako-Nom drank
'Meat and sake, Taro ate and Hanako drank respectively.'

(28) Dono okasi-to dono nomimono-o sorezore Taroo-ga tabe-te
which sweets-and which drink-acc respectively Taro-nom eat-and
Hanako-ga nonda no?
Hanako-nom drank Q
'Which sweets and which drink did Taro eat and Hanako have, respectively?'

Given the context in italics, (29) looks like an *wh*-argument ATB question with a non-identity reading. Notice that in (29), *kare-zisin* 'himself' and *kanozyo-zisin* 'herself', which are clause-bound reflexives, are each bound by its antecedent within the conjunct. We suggest that (29) is

not an ATB *wh*-question but an apparent ATB *wh*-question which is derived from distributed coordination constructions like (30) by putting the two singular *wh*-phrases into one plural *wh*-phrase:

(29) (*Every day, a teacher and a counselor each have a meeting about grades with one boy student and one girl student, respectively*.)
Kinoo-wa dare-to (sorezore) sensei-wa kare-zisin-no seiseki nituite
yesterday-top who-with (respectively) teacher-top himself-gen grades about
mendan site, kaunseraa-wa kanozyo-zisin-no seiseki nitsuite mendan-sita no?
interviewed, counselor-top herself-gen grades about interviewed Q
'Yesterday, with whom (respectively) did the teacher have a meeting about the boy students' own grades and the counselor about the girl students' own grades?'

(30) Kinoo-wa dono dansi seito-to dono josi seito-to (sorezore)
yesterday-top which boy student-and which girl student-with (respectively)
sensei-wa kare-zisin-no seiseki nituite mendan-site,
teacher-top himself-gen grades about interviewed,
kaunseraa-wa kanozyo-zisin-no seiseki nitsuite mendan-sita no?
counselor-top herself-gen grades about interviewed Q
'Yesterday, with which boy student and which girl student (respectively) did the teacher have a meeting about his own grades and the counselor about her own grades?'

(31) shows that the non-identity reading seems to be difficult to obtain when *dono seito* "which student" is used: at least there is a contrast with *dare-to* "who-with" in (29):

(31) ??Kinoo-wa dono seito-to (sorezore) sensei-wa kare-zisin-no
yesterday-top which student-with (respectively) teacher-top himself-Gen
seiseki nituite mendan-site, kaunseraa-wa kanozyo-zisin-no seiseki nituite
grades about interviewed, counselor-top herself-gen grades about
mendan-sita no?
interviewed Q
'Yesterday, with which student (respectively) did the teacher have a meeting about his own grades and the counselor about her own grades?'

This indicates that ATB *wh*-questions with a *dono* "which" *wh*-phrase cannot be derived from distributed coordination constructions, but rather, they are pure ATB *wh*-questions. We leave detailed discussions of this issue for further research.

5. An Implication for Improper Movement

Our proposal (17) provides a new approach to the fact that long-distance scrambling to a sentence-medial position is prohibited in Japanese (Saito 1985); consider (32):

(32) ??John-ga sono hon-o$_i$ minna-ni [$_{CP}$ Mary-ga t_i mottei-ru to] it-ta.
John-nom that book-acc all-to Mary-nom have-pres that say-past
'(Lit.) John, that book, said to all [that Mary has t_i].'

(32) is derived via long-distance scrambling of the embedded object *sono hon-o* 'that book' to a sentence-medial position, and the sentence is marginal. Saito (1985) observes that the sentence-medial position in question is an A-position, arguing that the marginality is due to improper movement that bans A'-movement followed by A-movement (*A→A'→A).

We can develop a new analysis of (32) in the Box System. Under our proposal (17), since the Case-marked [+θ]-element *sono hon-o* 'that book-acc' is obligatorily boxed at the embedded *v**P edge position, it cannot undergo IM to the relevant A-position in the matrix clause. Note that the boxed *sono hon-o* 'that book-acc' in the embedded *v**P edge position cannot be externalized at the matrix A-position by access from the non-phase head either, since it is only a phase head that can access to a boxed element for instructions (Section 3.1). In the Box System, there is no way to derive (32); neither IM nor access can apply to the boxed element. (32) is explained without recourse to the notion of improper movement.

What should be noted here is that our box analysis of (32) can lead to a prediction that is not available in the improper movement analyses. According to our proposal (17), since non-Case-marked [+θ]-elements like *to* 'that'-clause may or may not be boxed, it is predicted that long-distance scrambling of *to* 'that'-clause to a sentence medial position is possible under the option of unboxing. Remarkably, this prediction is borne out as shown in (33):

(33) John-ga [kare-ga muzai da to]$_i$ minna-ni [$_{CP}$ Mary-ga t_i omoikondei-ru to]
John-nom he-nom innocent is that all-to Mary-nom believe-pres that
it-ta.
say-past
'(Lit.) John, [that he is innocent]$_i$, said to all [that Mary believes t_i].'

(33) is derived via long-distance scrambling of the *to* 'that'-clause to the sentence-medial position. There is a contrast between (32) and (33); (33) is more acceptable than (32). This fact is surprising under the improper movement analysis, according to which, (33) should be marginal, on a par with (32), contrary to fact. Under our box analysis, however, it is not surprising anymore. The acceptability of (33) can be accounted for as follows: since the *to* 'that'-clause *[kare-ga muzai da to]* 'that he is innocent' may not be boxed, it can undergo further IM. Thus, the contrast provides evidence for the proposal (17).

6. Conclusion

In this paper we have examined the English and Japanese ATB *wh*-questions. On the basis of novel data from Japanese, we have proposed that *wh*-elements, which are θ- and Case-marked, allow only an identity reading. Elaborating Chomsky's Box System, we have argued that a [+θ] *wh*-element is boxed by IM to a phase edge and licensed through access by C_Q, while a [-θ] *wh*-element is not boxed and licensed through IM to the Spec of C_Q. We have proposed that not only θ-marking but also Case-marking contributes to boxing of a *wh*-element. Specifically, we have claimed that boxing is obligatory for Case-marked [+θ] *wh*-elements, but optional for non-Case-marked [+θ] *wh*-elements. Under this proposal, we have demonstrated that the interpretations of the ATB *wh*-questions are explained as a natural consequence of the Box System, along with the independently motivated ellipsis operation, which can apply to identical SOs, without being constrained by a cc-configuration. We have also shown that Case-marked [+θ]-elements and non-Case-marked [+θ]-elements behave differently with respect to the possibility of long-distance scrambling to a sentence medial position, suggesting that the

contrast, which cannot be accounted for under the improper movement analysis, lends further support for our proposal.

Before concluding this paper, we would like to go back to the remaining question: why [±Case] affects boxing. A scenario we are currently envisioning as a possible solution to this problem is the following. Chomsky (2023: 8, fn. 7) argues that SPEC-VP, not SPEC-*v**P, can be a θ-position for the external argument (cf. (8)). It then follows that a [+θ] *wh*-element must be boxed in SPEC-VP. If it were not boxed there, Θ-Theory would be violated, since the *wh*-element would receive two θ-roles at the object position and at SPEC-VP. A question remains, however, as to why a boxed element does not raise a labeling problem. Chomsky (personal communication) suggests that this question might be resolved by assuming that "a boxed element is inaccessible to labeling." However, this is clearly an *ad hoc* stipulation. Suppose instead that a boxed element is accessible to labeling. Then, when a [+θ] *wh*-element is boxed by IM in SPEC-VP, <φ, φ> labeling takes place because SPEC-VP is a position for <φ, φ> labeling (Chomsky 2013, 2015); there is no labeling problem without stipulating that "a boxed element is inaccessible to labeling." Suppose that Case is related to φ-agreement, or more relevantly, <φ, φ> labeling, that takes place at SPEC-VP. If a Case-marked boxed element, which is responsible for <φ, φ> labeling, underwent further IM from SPEC-VP, then it would "de-label" <φ, φ>, resulting in a violation of Labeling Theory. It then follows that a Case-marked [+θ] *wh*-element must stay at SPEC-VP by being put in a box by IM, so as not to undergo further IM, as required by the Box System. When a non-Case-marked [+θ] *wh*-element, which has nothing to do with <φ, φ> labeling, undergoes IM to SPEC-VP, it may not be boxed, thereby being subject to further IM.

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The role of main verbs in subextraction of wh-phrases from NPs

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1. Introduction

Subextraction of a wh-phrase from a NP object has long been known to be sensitive to a variety of factors. Much work has focused on how the definiteness of the object affects subextraction (Chomsky 1973; Fiengo & Higginbotham 1987; Diesing 1992; Simonenko 2016; Huang 2022, among many others). In this study, we take a closer look at another factor: the choice of the main verb that selects the NP.[1] In the context of NPs headed by content and representational nouns, it has been often observed that verb choice can affect the acceptability of subextraction, regardless of whether the NP is definite (1). However, exactly how verbs come to have such an effect is still a matter of debate.

(1) a. What did John {see/*destroy} [a picture of __]?
b. What did John {write/*destroy} [that book about]?

Our contribution is to experimentally evaluate three hypotheses about the role of the main verb: collocational frequency (Müller et al. 2022), semantic relatedness, and verb class (verbs of creation or conception, see Davies & Dubinsky 2003, Lim 2022, also Erteschik-Shir 1981, Shen and Huang 2023). We should also be upfront that the three hypotheses do not cover the entire empirical or theoretical landscape. For one, as we elaborate in our review of these hypotheses in Section 2, they do not account for exactly the same subextraction phenomena. Our primary goal here is to evaluate them on their own terms, rather than to compare them against each other. In addition, there are other hypotheses on subextraction that we will not be discussing in this paper. One such hypothesis is information structure, appealing to notions like dominance, backgroundedness, or relevance (Erteschik-Shir 1973, 1981, Goldberg 2006, Chaves and Putnam 2020). While there are recent experimental studies evaluating this hypothesis (e.g. Cuneo and Goldberg 2023), they use tests that are much more suitable for measuring the information structure properties of embedded clauses, and are therefore more relevant for the study of extraction from complement clauses. And while there are tests for measuring "dominance" of NPs (e.g. Erteschik-Shir 1973, 1981), as far as we can tell, it is not apparent from the literature whether these provide good measures of backgroundedness. As a result, in the context of subextraction from NPs, it is not clear how one could fairly evaluate the backgroundedness theory, perhaps the most prominent and worked-out information structure-based theory in the recent literature.

We test our three hypotheses using 300 verb-noun pairs in English, using formal experiments to collect acceptability judgments for subextraction from indefinite and definite NPs. Our approach, presented in Section 3, contributes to and complements existing work in a number of ways. Existing accounts of verb choice and subextraction have typically relied on informal acceptability judgments and a small number of verbs to provide support for a hypothesis. In contrast, our formal acceptability judgment experiments provide quantitative measures of acceptability, which is important because the hypotheses examined here might make predictions about gradience in acceptability (see also Lim 2022). In addition, while our set of verb-noun pairs is certainly not exhaustive, it is much larger and arguably

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[1] For ease of reference, we will describe such nominal projections as NPs throughout the paper, rather than DPs, as one might under the DP Hypothesis (e.g. Abney 1987, Szabolcsi 1994).

more representative than the ones used in existing studies.

To preview the results in Section 4, the best-performing hypothesis in our analysis is the creation (conception) verb hypothesis. However, we find that all three hypotheses offer relatively weak accounts of subextraction, whether for indefinite or definite NPs. This finding echoes results reported in large-scale studies for wh-extraction and elsewhere (Huang et al. 2022, White & Rawlins 2018, White 2021), but more importantly, suggests that there is room for improvement for our theories about subextraction.

2. Hypotheses

In this section, we review in more detail the three hypotheses about subextraction. For scope reasons, we will restrict our discussion of subextraction from NPs headed by content nouns or representational nouns, rather than nouns that are nominalizations of verbs (e.g. *election*, *purchase*) or denote roles (*governor*, *mother*).

2.1. Collocational frequency

In this account, proposed by Müller et al. (2022), subextraction from indefinite NPs is sensitive to whether the verb and the head noun of the NP forms a "natural predicate." They suggest that collocational frequency is the main driver of whether a verb-noun pair is perceived as a natural predicate in a language. To support this hypothesis, they conducted a study of 60 verb-noun pairs (5 nouns and 12 verbs) in German, calculating several collocational frequency measures for each of these verb-noun pairs using a German corpus, and show that collocational frequency is correlated with informal judgements of subextraction.

Müller et al. incorporate this hypothesis in a Harmonic Grammar framework: due to differences in collocational strength, two sentences that are structurally identical can differ in their degree of well-formedness. Of course, it is also possible to assume a more standard analysis, in which structurally-identical sentences are either well-formed or ill-formed. In this analysis, subextraction would always be well-formed but vary in ease of processing: perhaps sentences featuring less frequent verb-noun pairs are harder to process.

It is important to note that this Müller et al.'s account is based entirely on subextraction from indefinite NPs. While they do not address the issue of subextraction from definite NPs, it seems reasonable to assume that their account is not intended to cover such cases, given the general consensus that subextraction is much less compatible with definite NPs than indefinite NPs (Chomsky 1973, Fiengo & Higginbotham 1981, Simonenko 2016, among many others).

2.2. Verbs of creation (or conception)

Another hypothesis, first proposed by Davies and Dubinsky (2003), claims that subextraction from definite NPs is generally unacceptable unless the main verb has a verb of creation semantics, citing examples similar to (1b) above (see also Erteschik-Shir 1981 for very similar observations). In more recent work, Lim (2022) proposes a modification, suggesting that the relevant semantic property is not creation but the more specific notion of conception. Motivating this proposal are experimental results showing that not all creation verbs make subextraction from definite NPs acceptable; *What did Sally develop her picture of* is worse than *What did Sally snap her picture of*, even though both *develop* and *snap* involve creation. Lim suggests that in the case of *develop her picture*, the picture already existed prior to the event of developing it, while in the case of *snap her picture*, the snapping event is an event of conception that brought the picture into existence. Lim further introduced a conception test to determine whether a verb has conception semantics, and presented experimental results showing a correlation between conception semantics and subextraction acceptability for 16 verb-noun pairs in

English.

Beyond experimental support, Lim (2022) offers an explanation of why creation/conception semantics should affect subextraction, by adapting Truswell's (2007) Single Event Condition. Briefly, Truswell's condition predicts that island constraints are obviated when the event described in the island and the event described in the main verb are construed as a larger event grouping. Similarly, in the case of subextraction, the event described by a verb of conception and the existence of the object denoted by the NP are both construed as a larger event.

It is worth emphasizing again that both Davies and Dubinsky's and Lim's proposals were made in the context of subextraction from definite NPs. As far as we can tell, both proposals assume that definite NP objects are islands, except when selected by a creation/conception verb. This leaves open the question as to how and why the choice of main verbs affects subextraction from indefinite NPs.

2.3. Semantic relatedness

Finally, we consider a third possibility that subextraction from NPs in general is sensitive to how much the verb and the head noun are semantically related. For illustration, consider the examples in (1): *see* is more related than *destroy* to *picture*, in the sense that pictures are by their nature related to visual perception rather than destruction. Similarly, *write* is more related than *destroy* to *book*, since books by definition have to be created through writing.

To the best of our knowledge, this hypothesis has not been put forward in the literature, but it is worth articulating for the following reasons. First, this hypothesis can be seen as a variant of Müller et al.'s idea of "natural predicate," except that here, this notion is not dependent on collocational frequency. If it turns out that collocational frequency is a poor predictor of subextraction probabilities, adopting this hypothesis could serve to salvage the "natural predicate" account. Second, this hypothesis can be seen as a generalization of the creation/conception verb hypothesis, which attribute subextraction acceptability to one particular kind of semantic relatedness. Furthermore, because semantic relatedness can be gradient, this hypothesis could potentially offer an account of observations of gradience in acceptability of subextraction, e.g. as reported by Lim (2022).

3. Evaluating the hypotheses

Despite their differences, the three hypotheses make clear predictions that frequency or semantic properties should correlate with acceptability for certain kinds of subextraction. Our goal here is to evaluate these predictions: ideally, a good hypothesis should produce a strong correlation, at least for the subextraction domain that it is intended for: e.g. indefinite NPs for the collocation hypothesis and definite NPs for the creation (and conception) verb hypothesis.

3.1. Creating verb-noun pairs

To ensure comparability and representativeness, we wanted to evaluate the three hypotheses against one single set of verb-noun pairs that was relatively large. To that end, we compiled a set of 10 high-frequency nouns that have some kind of content semantics (*footage, image, map, photo, picture, portrait, review, statue, story, video*). For each noun, we parsed a random 20% subset of the Corpus of Contemporary American English (COCA, Davies 2020), identifying which verbs that had NP objects headed by these nouns. From this set of verbs, we selected 30 verbs for each noun to create a set of 300 verb-noun pairs. The process was pseudo-random, in that the selection was weighted by frequency, so that high-frequency verbs are more likely to be selected than low-frequency verbs, which are associated with typographical errors, mis-parses, and/or have metaphorical uses.

3.2. Measuring the acceptability of subextraction

3.2.1. Design

We ran an acceptability judgment experiment for all 300 verb-noun pairs. Our experiment used a 2x2 factorial design crossing subextraction and definiteness (specifically, demonstrative *that*) (2).

(2) a. Did Ben view a statue of Picasso? (No subextraction, Indefinite)
b. Who did Ben view a statue of? (Subextraction, Indefinite)
c. Did Ben view that statue of Picasso? (No subextraction, Definite)
d. Who did Ben view that statue of? (Subextraction, Definite)
(Note: we do not report our own judgments for these example sentences, which are intended as examples of the sentences to be judged by experiment participants.)

We use the demonstrative *that* instead of definite *the* because *the* is in principle ambiguous, having both an anaphoric and unique reading, which potentially introduces a confound. As Simonenko (2016) observes, while subextraction from anaphoric definites is generally unacceptable, subextraction from unique definites is judged to be better. We could have also used a possessor like *his* or *her* in place of *that*, but opted not to do so because of concerns over how the possessor would be interpreted and overall sentence plausibility. For instance, in a sentence like (2a) *Did Ben view his statue of Picasso*, it is unclear whether *his* refers to Ben or someone else and quite likely that Ben (or some other male individual) owns or created the statue. This in turn might raise questions about why (2a) would be uttered in the first place: if Ben owns or created the statue, presumably he must have also viewed it. In contrast, the demonstrative *that* avoids these confounds. More importantly, Davies and Dubinsky (2003) have also observed that subextraction from *that*-NP objects is sensitive to the choice of main verb, as (1b) illustrates.

These 4 conditions let us calculate two measures: a difference score (D score) between the two indefinite conditions (3a), as well as a difference-in-difference score (DD score) from all four conditions (3b). The D score quantifies how much less acceptable subextraction from indefinite NPs is compared with a yes/no question baseline: note that there is an implicit consensus in the literature that yes/no questions are not sensitive to the choice of main verbs. We follow Shen and Huang 2023 in using the DD score to quantify the acceptability of subextraction from definite NPs relative to an indefinite NP baseline. This captures the intuition that it is generally worse to subextract from a definite NP than from an indefinite NP (a definite island effect; see Neal and Dillon 2021, Shen and Lim 2022), setting aside the potential amelioration due to the choice of main verb, which is the phenomenon of interest here.

(3) a. Difference score (D score) for subextraction from indefinite objects = 2a−2b
b. DD score for subextraction from definite objects = (2c−2d)−(2a−2b)
(The higher the scores, the worse subextraction is from (in)definite NPs)

3.2.2. Materials and presentation

Because collecting acceptability judgments for all verb-noun pairs from a single participant would certainly incur fatigue and affect judgment quality, we decided to have each participant give ratings for only three verb-noun pairs in a survey. More specifically, we sorted the verbs into 100 different sets of three pairs each. For each set of three verb-noun pairs, we created 12 lexical frames per pair, with four variants for each of these frames, one per condition; (2) illustrates the four variants of one frame for the *view-statue* pair). Altogether this yielded 144 target sentences per set.

We then distributed these 144 target sentences into 12 different surveys using a Latin Square design, 12 sentences per survey. Because we wanted to be able to calculate D scores and DD scores for each verb-noun pair at a participant level, the 12 target sentences were distributed so that in each survey,

each of the three verb-noun pairs appeared four times, once per condition, and no lexical frames were repeated. Altogether, we created 1,200 different surveys.

We also added to the 12 target sentences in each survey a common set of 24 filler items. These fillers were taken and adapted from fillers used by Huang et al. (2022). 9 of these fillers appeared at the start in a fixed order; these were intended to prompt participants to use the full range of the acceptability scale. The remaining 15 fillers, also intended to span the full range of the acceptability scale, and the target sentences were then presented pseudo-randomly.

The surveys were hosted on PCIbex (Zehr and Schwarz 2018). Sentences were presented one at a time on the screen. Participants were to rate each sentence for acceptability using a slider scale provided on the screen. Prior to starting the surveys, participants first saw three example sentences with suggested acceptability ratings; these three sentences were completely unacceptable, of marginal acceptability, and completely acceptable (in that order). Participants were also asked whether they lived in the United States from birth until at least age 13, whether their parents spoke to them in English at home, and which state they grew up in.

3.2.3. Participants

We recruited 3,583 participants via the Prolific crowdsourcing platform, with the goal of recruiting about 36 participants per verb-noun pair (recall we had distributed our 300 verb-noun pairs into 100 sets of surveys), so that each verb-noun pair would be associated with D scores and DD scores for 36 native speakers. Participants were self-identified monolingual speakers of American English, born in the United States, and above the age of 21. Each participant received GBP 0.75 for completing the survey, based on the assumption that it would take about 5 minutes to complete the survey, and a GBP 9.00 hourly rate, as recommended by Prolific.

3.2.4. Data analysis

Acceptability judgments were z-scored at the participant level to control for differences in how each participant used the slider scale. For each of the 15 fillers that appeared with the target sentences, we checked each participant's judgment against the sample mean for that filler sentence, and counted the number of "extreme" judgments that were two standard deviations above or below the mean. We only included participants who gave at most 3 "extreme" judgments.

We imposed a few other filters on our participants. We selected only participants who answered that they lived in the United Sates from birth and their parents spoke to them in English at home. We also analyzed each participant's responses, selecting only participants whose median response time was at least 2 seconds, which provides some confidence that they had read each sentence before judging it for acceptability. Altogether, after applying these filters, we selected 2,264 participants' responses for analysis.

3.3. Compiling predictor measures

We next describe how we compiled predictor measures for each of the hypotheses under consideration.

3.3.1. Collocational frequency

We calculate three measures, DeltaP, Mutual Information, and t-scores, closely following Müller et al.'s (2022) analysis. We first split the Corpus of Contemporary American English (COCA) into sentences. Within each sentence, we identified all the nouns (based on the part-of-speech tags that come with COCA), and then checked whether there was a verb in the three words preceding the noun; if so, we consider that that noun to be the head noun of the verb's object. We recorded down all verbs and nouns in this configuration. We note that this three-word method, while adhering to Müller et al.'s

analysis, meant that we could not obtain estimates for eight verb-noun pairs. For six of these pairs, this was because the verbs are associated with a particle that could appear either before or after the NP (*pull up, beam down, black down, check out, clean up, cut out*); for the remaining two (*email-image, contribute-footage*), we believe that this is because the verb and noun appeared more than three words apart from each other.

With counts of verbs and nouns, we calculate the three collocational frequency measures for a verb-noun pair v, n using the formulas in (4). Read N(…) as "the total count of …" and "v occurring with n" as short for "verb-object relations between v and n."

(4) a. $\Delta P_{v|n}$ = (N(v occurring with n) ÷ N(all verbs occurring with n))
- (N(v occurring with all other nouns) ÷ N(all verbs occurring with all other nouns))[2]

b. Mutual information = N(v occurring with n) ÷ Expected count(v occurring with n)
where
Expected count(v occurring with n) = N(v occurring with all other nouns)
× N(all other verbs occurring with n)
÷ N(all verb-object relations)

c. t-score = (N(v occurring with n) – Expected count(v occurring with n))
÷ √N(v occurring with n)

Intuitively, as Müller et al. point out, $\Delta P_{v|n}$ measures how well the head noun of an object predicts the verb that selects it, compared to all other head nouns. Mutual Information (MI) measures how much more likely a verb and noun will be in a verb-object relation relative to chance, while the t-score serves to highlight the frequency of the co-occurrence of the verb and noun (see Gablasova et al. 2017 for a critique).

As Müller et al. also noted, these measures are based on counts obtained through this closeness heuristic, but the heuristic only gives an approximation of how often a given verb-noun pair appears in a verb-object configuration. Ideally, one would have first parsed each sentence to identify the verbs and noun occurring in a verb-object configuration, but doing so by hand is unfeasible, while using a statistical parser is computationally intensive (given the size of COCA). Furthermore, since statistical parsers are not perfectly accurate, using them would introduce a risk of misparsing that seems no worse than this closeness heuristic.

3.3.2. Creation/conception semantics

To determine whether the verbs have creation or conception semantics, we trained three undergraduate research assistants (RAs), without revealing to them the goal of the study. The RAs were presented with one example sentence per verb-noun pair based on those used in the acceptability judgment surveys. They were instructed that a verb is a creation verb if it creates an entity described by the noun; the entity can be a copy or a more abstract item, and that a verb is a conception verb if the action denoted by the verb makes the object denoted by the noun come into existence. RAs also saw two examples of Lim's (2022) conception test (5), to help them pick out conception verbs from the larger set of creation verbs.

(5) Jo {took / printed} a photo of the mountain. Did Jo's photo exist before she printed it?
If answer is "yes": *take* (*print*) is not a verb of conception.
If answer is "no": *take* (*print*) is a verb of conception.

[2] There is an alternative ΔP measure, $\Delta P_{n|v}$, that we do not use here. Müller et al. (2022: 1631) suggest that $\Delta P_{v|n}$ is the better predictor.

(Note: while *take-photo* and *print-photo* are in our list of 300 verb-noun pairs, these two examples did not specify whether *take* or *print* are creation verbs or conception verbs.)

The RAs annotated the set of verbs independently. They were further instructed to take frequent breaks, to minimize the risk of fatigue. We then compiled all three sets of annotations. We classified a verb as a creation (conception) verb only if at least a majority of RAs (two out of three) considered it as such. For statistical analysis purposes, we coded a creation (or conception) verb as 1 and all other verbs as 0.

3.3.3. Semantic relatedness

For this hypothesis, we relied on word embeddings, calculating the cosine similarity between the vector representations of a given verb and noun. We note that this approach is a commonly used one for calculating whether two words are semantically related, and has the advantage of producing gradient measures ranging from -1, which is interpreted as involving completely opposite meanings, to 1, which is interpreted as involving highly similar meanings.

We used two publicly-available word embedding data sets (Fares et al. 2017), created by applying GloVe (Pennington et al. 2014), an unsupervised learning algorithm, on a 2017 version of English Wikipedia and the 5th edition of the GigaWord corpus. Note that a small number of these verbs – e.g. those associated with a particle, like *pull up* – are absent in these word embedding data sets. For each of the verb-noun pairs present in the data sets, we calculated the cosine similarity between the verb and noun. This produced two sets of similarity measures, one based on Wikipedia and the other based on the GigaWord corpus, for 286 verb-noun pairs.

4. Results

To summarise, we calculated two different measures of z-scored subextraction acceptability: a D score for indefinite NPs and a DD score for definite NPs; and a total of seven predictor measures: three for collocational frequency, two for creation/conception semantics, and two for semantic relatedness. We calculate Pearson correlations for all combinations of subextraction acceptability and predictors, even though existing hypotheses in the literature – the collocational frequencies and the creation/conception verb hypotheses – only have clear predictions for either definite or indefinite NPs. To maximize comparability, we analysed only the 284 verb-noun pairs where we have values for all seven predictors.

We take this comprehensive approach because it is logically possible that the predictors might turn out to cover both indefinite and definite NPs: for example, perhaps collocational frequencies predict not only D scores (for subextraction from indefinite NPs), as proposed by Müller et al., but also DD scores, which measure subextraction acceptability for definite NPs. Although the hypotheses, as currently formulated, do not necessarily cover both types of NPs, we present these results here in the spirit of transparency and to encourage future research on this topic.

We should also point out that it is logically possible that some correlations, even if statistically significant, are relatively small and so have a very limited role to play in our theories of subextraction. To identify such correlations, we note that each correlation corresponds to a linear regression. We then calculate the R^2 of this regression model (in this case mathematically equivalent to the square of the Pearson correlation), which indicates the amount of variation in D (or DD) scores explained by the predictor. We also use the bayestestR package (Makowski et al. 2019) to calculate a Bayes factor for this model relative to a null hypothesis model that lacks the predictor, i.e. a model that only has an intercept. The Bayes factor here is a ratio indicating how much more likely the data is under this model compared with the null hypothesis model. The lower the ratio, the stronger the evidence is for the null hypothesis.

4.1. Subextraction from indefinite NPs

We first consider results for indefinite NPs. Pearson correlations and Bayes factor values are presented in Table 1. To help visualize the size of the correlations, scatterplots for selected predictors are presented in Figure 1.

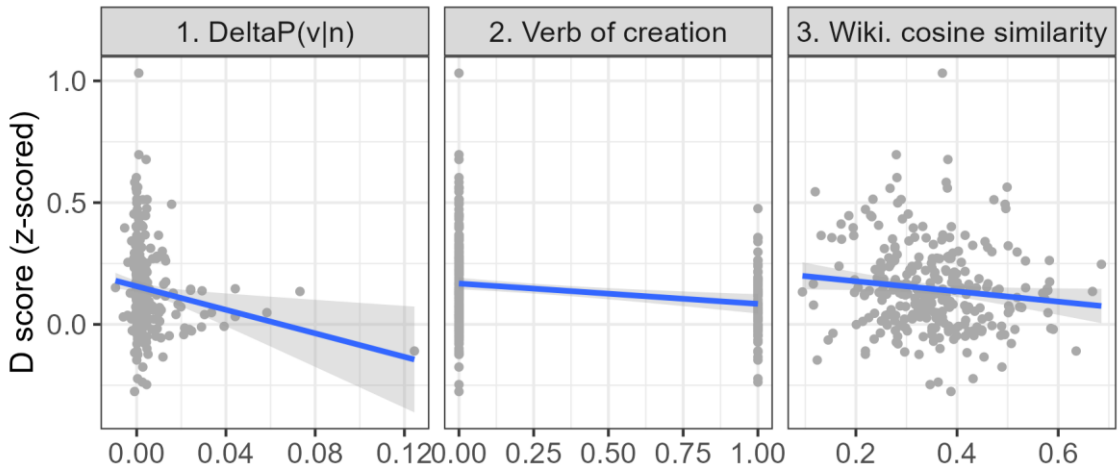
Table 1

Subextraction from indefinite NPs (D scores): correlation, R^2s, and Bayes factors for various predictors

	Pearson *r*	*p*	R^2	Bayes factor
Frequency: $\Delta P_{v\|n}$	-.16	.009	.02	2
Frequency: Mutual Information	-.09	.140	.01	0
Frequency: t-score	-.15	.011	.02	2
Creation verbs (1=creation verb, 0=others)	-.21	<.001	.04	32
Conception verbs (1=conception verb, 0=others)	-.21	<.001	.04	28
Semantic relatedness: Wikipedia cosine similarity	-.12	.042	.01	0
Semantic relatedness: GigaWord cosine similarity	-.10	.097	.01	0

Figure 1

Scatterplots of D scores with one selected predictor per hypothesis



The predictors that perhaps deserve the most attention here are those for the collocational frequency hypothesis, since that has been argued to account for variation in subextraction acceptability in German indefinite NPs. Here, we expect a negative correlation: high D scores (unacceptable subextraction) should be associated with low collocational frequencies. An examination of correlations, Bayes factors, and scatterplots, however, suggest that collocational frequencies are poor predictors of the variation in D scores in English. Although all three correlations are in the right direction, the correlation coefficients are all small (Pearson *r* -.09 to -.16); in fact, the correlation is not significant for Mutual Information. R^2 values are similarly small, around .01-.02, implying that these predictors explain only about 1-2% of all variation in D scores. Bayes factors are also small, at around 0-2. We note that this is below the ratio of 3 that is often suggested as indicating clear evidence against the null hypothesis.

Other predictors also show negative correlations, which are not implausible. For instance, for the creation/conception verb hypothesis, a negative correlation implies that creation or conception verbs tend to have low D scores, i.e. be associated with more acceptable subextraction. Likewise, for the

semantic relatedness hypothesis, a negative correlation implies that verb-noun pairs that are highly related semantically (high cosine similarity) have low D scores. Interestingly, we see that creation/conception verb predictors turn out to be the best-performing predictors, even though the creation/conception verb hypothesis makes no prediction about subextraction from indefinite NPs. These predictors produce the strongest correlations (and hence relatively high R^2s, although these are still low in absolute terms) and the highest Bayes factors (28-32). We return to this issue in the general discussion in Section 5.

4.2. Subextraction from definite NPs

We next consider results for definite NPs. Correlations with DD scores, indicating the relative acceptability of subextraction from these NPs, and Bayes factors are presented in Table 2, and scatterplots are presented in Figure 2.

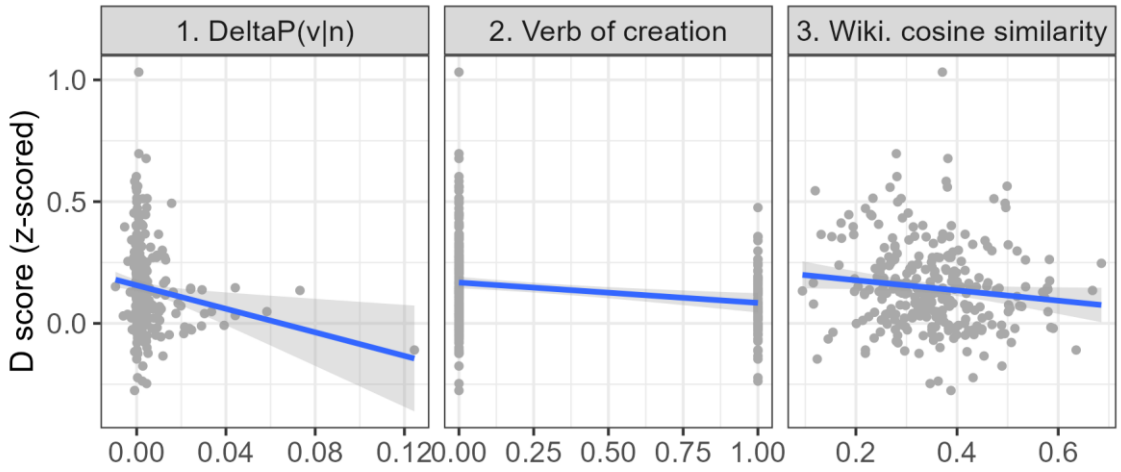
Table 2

Subextraction from definite NPs (DD scores): correlation, R^2s, and Bayes factors for various predictors

	Pearson *r*	*p*	R^2	Bayes factor
Frequency: ΔP(v|n)	-.11	.071	.01	0
Frequency: Mutual Information	-.26	<.001	.07	1,224
Frequency: t-score	-.07	.21	.01	0
Creation verbs (1=creation verb, 0=others)	-.36	<.001	.13	>100,000
Conception verbs (1=conception verb, 0=others)	-.33	<.001	.11	>100,000
Semantic relatedness: Wikipedia cosine similarity	-.13	.030	.02	1
Semantic relatedness: GigaWord cosine similarity	-.07	.235	.01	0

Figure 2

Scatterplots of DD scores with one selected predictor per hypothesis



Here, the predictors for interest are the creation verb and conception verb predictors, as they have been linked in the literature to acceptable subextraction from definite NPs. We expect a negative correlation: high DD scores (unacceptable subextraction) should be correlated with noncreation or nonconception verbs, which are coded as 0 in our data. Results are consistent with this prediction: we observe statistically significant negative correlations for both predictors, with stronger correlations (Pearson *r* -.33 and -.36) and much higher R^2s and Bayes factors than in the indefinite NP cases. But as

the scatterplots show, even though there is a much clearer correlation, there is nonetheless a lot of variation in DD scores within each verb class.

Turning to the other predictors, we also see negative correlations in general, which are not implausible. These correlations mean that unacceptable subextraction from definite NPs (high DD scores) is associated with low collocational frequency and low semantic relatedness. However, the size of correlations here are much smaller, around -.1, and Bayes factors are generally far lower, suggesting that these predictors account for very little, if any, of the variation in DD scores. The one exception to this pattern is the Mutual Information predictor, whose correlation, R^2s and Bayes factors are comparable to those for both creation/conception verb predictors.

5. Discussion

Our results indicate that collocational frequency is not a good predictor of the acceptability of subextraction from indefinite NPs, as measured through D scores (*pace* Müller et al), even though at least one measure (Mutual Information) is a relatively good predictor of DD scores, which are intended to reflect the acceptability of subextraction from definite NPs. Our results also show that general semantic relatedness is not a good predictor of either case of subextraction.

The results are more favorable for the creation/conception verb hypothesis: verb class predictors produce statistically significant correlations with DD scores (subextraction from definite NPs) in the predicted direction, corroborating informal observations by Davies & Dubinsky (2003) and experimental results reported by Lim (2022).

Verb class predictors also show a significant negative correlation with D scores, around -.2. This is actually not a problem for existing statements of this hypothesis, which does not make clear predictions about whether verb semantics matter for subextraction from indefinite NPs. But to the extent that creation/conception verb semantics do matter in this case, we believe it will be challenging to extend whatever account developed for DD scores for subextraction from definite NPs (such as Lim's adaptation of the Single Event Condition) to also cover D scores. This is because intuitively, DD scores are defined as the impact on acceptability of subextraction from definite NPs above and beyond the impact of acceptability of subextraction from indefinite NPs. An account for DD scores by definition should explain the difference between the two kinds of subextraction, but logically that will not guarantee an explanation for facts around subextraction from indefinite NPs.

Another point that is worth highlighting is how our results seem much weaker than what has been suggested in previous work. We will have to leave for future investigation the exact reasons for this discrepancy between our results and previous work. However, it seems not implausible that one reason might be the relatively small number of verb-noun pairs studied: for instance, Müller et al. (2021) looked at 60 verb-noun pairs, while Lim (2022) considered 16 verb-noun pairs. Whether in German or English, the actual number of transitive verbs that take NP objects with content or representational head nouns is certainly much larger. Even with best efforts, it would have been very difficult to ensure a sample of 16-60 verb-noun pairs that is representative of the entire population. Our 300 verb-noun pairs helps to address this methodological issue by providing a larger set of data that is hopefully more representative.

6. Conclusion

In this study, we evaluated three hypotheses about subextraction from NP objects with large scale experiments in English. Among the three hypotheses – collocational frequency, creation (conception) verbs, and semantic similarity – the creation (conception) verbs performed the best, in producing a correlation with DD scores (reflecting subextraction acceptability for definite objects) in the predicted direction, along with a high Bayes factor suggesting clear evidence against the null hypothesis.

However, the R^2 for even this hypothesis is low, indicating that it does not offer a full account of variation in DD scores. We further pointed out that these results appear worse than what was reported previously on these hypotheses, and suggested that this might be related to the smaller samples used in previous work, which might not have been as representative as intended.

Consistent with our speculation about data representativeness, the lack of clear results in favor of existing hypotheses seem to be typical of large-scale experimental studies. In a similarly large-scale study of how clause-embedding verbs affect long-distance wh-dependencies, Huang et al. (2022) also found weak support for existing accounts, including those positing a link between extraction and frequency, semantic similarity, and information structure. Outside of wh-dependencies, similarly weak results have been obtained in large-scale studies testing claims about the selection of interrogative and declarative clauses in attitude verbs (White 2021 and White and Rawlins 2018).

Finally, it is also important to keep in mind that we have not evaluated information structure theories in this paper. It is possible that, while all three hypotheses here provide at best a weak account for variation in subextraction acceptability, information structure can deliver much better empirical coverage for both indefinite and definite NPs. We will set this empirical question aside, noting again that it is not immediately clear how to use existing tests to measure the currently theoretically-important notion of backgroundedness in the context of subextraction from NPs.

For the time being, focusing only on the results reported above, we argue that these results indicate room for improvement for theories about how main verbs affect subextraction. For instance, perhaps definitions of verb of creation/conception could be refined further, in order to better account for the variation of DD scores within the class of creation (conception) verbs and noncreation (nonconception) verbs; perhaps the operationalization of collocation has to be reconsidered: maybe instead of counting individual verb-noun pairs, it might be helpful to consider combinations of verb classes and noun classes. Or given that single-factor hypotheses are relatively weak, perhaps it would be fruitful to explore multifactorial hypotheses, e.g. modeling variation in subextraction with both collocational frequency and verb class.

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Toward a new taxonomy of exclamatives: A case study of Japanese exclamatives with nante and doredake*

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1. Introduction: E-only wh-phrases and non-E-only wh-phrases

This paper investigates semantic differences between two exclamative wh-items in Japanese (*nante* and *doredake*), suggesting a new taxonomy of exclamatives which is based on fixedness of the judge-parameter.

It is suggested in the literature that some *wh*-phrases appear only (or typically in any rate) in exclamative clauses (cf. Castroviejo (2006: 167) for Catalan, Zanuttini & Portner (2003: 68ff) for English, Italian and Paduan, Wiltschko (1997: 114) and Repp (2013) for German, Ono (2006: 9ff) and Yamato (2010: 63) for Japanese, and Badan & Chen (2015: 392) for Mandarin). Zanuttini & Portner (2003) call this type of wh-phrases as "E-only wh-phrases." For example, German uninflected *welch*, which can occur in exclamatives as in (1a), is incompatible with information-seeking questions as in (1b) (cf. Wiltschko 1997, Repp 2013). [1]

(1) a. **Welch** einen tollen Mann die geheiratet hat!
which a fantastic man she married has
'What a fantastic man she married!'

b. ***Welch** einen tollen Mann hat die geheiratet!
which a fantastic man has she married
'(intended:) Which fantastic man did she marry?'

The Japanese wh-phrase *nante* is also an E-only wh-phrase (cf. Ono (2006) and Yamato (2010)). As the contrast shown in (2), *nante* can be used only for exclamatives.[2]

(2) a. Taro-wa **nante** se-ga takai nodaroo!
Taro-Top nante height-Nom tall Mod
'How tall Taro is!'

b. *Taro-wa **nante** se-ga takai no?
Taro-Top nante height-Nom tall Prt
'(intended:) How tall is Taro?'

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[1]Note that some E-only wh-phrases may appear in non-exclamative contexts. Repp (2013) and Badan & Chen (2015) respectively show that German uninflected *welch* 'which' and Chinese *zěnme zhème* 'how this.ME' can be observed not only in exclamatives but also in rhetorical questions, while these wh-phrases are incompatible with information-seeking questions.

[2]Throughout the paper, (i) we will not discuss the semantic contribution of sentence-final *nodaroo* 'would' (cf. Ito & Mori 2019 for some empirical facts on *nodaroo* in exclamatives), but the optionality of this expression in exclamatives will be discussed in subsection 4.3., and (ii) we do not deal with *nante* that appears in sentence-final position (See Sawada & Sawada (2020) and Hirayama (2021) for the property of sentence-final *nante*).

Another Japanese wh-item *doredake*, on the other hand, is a non-E-only wh-phrase. It can be used for exclamatives as well as for questions as in (3).

(3) a. Taro-wa **doredake** se-ga takai nodaroo!
Taro-Top doredake height-Nom tall Mod
'How tall Taro is!'
b. Taro-wa **doredake** se-ga takai no?
Taro-Top doredake height-Nom tall Prt
'(intended:) How tall is Taro?'

This paper is organized as follows. We will first focus on the exclamative use of *nante* and *doredake* and discuss the difference between them, especially with respect to their use with *predicates of personal taste* (henceforth "PPTs"). Section 3 proposes the way to capture the observations in Section 2. Section 4 then shows some empirical prediction from the proposal. Section 5 concludes.

2. Key observation: *Nante* and *doredake* with PPTs

As we have seen above, *nante* as well as *doredake* can be used for exclamatives. However, an exclamative with *nante* becomes infelicitous as in (4a) if the predicate is a PPT (in (4), *oishii* 'tasty') and the judge is shifted to a non-speaker (in (4), Taro).[3] Quite informally, PPTs are predicates which involve one's (by default, the speaker's) subjectivity, taste and personal evaluation. Crucially, this infelicity is not observed in the exclamative with *doredake* as in (4b).[4]

(4) [Context: Taro is having four more helpings of stew, which is unbelievable from the speaker's point of view.]
a. *Ano shichuu-wa (Taroo-nitotte) **nante** oishii nodaroo!
that stew-Top (Taro-to) nante tasty Mod
'(intended:) How tas ty that stew is (to Taro)!'
b. Ano shichuu-wa (Taroo-nitotte) **doredake** oishii nodaroo!
that stew-Top (Taro-to) doredake tasty Mod
'(intended:) How tasty that stew is (to Taro)!'

If the context allows the judge to be the speaker, *nante* as well as *doredake* are felicitous as in (5).

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[3]Lasersohn (2005) notes that it is not conclusive which lexical items can be characterized as PPTs. Throughout this paper, we only address the PPT *oisii* 'tasty,' one of the most prototypical PPTs in previous studies.

[4]It is worth noting that in both English and Japanese, PPTs can be accompanied by an overt 'non-first person' experiencer:

(i) a. This stew is tasty **to him**.
b. Kono shichuu-wa **Taro-nitotte** oishii.
this stew-Top Taro-to tasty
'This stew is tasty to Taro.'

The fact indicates that the oddness in (4a) is due to some constraint on *nante*-exclamatives rather than to the occurrence of PPT with non-first person experiencer.

(5) [Context: The speaker is eating stew.]
a. Kono shichuu-wa **nante** oishii nodaroo!
this stew-Top nante tasty Mod
'How tasty this stew is!'
a. Kono shichuu-wa **doredake** oishii nodaroo!
this stew-Top doredake tasty Mod
'How tasty this stew is!'

To the best of our knowledge, this observation has not been reported in the literature. The goal of this paper is to propose semantics for *nante* and *doredake* which explains the contrast. Furthermore, we show that our analysis correctly predicts various behaviors of wh-phrases in Japanese exclamatives. The conclusion of this paper suggests that the difference between *nante* and *doredake* sheds new light on the taxonomy of exclamatives cross-linguistically.

3. Proposal & analysis

3.1 The semantics of E-only exclamatives

The following assumptions are made in the analysis. First, following Lasersohn (2005) and Anand & Korotkova (2018), sentences with PPTs are relativized to two parameters: a world *w* and crucially a judge *j*. Second, we assume that a PPT like *oishii* 'tasty' is an open-scale gradable adjective representing a function that takes an entity and returns a certain degree on the scale associated with the adjective (Hirvonen 2014).[5] Gradable adjectives like *oishii* 'tasty' are assumed to denote relations between entities and degrees, type $\langle e,\langle d,t\rangle\rangle$, where *d* is a variable that ranges over degrees (von Stechow 1984, among others).[6]

Putting the assumptions all together, the denotation of *oishii* 'tasty' and *x nitotte oishii* 'tasty to *x*' with and without an overt experiencer are given below, respectively.[7] [8]

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[5]Hirvonen (2014) concludes that most PPTs have open-scale structures since they are clearly odd when combined with some modifiers that are compatible with closed scale adjectives:

(i) a. ??The party was perfectly boring/fun/amusing/entertaining.
b. ??Her paintings were half nice/fascinating.
c. ??Her new husband is completely handsome/good-looking.
d. ??The home-made wine was half disgusting/delicious/tasty. (Hirvonen 2014: (17)–(20))

[6]Departing from the traditional view that gradable adjectives are type $\langle d,\langle e,t\rangle\rangle$, for convenience, we assume that they take an entity as the first argument and then return a set of degree.

[7]The meaning assumed in (a) is a simplified version of that proposed by Anand & Korotkova (2018) among others who suggest that PPTs have certain evidential presuppositions. That is, PPTs require that the judge *j* has a certain type of direct experience. This requirement is omitted here for the sake of simplicity, but refer to e.g. Hirayama (2023) for the semantics of Japanese PPTs with evidential presupposition and the compositional process to derive *-nitotte oishii* 'tasty to.'

[8]To derive a declarative interpretation for (6) and (7), we can make use of a null degree morpheme **pos** (for positive form) (von Stechow (1984) among many others). **pos** encodes the relation $\textbf{standard}_c$, which holds of a degree *d* just in case it meets a standard of comparison for the adjective *G* with respect to a comparison class determined by *c*.

(i) a. $[\![\textbf{pos}]\!]^{w,c,j} = \lambda G \lambda x.\exists d.\textbf{standard}_c(d)(G) \,\&\, G(x,d)$
b. $[\![\textbf{pos}\text{-}oishii]\!]^{w,c,j} = \lambda x.\exists d.\textbf{standard}_c(d)([\![oishii]\!]) \,\&\, [\![oishii]\!](x,d)$
c. $[\![sono\ sochuu\text{-}wa\ \textbf{pos}\text{-}oishii]\!]^{w,c,j} = \exists d.\textbf{standard}_c(d)([\![oishii]\!]) \,\&\, [\![oishii]\!](\textbf{s},d)$

(6) PPT without an overt experiencer
   a. [[*oishii* 'tasty']]^{w,c,j} = $\lambda x \lambda d.$**tasty**$_j$(x,d),
      where '**tasty**$_j$(x,d)' stands for 'x is d-tasty to the judge j.'
   b. [[*sono shichuu-wa oishii* 'that stew is tasty']]^{w,c,j}
      = $\lambda d.$**tasty**$_j$(**s**,d), where **s** stands for 'that stew.'

(7) PPT with an overt experiencer
   a. [[*y-nitotte oishii* 'tasty to y']]^{w,c,j} = $\lambda x \lambda d.$**tasty**$_j$(x,d) & $j = y$
   b. [[*sono shichuu-wa Taroo-nitotte oishii* 'that stew is tasty to Taro']]^{w,c,j}
      = $\lambda d.$**tasty**$_j$(**s**,d) & j = **t**, where **t** stands for Taro.

Informally, (7b) is a set of degree d such that that stew is d-tasty to Taro.

We propose that *nante* is defined as an exclamative speech-act operator that modifies a degree of a proposition to exceed the standard with a semantic presupposition that the judge must be the actual speaker. Here, we utilize the surprising operator '**surprising**' defined based on Rett's (2011) *E-Force* and Grosz's (2012) *EX-operator*. **surprising** carries the following presuppositions.

(8) *Surprising operator*
   surprising$_j$(φ) is defined in a context c iff:
   a. the judge j has direct evidence for φ;
   b. the judge j believes φ;
   c. the judge j finds a degree of φ note-worthy or remarkable.
   When defined, **surprising**$_j$ expresses j's attitude towards φ.

We argue that E-only *wh*-expression *nante* encodes **surprising** and at the same time identifies the judge of the attitude holder to be the actual speaker, as shown in (9). Importantly, the attitude holder of E-only type exclamatives in Japanese is lexically fixed at the level of semantics.

(9) [[*nante*]]^{w,c,j} = λI_{dt}. $\exists d.I(d)$ in w & **surprising**$_j$($I(d)$) & $\partial(j = spkr_c)$,
   where I is a set of degree of type $\langle d,t \rangle$.

In (9), we use the ∂ symbol (the 'partial symbol,' read 'presupposing') to represent presupposition, following Beaver & Krahmer (2001). If the formula in the scope of the partial operator is not true, then the truth value of the formula is undefined. Informally speaking, *nante*(I) presupposes that the judge is the speaker in c, and when satisfies this, it is true iff there is a degree d such that $I(d)$ is true in w and $I(d)$ denotes a surprising degree for the judge (i.e., the speaker).

Let us illustrate how the proposal works. In the felicitous example (5a) (repeated in (10)), *nante* takes the set of degrees and returns the meaning in (10c): (10c) states that there is a degree d such that the stew is d-tasty to the speaker and d is surprising to her (e.g., note-worthy, remarkable, or unexpected).

(10) *Kono shichuu-wa nante oishii nodaroo!* 'How tasty this stew is!' (= (5a))
   a. Simplified LF: *nante* [λd. this stew is d-tasty]
   b. [[*kono shichuu-wa oishii*]]^{w,c,j} = $\lambda d.$**tasty**$_j$(**s**,d)

c. $[\![(10)]\!]^{w,c,j}$
$= [\![nante]\!]^{w,c,j}([\![kono\ shichuu\text{-}wa\ oishii]\!]^{w,c,j})$
$= [\lambda I_{dt}.\ \exists d.\ I(d)$ in w & $\mathbf{surprising}_j(I(d))$ & $\partial(j = spkr_c)](\lambda d.\mathbf{tasty}_j(\mathbf{s},d))]$
$= \exists d.\ \mathbf{tasty}_j(\mathbf{s},d)$ in w & $\mathbf{surprising}_j(\mathbf{tasty}_j(\mathbf{s},d))$ & $\partial(j = spkr_c)$

The example (4a) (repeated in (11)), on the other hand, is infelicitous because of the presupposition failure. In (11), *nante* takes a prejacent marked with the overt experiencer and returns the meaning in (11c).

(11) *#Ano shichuu-wa Taroo-nitotte nante oishii nodaroo!*
'(lit.) How tasty that stew is to Taro!' (= (4a))

a. Simplified LF: *nante* [λd. that stew is d-tasty to Taro]
b. $[\![ano\ shichuu\text{-}wa\ Taroo\text{-}nitotte\ oishii]\!]^{w,c,j} = \lambda d.\mathbf{tasty}_j(\mathbf{s},d)$ & $j = \mathbf{t}$
c. $[\![(11)]\!]^{w,c,j}$
$= [\![nante]\!]^{w,c,j}([\![ano\ shichuu\text{-}wa\ Taroo\text{-}nitotte\ oishii]\!]^{w,c,j})$
$= [\lambda I_{dt}.\ \exists d.\ I(d)$ in w & $\mathbf{surprising}_j(I(d))$ & $\partial(j = spkr_c)](\lambda d.\mathbf{tasty}_j(\mathbf{s},d)$ & $j = \mathbf{t}])$
$= \exists d.\mathbf{tasty}_j(\mathbf{s},d)$ in w & $j = \mathbf{t}$ & $\mathbf{surprising}_j(\mathbf{tasty}_j(\mathbf{s},d))$ & $\partial(j = spkr_c)$

The shading part in (11c) shows that applying *nante* to a sentence with an overt experiencer induces obligatory presupposition failure; the sentence asserts that the judge is 'Taro' (i.e., a non-speaker) while at the same time presupposes that the judge is fixed to the speaker herself.

Before moving on to the next section, we will provide one piece of evidence for the argument that the constraint that the experiencer is the speaker in *nante*-exclamatives is presupposition (or at least some similar kind of not-at-issue meaning). As shown in (13), the inference that the judge is the speaker passes the "*Hey! Wait a minute!*" test (von Fintel 2004) for presupposition.[9]

(12) *"Hey! Wait a minute!" test*
If a sentence φ presupposes p, φ can be responded by another discourse participant by "*Hey wait a minute, I didn't know that p*." (von Fintel 2004)

(13) [Context: A husband (= 'H') made dinner stew for the kids this morning before he went to work. Since he is usually a bad cook, his wife (= 'W') rarely eats the food he has made. Today, she was so hungry and decided to eat the stew. She is now eating the stew over the phone with the husband:]

W: Kono sichuu, nante oishii nodeshoo!
this stew.Top nante tasty Mod.Pol
'How tasty this stew!'

H: Chotto mat-e. Kyoo omae-ga ore-no shichuu-o tabe-ru nante
a.minute wait-Imp today you-Nom my stew-Acc tasty-Comp Comp
shira-nakat-ta yo! Nara motto umaku tsukut-ta noni.
know-Neg-Past Prt then more well make-Past though
'Wait a minute. I didn't know you were going to eat my stew today! If I had known,

[9]One may wonder that the exclamative in (13) passes the test just because the whole meaning of exclamatives contribute to a not-at-issue meaning. However, considering the findings of recent papers presenting evidence such that exclamatives have assertive properties (Trotzke & Giannakidou 2021, Ihara & Ito 2022), such a view is not necessarily correct.

I would have made it better."

In (13), the exclamative with the implication that 'the experiencer of the stew is the wife' can be responded by the husband by "I didn't know it was you (= the wife) who were going to eat my stew," which suggests that the meaning is encoded as a presupposition.

The analysis presented in this section predicts that a *nante*-exclamative becomes redundant when it accompanies the overt first-person experiencer (if the restriction that the judge must be the speaker is really a presupposition). We will discuss this issue in Section 4.

3.2 The semantics of non-E-only exclamatives

This section illustrates how the meaning of *doredake*-exclamatives is derived. In the previous section, we have proposed that *nante*, an E-only wh-expression, is itself an exclamative speech act operator. As for *doredake*, a non-E-only wh-expression, we assume a standard semantics for an ordinary wh-phrase, namely a generator of a set of propositions (like English *how*). Instead of assuming that *doredake* is not itself an exclamative-specialized operator, we argue that their interpretation relies on an independent semantic operation, thereby no restriction on the judge is observed.

Our treatment for *doredake*-exclamatives is basically based on the "question" approach by Zanuttini & Portner (2003) who suggest that the semantics of exclamatives are derived from that of questions. A wh-exclamative like "*How tall Steve is!*" therefore has the semantics identical with the question "*How tall is Steve?*" That is, assuming a standard Hamblin semantics of questions, the denotation of "*How tall Steve is!*" is the set of possible answers to the question "*How tall is Steve?*" as follows.

(14) $[\![$ *How tall is Steve?* $]\!]$
= { *Steve is 165cm tall*, … , *Steve is 170cm tall, …* , *Steve is 175cm tall* }

Pursuing the intuition that exclamatives are factive questions, Zanuttini & Portner (2003) propose that *domain widening* (defined in (15)) is responsible for making exclamatives informative. What sets exclamatives apart from questions is the inclusion of an "exceptional" (or "unexpected," "suprising") alternative that would not normally be in the domain. In short, after *widening*, the new domain must contain a widened alternative which counts as "exceptional." The exclamative "*How tall Steve is!*" is construed as having a wider domain than "*How tall is Steve?*" as in (16).

(15) *Domain widening*
For any clause *S* containing $R_{widening}$, widen the initial domain of quantification for D_1 to a new domain D_2 such that:
i. $[\![S]\!]^{w,D2,<} - [\![S]\!]^{w,D1,<} \neq$ empty.
ii. $\forall x \forall y.[[x \in D_1 \,\&\, y \in [D_2 - D_1]] \rightarrow x < y]$. (Zanuttini & Portner 2003)

(16) $[\![$ *How tall Steve is!* $]\!] = [\![R_{widening}([\![$ *how tall is Steve* $]\!])]\!]$
= { *S is 165cm tall*, … , *S is 170cm tall, … , S is 175cm tall,* ***S is 180cm tall*** }

We argue that the meaning of exclamatives with *doredake* are derived in the same strategy as *how*-exclamatives. Suppose that a *doredake*-clause with a PPT *oishii* 'tasty' initially has a denotation in (17a), a set of (expected) alternatives relativized to the degree of tastiness. Then,

by *widening*, an exceptional alternative '**s** *is* d_4*-tasty to j*' (i.e., the actual degree of the tastiness of '*this stew*') is added to the initial domain. Consequently, the widened domain (17b) counts as having an extreme value. Since the widened set is the actual domain at the time the sentence is used, the exclamative implication is conveyed.[10] [11]

(17) a. [[*kono sichuu-wa doredake oishii* 'how tasty is this stew']]^{w,c,j}
= { **s** *is* d_1*-tasty to j,* **s** *is* d_2*-tasty to j,* **s** *is* d_3*-tasty to j* }
b. [[*Kono sichuu-wa doredake oishii nodaroo!* 'How tasty this stew is!']]^{w,c,j}
= [[$R_{widening}$([[(17a)]])]]^{w,c,j}
= { **s** *is* d_1*-tasty to j,* **s** *is* d_2*-tasty to j,* **s** ***is*** d_4***-tasty to j*** },
where $d_4 > d_3 > d_2 > d_1$ and '>' stands for 'tastiness.'

Notice that unlike the case of *nante*, there is *no* semantic requirement for the value of the judge parameter. The judge in *doredake*-exclamatives can either be the speaker herself (by default) or someone other than the speaker with respect to the context uttered, which explains the initial contrast between (4a) and (4b).

4. Empirical predictions

4.1 '*To the speaker*' induces redundancy in *nante*-exclamatives

Let us show what can be predicted from the analysis. First, we look at how inserting an overt '*to the speaker*'-expression affects *nante*-exclamatives with PPTs. As shown in (18), in both English and Japanese, an overt first-person experiencer can generally accompany PPTs.

(18) a. This stew is tasty **to me**.
b. Kono shichuu-wa **watashi-nitotte** oishii.
this stew-Top me-to tasty
'This stew is tasty to me.'

How about the case of exclamatives? As we have proposed in Section 3.2., *nante*-exclamatives presuppose that the experiencer of a PPT is the speaker (i.e., the first-person). The current analysis thus predicts that *nante*-exclamatives with a PPT cannot accompany an overt first-person experiencer, since it induces redundancy. This prediction is borne out as below.

(19) #Kono sichuu, **watashi-nitotte** nante oishii nodaroo!
this stew.Top me-to nante tasty Mod
'(lit.) How tasty this stew is to me!'

[10] One criticism of the widening approach would be that it overgeneralizes since it does not specify what the source of the exceptionality is for the exceptional alternative. Thus, some additional constraint is needed, for instance, as Rett (2011) does by making use of E-Force with a degree measurement operator. Our purpose of adopting this approach to *doredake*-exclamatives is that it enables us to capture the possible interpretations of a sentence with *doredake* (i.e., questions and exclamatives) in a unified way, keeping the lexical entry of *doredake* a standard wh-item.

[11] This line of an account may predict that *how*-exclamatives are also judge-free as *doredake*-exclamatives. We set aside the task of examining this possibility for future work.

The redundancy observed here would be what is known as *sentence-internal redundancy* (cf. Stalnaker 1978). The common examples are (20) below (taken from Sudo (2017)).

(20) a. #Mary is expecting a girl, and she is pregnant and is happy.
b. #If Mary is expecting a girl, and she is pregnant and is happy.

Intuitively, these sentences are infelicitous, because they involve redundant expressions within themselves: the first conjunct '*Mary is expecting a girl*' presupposes that she is pregnant and is happy, but the second one asserts the same semantic content.

The infelicity in (19) can be explained in the same way as above. The sentence (19) involves the presupposition that the experiencer of *oishii* 'tasty' is the speaker (by *nante*) but at the same time conveys the same content (by *watashi-nitotte* 'to me').[12]

4.2 Using *nante/doredake* in questions

In Section 1, we have already seen that E-only wh-items are incompatible with information-seeking questions. As in (21a), *nante* cannot be used for a question asking a degree (i.e., a size of the car).

(21) a. *Taro-wa nante ookina kuruma-o kat-ta no?
Taro-Top nante big car-Acc bought Prt
'(intended:) How big a car did John buy?'
b. Taro-wa doredake ookina kuruma-o kat-ta no?
Taro-Top doredake big car-Acc bought Prt
'How big a car did John buy?'

Our analysis gives an account of this fact as follows. Since a *nante*-clause denotes a surprising degree proposition, the speaker using *nante* must know how much the degree is. Following Caponigro & Sprouse's (2007) definition of ordinary (i.e., information-seeking) questions in (22), *nante*-clauses cannot be used as a question asking a value of degree.

(22) *Definition of ordinary questions*
An ordinary question is an interrogative clause whose answer is not known to the speaker, but the speaker thinks the addressee may know it. An answer is required in order for the dialogue to be felicitous. Only the addressee can answer. (Caponigro & Sprouse 2007)

Doredake, on the other hand, is a pure wh-item, which has no requirement for an unexpected degree. The use of *doredake* in a question is thereby acceptable.

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[12]Unfortunately, our account for *doredake*-exclamatives fails to predict the fact that they too disallow anovert first-person experiencer when occurring with PPTs.

(i) # Kono shichuu-wa watashi-nitotte doredake oishii nodaroo!
this stew-Top me-to doredake tasty Mod
'[lit.] How tasty this stew is to me!'

Since our analysis does not restrict the experiencer to *doredake*-exclamatives, it leaves a possibility of the utterance (i) being felicitous. To investigate this issue, more empirical facts need to be gathered on whether non-E-only exclamatives including *doredake*-exclamatives generally tolerate overt first-person experiencers.

4.3 Optionality of sentence-final *nodaroo*

As most of the previous examples have shown, the modal expression *nodaroo* (generally translated as *would* in English) tends to co-occur with *nante*-exclamatives.[13] The third prediction obtained from our analysis is that sentences with *nante* is understood as exclamatives even when *nodaroo* does not co-occur. This is because in our proposal, *nante* itself plays a role as an exclamative speech act operator, and thus the occurrence of *nodaroo* may not be responsible for the sentence to have an exclamative interpretation. As in (24), this prediction is borne out.

(24) a. Nante (ustukushii) keshiki(-da)!
nante (beautiful) scenery(-Cop)
'What a (beautiful) scenery it is!'
b. Nante (ustukushii) keshiki-na nodaroo!
nante (beautiful) scenery-Cop Mod
'What a (beautiful) scenery it is!'

The meaning of the *nante*-exclamative without *nodaroo* in (24b) is derived exactly the same way as the one with *nodaroo*. Notice that the adjective *ustukushii* 'beautiful' can be unpronounced in (25). We assume that in that case a covert adjective is in play (Rett 2011).

(25) *Nante (ustukushii) keshiki-da!* 'What a beautiful scenery it is!' (= (24b))
a. $[\![$ *ustukushii keshiki-da* 'it is a beautiful scenery' $]\!]^{w,c,j} = \lambda d.$**beautiful**$_j$(scenery,$d$)
b. $[\![$ (24b) $]\!]^{w,c,j} = [\![$ *nante* $]\!]^{w,c,j}([\![$ (25a) $]\!]^{w,c,j})$
$= [\lambda I_{dt}.\ \exists d.\ I(d)$ in w & **surprising**$_j(I(d))$ & $\partial(j = spkr_c)](\lambda d.$**beautiful**$_j$(scenery,$d$)$])$
$= \exists d.$**beautiful**$_j$(scenery,d) in w & **surprising**$_j$(**beautiful**$_j$(scenery,d)) & $\partial(j = spkr_c)$

Both the observation and the analysis above are theoretically important because the observation is problematic for the syntactic approach that assumes an Agree/Checking-relation between *nante* and *nodaroo* (e.g., Ono 2006). Note that the tentative analysis here indicates that *nodaroo* does not have any semantic contribution in *nante*-exclamatives, but this leaves an open issue to be examined in the future.[14]

4.4 Embeddability of *doredake/nante*

As pointed out in the literature (e.g., Grimshaw 1979, Lahiri 1991, Guerzoni 2003, Romero 2015), factive emotive predicates like (*be*) *surprised* cannot embed polar interrogative clauses as in (26a), while they can embed wh-interrogative clauses, (26b).

(26) a. * John was surprised at **whether** Paul visited Mary.
b. John was surprised at **who** visited Mary.

The same contrast is observed in Japanese, as shown in (27). Let us note here that when a single proposition is embedded under the Japanese question particle *ka*, the clause is interpreted as a polar interrogative.

[13]Refer to Ito & Mori (2019) for the treatment of *nodaroo* in *nante*-exclamatives.

[14]The analysis here may indicate that *nodaroo* does not have any semantic contribution in *nante*-exclamatives, but this leaves an open issue to be examined; the fact that *nodaroo* can be added to *nante*-exclamatives implies that the occurrence of *nodaroo* is not actually redundant, hence there might be some contribution.

(27) a. *Watashi-wa Taroo-ga Hanako-o tazune-ta ka ni-odoroi-ta.
I-Top Taro-Nom Hanako-Acc visited Q Dat-surprised
'(lit.) I was surprised at whether Taro visited Hanako.'
b. Watashi-wa dare-ga Hanako-o tazune-ta ka ni-odoroi-ta.
I-Top who-Nom Hanako-Acc visited Q Dat-surprised
'(lit.) I was surprised at who visited Hanako.'

Under the proposed analysis, a *nante*-exclamative denotes a proposition, while a *doredake*-exclamative denotes a set of propositions. This leads to a prediction that a *nante*-exclamative cannot be embedded under *ka* with factive emotive predicates, while a *doredake*-exclamative can be embedded, just like (27). This prediction is borne out as below.

(28) a. *Watashi-wa sono kuruma-ga nante takai ka ni-odoroi-ta.
I-Top that car-Nom nante expensive Q Dat-surprised
'(intended:) I was surprised at how expensive that car was.'
b. Watashi-wa sono kuruma-ga doredake takai ka ni-odoroi-ta.
I-Top that car-Nom doredake expensive Q Dat-surprised
'I was surprised at how expensive that car was.'

5. Conclusion

In this paper, we have presented a novel observation that a certain type of E-only exclamatives has a restriction in that a judge parameter is fixed to the speaker. As a solution to explain this, we have suggested that E-only item *nante* lexically requires that the judge be identified with the speaker as a precondition.

Let us conclude the paper with some theoretical implication. Rett (2011) claims that speech acts of 'exclaiming' (i.e., exclamations) can be classified into two types, based on whether the *scalar expectation* is involved or not. She calls the former (*true*) *exclamatives* (generally expressed with wh-clauses, inversion clauses, or definite DPs; e.g., (29a)) and the latter *sentence exclamations* (generally expressed declarative clauses; e.g., (29b)).[15]

(29) a. How (very) early John arrived! I'd guessed that he'd be early, but not this early!
b. (Wow,) John arrived early! #I'd guessed that he'd be early, but not this early!

Based on Rett's criteria, both *nante* and *doredake* are classified into the former type, because they involve scalar expectations: they both allow the continuation involving the speaker's expectation toward the tastiness.

(30) a. Kono shichuu-wa nante oishii nodaroo!
this stew-Top nante tasty Mod
Oishii to omotte-ta ga, konna-ni oishii to-wa omowa-nakat-ta.
tasty Comp guessed but this-Dat tasty-Comp-top guess-Neg-Past.
'How tasty this stew is! I'd guessed that this would be tasty, but not this tasty!'

[15] Repp (2013), for instance, shows that the German wh-phrases *welch* 'which' and *welchE* (inflected 'which') reflect the scalar/non-scalar distinction.

b. Kono shichuu-wa doredake oishii nodaroo!
this stew-Top doredake tasty Mod
Oishii to omotte-ta ga, konna-ni oishii to-wa omowa-nakat-ta.
tasty Comp guessed but this-Dat tasty-Comp-top guess-Neg-Past.
'How tasty this stew is! I'd guessed that this would be tasty, but not this tasty!'

Given the fact that *nante*- and *doredake*-exclamatives are different from each other in terms of the (in)flexibility of the judge, and at the same time they both are true exclamatives *à la* Rett, our findings offer a new taxonomy of exclaming speech-acts: exclamatives (that involve scalar expectation) are further classified into *judge-fixed* types and *judge-flexible* types (Figure 1). Exploration of typologies including other languages other than Japanese will remain an issue for the future.

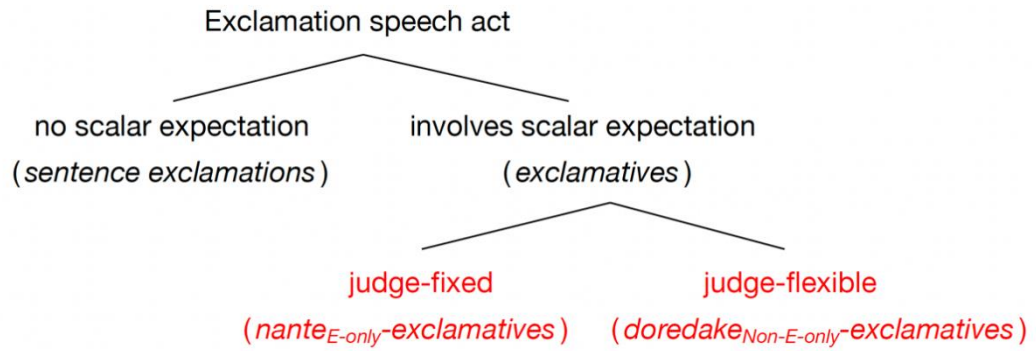

Figure 1: Classification of exclamation speech acts

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Two diagnostics for preposition-hood: Decomposing Path in White Hmong

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1. Introduction

This paper investigates the syntactic category of so-called "path predicates" in White Hmong (Hmong-Mien, Laos/Thailand), a class of predicates which appear to have both verbal and prepositional uses (Clark 1979, Jarkey 2015, Johnston to appear).[1] These are found in four main environments: as the main predicate of the clause, as head of the complement of a manner-of-motion verb, as head of the complement of a transfer verb, or as the head of an outer locative. These four uses are illustrated using the predicate *mus* 'go, to' in (1–4), respectively.

(1) kuv **mus** tajlaj *Main verb*
1SG go.to market
'I went to the market.'

(2) kuv khiav **mus** tajlaj *Complement of manner verb*
1SG run to market
'I ran to the market.'

(3) kuv txib Sua **mus** tajlaj *Complement of transfer verb*
1SG send Shoua to market
'I sent Shoua to the market.'

(4) peb nyob tod [**mus** thaum peb tshaib plab] *Adjunct*
1PL stay there to time 1PL hungry stomach
'We'll stay there [until we're hungry].'

In this paper, I propose two novel diagnostics for prepositional status: dependence of Source-marking on Goal-marking, and obligatory Route > Source > Goal ordering within complex path-denoting constituents. Both are based on Pantcheva's (2011) decompositional syntax for the (prepositional) path domain. Building on these diagnostics, I argue that path predicates in Hmong consistently function as prepositions across all environments in (1–4), and that the "main verb" use in (1) is genuinely cross-categorial, arising only when the predicate lexicalizes a span (Svenonius 2016, a.o.) including both verbal and prepositional heads.

Section 2 reviews the basic properties of Hmong path predicates and their treatment in prior literature. Section 3 considers a variety of possible diagnostics for verbal or prepositional status, and shows that all are ultimately uninformative in the case of Hmong. Section 4 introduces Pantcheva's (2011) decompositional syntax, and on that basis proposes two novel diagnostics for preposition-hood which can be observed only in complex paths of motion.

[1] All uncited examples are from elicitation with Canadian speakers of White Hmong (*Hmoob Dawb*). Thank you to Ka Lee-Paine and Sy Moua for sharing your language with me. Examples are presented in the Hmong Romanized Popular Alphabet (RPA) orthography, in which "coda consonants" represent tones. Thank you to Éva Dékány, Taehoon Hendrik Kim, Tamisha Tan, other GLOW in Asia poster session attendees, and three anonymous reviewers for questions and comments. This work was supported by SSHRC grants to Jessica Coon and by the Centre for Research on Brain, Language, and Music.

Section 5 presents an analysis which both captures these structural effects and derives mixed verbal and prepositional properties for path predicates in their "main verb" usage. Section 6 discusses consequences of this proposal and remaining issues.

2. Path predicates

Hmong path predicates are a heterogeneous group, comprising several sub-classes which differ from one another in paradigmatic ways. Here I adopt a simple four-way division, based on the geometry of the path they describe, into Goal, Source, Route, and Transition sub-classes. All four types are found across all four environments in (1–4).[2]

The first two types, Goal and Source predicates, describe a path of motion which has one endpoint located at a GROUND.[3] Goal predicates, as already seen in examples (1–4), describe motion towards a GROUND. Source predicates, as in (5), describe motion away from a GROUND.

(5) a. Tub khiav **thim** hauv lub tsev los
Tou run from inside CLF house hither
'Tou ran out of the house.' ≈ 'Tou came running out of the house.'

b. Sua thauj kuv **tawm** kawm.ntawv los tsev
Shoua transport 1SG from school to home
'Shoua drove me home from school.'

Route predicates, shown in (6), describe motion through or past a particular location. The GROUND of a Route predicate either describes the entire range the path traverses, or it describes a landmark somewhere along that path, depending on the predicate and on the context.

(6) a. kuv khiav **hla** tus choj
1SG run across CLF bridge
`I ran across the bridge.'

b. tus niam nqa tus mos.as **ncig** lub tsev
CLF mother carry CLF baby around CLF house
'The mother carried the baby around the house.'

Transition predicates, shown in (7), also describe motion oriented towards a GROUND—but unlike Goal predicates, these are necessarily telic (Johnston to appear). These will be less relevant to the discussion that follows, and are included here primarily for completeness.

(7) a. kuv **txog** tom tajlaj
1SG arrive DEM market
`I got to that market.'

b. tus qav dhia **txij** kuv xwb.pwg! (Jarkey 2015, p. 212)
CLF frog jump up.to 1SG shoulder
'The frog jumped up to (≈ as high as) my shoulder.'

The makeup of these four classes is given in (8), following Jarkey (2015, p. 111) and Johnston

[2] With one exception: Route predicates are not clearly attested in the adjunct use in (4).

[3] Following Talmy (1985), FIGURE refers to the moving individual, and GROUND to the location with respect to which the motion is located and oriented.

(to appear).[4] In the literature on Hmong, these predicates are usually assumed to be underlyingly verbal, and the table in (8) reflects this, using only traditional (i.e., verbal) glosses.

(8) Path predicates in White Hmong (following Jarkey 2015, Johnston to appear)

Route	**Source**	**Goal**	**Transition**
hla 'cross, pass'	*tawm* 'leave'	*mus* 'go'	*txog* 'arrive, get to'
raws 'go after'	*thim* 'withdraw'	*tuaj* 'come'	*txij* 'reach, extend to'
nyab 'rise'	*sawv* 'get up'	*los* 'come (home)'	*cuag* 'reach'
nce 'ascend'	*dim* 'get away'		*nto* 'reach (a high place)'
nqis/nqes 'descend'	*poob* 'fall'		*rau* 'to, for'
ncig 'go around'	*lawm* 'depart'		
taug 'follow along'			
lawv 'follow behind'			

Path predicates are required for a directed motion interpretation. Omitting the path predicate from (2), for example, results in (9), which cannot be understood to describe directed motion.

(9) kuv khiav tom tajlaj
1SG run DEM market
'I ran about at that market.'

In prior literature on Hmong, path predicates in simple examples like (1) are treated as verbs, those in more complex examples like (2–3) are assumed to be serial verb constructions, and only those in adjunct examples like (4) are treated as genuine prepositions (Clark 1979, Jarkey 2015). Purported diagnostics for prepositional status employed in support of this view include (i) lack of a semantic relationship with a FIGURE, (ii) more peripheral position within the clause, and (iii) topicalization (Jarkey 2015, p. 198–202), but these are not in fact categorial diagnostics: they simply distinguish adjunct PPs (i.e., event modifiers) from complement PPs (which express directed motion of a FIGURE). Because of this, it is necessary to revisit the question.

3. Diagnostics for Categorial Status

In this section, I review several plausible diagnostics for the prepositional/verbal status of path predicates. These include morphosyntactic properties, syntactic distribution, syntactic relationship with the external argument (Baker 2003), semantic contribution (Zwarts 2005, 2008, a.o.), and "satellite-framed" typological features distinction (Talmy 1985, et seq.). All of these are language specific to at least some extent—so what's crucial for the present discussion is not their cross-linguistic utility, but the extent to which they are informative in the context of Hmong. Unfortunately, while the full picture given by these diagnostics is generally consistent with the view that path predicates have a mix of verbal and prepositional properties, none of these diagnostics are fully conclusive in their own right.

3.1 Morphosyntactic properties of verbs and prepositions

[4] The Route class is called Path by Jarkey; I rename this to avoid terminological confusion. I exclude Jarkey's singleton class of "Return" predicates, and instead assume its sole member, *rov*, to function as an adverb meaning 'back', with a distribution that overlaps that of the historically-related adverb *rov.qab* 'again'. The preposition *rau* 'to, for' is included among the Transition predicates; see Section 3.2 for more on *rau.*

Hmong is a highly isolating language, in which verbs are not marked with any distinctive inflectional or derivational morphology. Morphemes marking aspect, negation, and modality do exist, but they consistently appear to the left of the verb phrase and do not attach to individual predicates (see also Jarkey 2015, p. 198). As such, this is not a useful diagnostic for Hmong.

3.2 Syntactic distribution of verbs and prepositions

A simple diagnostic for prepositional status is distribution: if path predicates appear in complementary distribution with one or more lexical items known to be prepositions, then we can conclude that path predicates too are prepositional.

In Hmong, there exists one plausible candidate for a genuine (non-verbal) path preposition: *rau.* This preposition historically derives from the verb *rau* 'put in, insert', which Clark (1979) claims to be falling out of productive use in the language. The meaning of *rau* is highly underspecified; it can introduce recipients, benefactees, topics of conversation, or patients, and may be glossed as 'to', 'into', 'for', 'about', or 'at', depending on the context.

Importantly, *rau* can also introduce a Goal of motion across all of environments (2–4), lacking only the "main verb" use in (1). It can take the place of path predicates like *mus* 'go, to' and *txog* 'arrive, up to' in both directed motion cases and adjunct cases, as in (10–11).

(10) kuv coj tus dev **rau** hauv lub tsev
1SG lead CLF dog to inside CLF house
'I led the dog into the house.'

(11) txij lub zos peb nyob **rau** yav.pem.toj mas, ua tau teb pob.kws…
from CLF village 3PL live up.to mountain TOP make can field corn…
'From the village we lived in up to the mountains, (we) could grow… (Fuller 1985)

Of all the evidence we will see throughout Section 3, it is possible that the similar distribution of *rau* 'to, for, about' represents the strongest evidence in favor of the prepositional status of path predicates. However, there are two issues that complicate the generalizations presented here. The first has already been alluded to: though *rau* appears to be further along a grammaticalization pathway from verb to preposition, it is not certain whether the main verb use has entirely disappeared (see Jarkey 2015, p. 215–223). Second, it should be noted that *rau* 'to, for' and other path predicates are not, in fact, in complementary distribution. Though either is sufficient to describe a path of motion, they can also co-occur as in (12), in a version of the secondary predication construction discussed by Johnston (to appear).[5]

(12) nws xa ib tsab ntawv (**mus**) **rau** nws niam (Jarkey 2015, pp. 55, 144)
3SG send one CLF letter go.to to 3SG mother
'She sent a letter to her mother.'

3.3 Predication of external argument

The ability to directly predicate an external argument is claimed to be unique to verbs (Baker 2003). A verb does not require any special marking to combine with an external argument, while other categories, including prepositions, require some additional syntactic structure (e.g.,

[5] This construction derives an entailment of boundedness—i.e., that the goal of motion was reached.

an added PredP layer) in order to combine with an external argument. Applied to Hmong path predicates, this diagnostic is suggestive, but not fully conclusive. The "main verb" usage in (1) above is clearly verbal, as there are no other elements that could plausibly predicate the external argument. Likewise, the adjunct usage in (4) is clearly prepositional: the path predicate does not predicate an external argument, but modifies the event instead.

The status of the path predicates in the environments in (2) and (3), on the other hand, is somewhat indeterminate. Both sentences include a FIGURE of motion, but in both cases the FIGURE appears to have a closer relationship with another predicate in the sentence—*kuv* '1SG' in (2) is also the subject of the manner-of-motion verb *khiav* 'run', while *Sua* 'Shoua' in (3) is also the object of the transfer verb *txib* 'dispatch'. In both cases, the putative "external argument" of the path predicate can simply be introduced by the manner/transfer predicate, meaning that *mus* 'go, to' in (2–3) might be genuinely prepositional without running afoul of Baker's (2003) generalization. This behavior does not prove that path predicates are prepositions, but neither does it rule that out.

3.4 Semantic contrasts

In a standard Neo-Davidsonian approach, a verb denotes a property of events, which generally supplies some sort of conceptual or qualitative information about the event in question. A verb like English *escape,* for example, supplies a property like that in (13), which makes reference to some (prelinguistic) conceptual notion of which events "count" as events of *escaping.*

(13) $[\![\text{escape}]\!] = \lambda e.escape(e)$

Directed motion prepositions similarly denote properties of paths, with a path defined as an ordered set of positions in space (Zwarts 2005, 2008). Such a path can be visualized as a dotted line on a map: it comprises a point of origin and a terminal point, with an optional (but potentially arbitrarily large) number of intervening points. A spatial preposition like *from* can be represented as in (14): *from X* describes the property shared by all paths whose point of origin (noted as $p(0)$ here) is at the location *X*, and which therefore necessarily lead away from *X*.

(14) $[\![\text{from } X]\!] = \lambda p.p(0) = X$

These simple examples highlight a fundamental contrast in the sorts of meanings that can be expressed by verbs and by spatial prepositions. A verb may contribute qualitative or conceptual meaning, while a spatial preposition may contribute spatial meaning only.[6]

This contrast appears to be reflected in the meanings of path predicates, which vary in interpretation depending on the environment in which they occur. For example, the Source predicate *dim* can be translated variously as 'escape', 'get away', 'away from', or simply 'from'. Assuming that dim genuinely varies in its meaning between verbal and prepositional senses, we predict the interpretation of the path predicate to be constrained by its syntactic category. This prediction is plausibly correct, with "main verb" examples like (15a) receiving a verbal meaning, and the environments in (15b–d) receiving a prepositional (i.e., purely spatial) meaning.

[6] Of course, some verbs do convey primarily/only spatial information—English *go* is one such example.

(15) a. cov Hmoob **dim** hauv Nplog.teb los (Jarkey 2015)
CLF Hmong escape inside Laos hither
'The Hmong escaped from Laos.'

b. kuv khiav **dim** tus dev mus
1SG run from CLF dog away
'I ran away from the dog.'

c. Sua txib cov me.nyuam **dim** tus dev mus
Shoua dispatch CLF child from CLF dog away
'Shoua sent the children away from the dog.'

d. [**dim** qhov rooj txog phab.ntsa], cov neeg sawv.ntsug
from CLF door up.to wall CLF person stand.upright
'From the door to the (back) wall, people were standing.'

However, there are certain confounds that make this ultimately inconclusive. Although my consultants generally produce and accept prepositional translations like 'from' or 'away from' in environments like (15b–d), there are a small number of cases in which *dim* and other path predicates in these environments receive verbal translations. It is not clear whether these counterexamples genuinely reflect the underlying meaning, or whether they arise in the process of translation. (For example, a speaker might offer a more highly specified "citation form" even when not fully appropriate.) Furthermore, there may be contextual or information-structural effects that bias a speaker towards one translation or the other.

It is not a simple matter to address these confounds, for example, by devising contexts for elicitation that clearly differentiate between the two senses of path predicates. Taking *dim* as an example, the events described by its verbal sense form a proper subset of the events derivable from its prepositional sense. That is, an event of *escaping* will generally be one in which a path *from* a location is traveled. Until and unless the apparent contrasts in (15) can be addressed in a larger-scale study, we are left with another suggestive yet inconclusive diagnostic.

3.5 Verb-framed versus satellite-framed

Hmong has several of features consistent with "satellite-framed" languages—that is, languages in which motion can be encoded by another (usually non-verbal) element, rather than by the verb itself (Talmy 1985). These features include resultatives, verb-particle constructions, double-object verbs, created-result constructions, and productive noun-noun compounding (Snyder 2001, Folli and Harley 2020).[7] This suggests that Hmong is a satellite-framed language, which is consistent with the view that (i) the main predicates in environments (2–3) are the manner/transfer verbs, and (ii) the path predicates in examples (2–3) function as the "satellite"—a role often, but not necessarily, fulfilled by prepositions cross-linguistically. But strictly speaking, this does not indicate the categorial status of the directed motion predicate.

3.6 Interim summary

Thus far, we have seen five diagnostics for verbal/prepositional categorial status. These include (i) morphological inflection, (ii) syntactic distribution, (iii) predication of an external argument, (iv) semantic contrasts, and (v) satellite-framed typological features. None of these offers definitive evidence that Hmong path predicates function as prepositions, but all of them are at

[7] Due to the available space, I do not include examples here, though see Johnston to appear.

minimum compatible with that view. In the following section, I propose two novel diagnostics which will more concretely attest to the prepositional status of Hmong path predicates.

4 Two novel diagnostics from decomposition

A line of analysis going back to Jackendoff (1983) divides the prepositional domain into two projections: PlaceP, which encodes static locative relations, and PathP, which dominates PlaceP and encodes dynamic motion (see also van Riemsdijk 1990, Koopman 2000, Kracht 2002, Den Dikken 2010, a.o.). More recent work further decomposes both PathP and PlaceP, although as we are primarily concerned with path predicates, I will not discuss PlaceP in detail.

I adopt the decompositional analysis of the Path domain put forward by Pantcheva (2011), which divides the function of the Path head itself across three heads, Route, Source, and Goal, as schematized in (16). Each are associated with a particular path geometry, with Goal paths being most fundamental, and Source and Route paths inherently more complex. Evidence for this approach comes from patterns of morphological containment and syncretism across a sample of 81 mostly agglutinating languages.

(16) [Route [Source [Goal [Place […]]]]] (Pantcheva 2011)

This section presents two novel diagnostics for prepositional status, both of which relate to co-occurrence restrictions in the derivation of internally-complex paths of motion. In Section 4.1, I show that Hmong Source predicates must obligatorily co-occur with Goal predicates. This aligns with an important pattern in spatial case-marking attested in a number of languages surveyed by Pantcheva. In Section 4.2, I show that Hmong Route, Source, and Goal predicates obligatorily co-occur in precisely that order—just as the structure in (16) predicts. On both counts, this behavior differs from that of purely verbal predicates in Hmong.

4.1 Dependence of Source on Goal

On closer examination, Source predicates in Hmong do not, in fact, have an inherent Source meaning. When a predicate like *tawm* ‘leave, from’ occurs as the sole path predicate in the clause, as in (17), it obligatorily receives a Goal interpretation instead. To derive a Source interpretation, *tawm* must be followed by an overt Goal predicate, as in (18).

(17) kuv **tawm** tsev
1SG leave home
#‘I left (from) home.’
‘I left for home.’

(18) kuv **tawm** tsev **mus** tajlaj
1SG leave home to market
‘I left (from) home for the market.’
#‘I left for home and went to the market.’

Put another way, the path predicate itself is ambiguous between Source and Goal interpretations, but the underlying syntactic structure into which the path predicate merges is not. This pattern is highly unusual. In a survey of Goal and Source marking across 117 languages, Wälchli and Zúñiga (2006) find only one language to show this pattern: Hmong.[8]

However, this behavior does not seem quite so startling if we consider that in more highly agglutinating languages, Source markers often morphologically incorporate Goal markers, in a way that is clearly compositional (Pantcheva 2011). In fact, this “Source–Goal

[8] The Hmong variety included in their sample is *Moob Ntsuab* (called Mong Njua, Green Mong, or Blue Mong), a closely-related and mutually-intelligible Laotian Hmong variety.

containment" is one of the primary pieces of evidence in favor of the decomposition seen in (16) above, attested in eight of the 81 languages surveyed.[9] This is illustrated in (19) with data from Chamalal (Nakh-Dagestanian; Magomedbekova 1967 cited in Pantcheva 2011, p. 47),

(19)	a.	*Goal path:*	b.	*Source path:*
		mik^{y}i-l-u		mik^{y}i-l-u-r
		road-on-GOAL		road-on-GOAL-SOURCE
		'onto the road'		'off the road'

If such a pattern is attested in markers of spatial case, perhaps it is unsurprising that it should also be found in prepositions. However, there is no reason that this pattern should be observed in purely verbal predicates: if *tawm* is a verb capable of assigning a Source role to its complement in (18), then why can it not do the same in (17)? In fact, this is precisely the behavior we observe with at least one other class of verbs in Hmong. Verbs of *obtaining*, such as *txeeb* 'snatch' in (20), can simply assign a Source role to a locative argument, despite the fact that there is no additional path or transfer predicate to describe a Goal.

(20) tus tub.sab **txeeb** kuv cov nyiaj ntawm kuv tes (Jarkey 2015)
1SG robber snatch 1SG CLF money DEM 1SG hand
'The robber snatched my money from my hand.'

4.2 Ordering within complex predicates

A further prediction of the decompositional model of Path relates to the ordering of the sub-parts of complex predicates. In many decompositional analyses of the verbal domain, complex predicates can be formed from multiple heads within the verb phrase (Ramchand 2008, Travis 2010, a.o.). These heads generally compose with one another in a broadly temporal order, often with explicitly causative semantics. See, for example, the decomposition in (21a) proposed by Ramchand (2008), in which an *init(iation)* state causes a dynamic *proc(ess)* event, which itself causes a *res(ult)* state. In the prepositional domain, it has likewise been proposed that several heads can interact with one another to derive complex predicates—however, in the decomposition in (21b) proposed by Pantcheva (2011), the ordering is expressly not temporal. The precedence of Route over Source and Goal shows this; in a purely temporal or iconic ordering, we instead expect to find Source > Route > Goal ordering in many or all cases.

(21) a. [*init* [*proc* [*res* [P/A/D […]]]]] (Ramchand 2008)
b. [Route [Source [Goal [Place […]]]]] (Pantcheva 2011)

This sets up a clear prediction. The sub-parts of complex path descriptions must inherit their ordering from the ordering of the heads they spell out. If they display a purely temporal ordering, like that in (21a), they likely merge in the verbal domain. If, on the other hand, they display the idiosyncratic ordering in (21b), they likely merge in the prepositional domain.

No clear difference has thus far been evident. Although the Source–Goal relationship discussed in Section 4.1 does not appear to be causal in nature, it certainly shows a similar temporal/iconic ordering to that found in the verbal domain. However, when introducing a

[9] The eight languages cited: Bulgarian, Dime, Chamalal, Ingush, Jingulu, Mansi, Quechua, and Uchumataqu. The reverse pattern, a Goal marker that contains a Source marker, is unattested (Pantcheva 2011, p. 49).

Route predicate into the structure, that predicate obligatorily precedes both Source and Goal—that is, the sub-parts of complex path descriptions appear in an obligatory Route > Source > Goal order (Jarkey 2015).

(22) cov Hmoob (khiav) **hla** dej Na.Koom **dim** hauv Nplog-teb **mus** Thai-teb
CLF Hmong run across water Mekong from inside Laos to Thailand
'The Hmong fled [across the Mekong River from Laos to Thailand].'

This clearly supports a structure like (21b) over one like (21a). And importantly, this contrasts with the behavior of other (genuinely verbal) complex predicates in Hmong, whose sub-parts clearly show either a causal relationship, as in (23a), or at minimum a temporal ordering, as in (23b) below (Jarkey 2015, Johnston to appear)

(23) a. kuv **nrhiav** **pom** lub pob
1SG find see CLF ball
'I found the ball.'
b. lawv **hlais** cov txiv **faib** **noj**
3PL slice CLF fruit divide eat
'They sliced, divided, and ate the fruits.'

Despite its clear resemblance to Pantcheva's (2011) decomposition, the ordering observed in (22) flies in the face of a common assumption about prepositional phrases—that they adjoin to vP in a recursive and relatively free manner. If that is so, then why can a speaker of Hmong not structure examples like (22) such that each Path predicate forms its own PathP adjunct, which might then be freely ordered with respect to one another? At present, I have no explanation for why this multiple-adjunct structure is unavailable in Hmong—it is simply a fact that it does not occur in the language.[10]

5 Analysis

In this section, I propose an analysis intended to capture the mixed verbal and prepositional properties of Hmong path predicates—and in particular, the distribution of those properties across the four environments illustrated by examples (1–4) above.

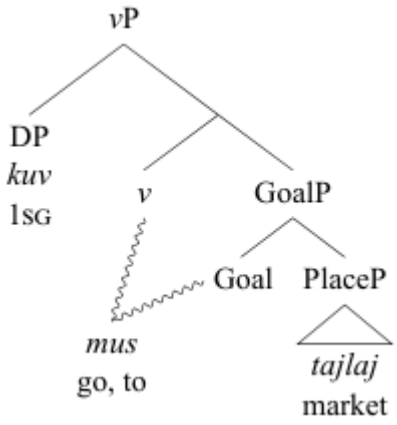
As the spatial interpretation is consistent across environments (1–3), I model these cases with the same basic underlying syntax, differentiated primarily by the way in which this underlying structure is lexicalized. In their "main verb" use, path predicates lexicalize a span (see e.g. Svenonius 2016) including both *v* and the head of its complement—which in the case of (24) is Goal. In other cases, such as (25), *v* is lexicalized by a manner-of-motion verb. The path predicate then lexicalizes only Goal.

[10] Similar structural effects are also observed for complex PPs in English. When a multiple-adjunct structure is available, as in (i), Source and Goal PPs can appear in either order. When a multiple-adjunct structure is not available, such as when a complex PathP functions as a locative as in (ii), a strict Source–Goal ordering is required.

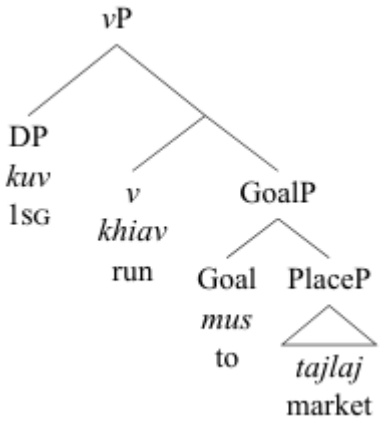
(i) a. John [[walked [from his apartment]] [to the park]].
b. Mary [[drove [to her aunt's place]] [from the airport]].

(ii) a. They're resurfacing the highway [from Pipestone to Jasper].
b. *They're resurfacing the highway [to Jasper from Pipestone].

(24)

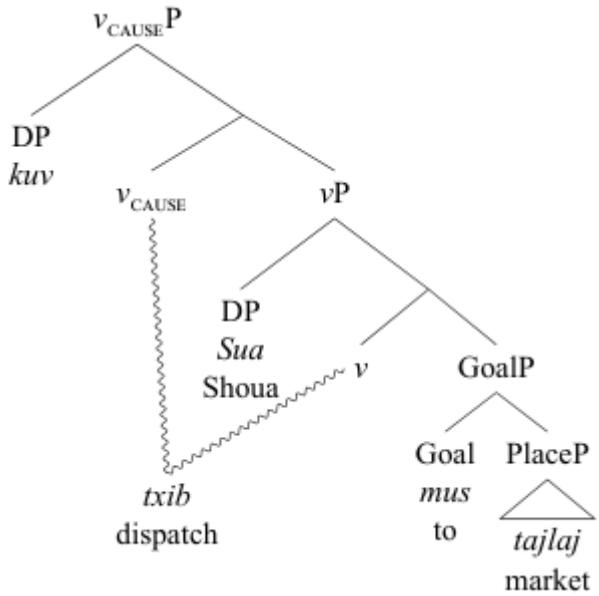


(25)



Examples involving transfer verbs are similar to the manner verb cases: the path predicate once again lexicalizes only the head of the complement of *v*, and not *v* itself. However, there are two complications in this case. First, while manner-of-motion verbs are generally intransitive, transfer verbs are by definition transitive. This must be reflected in the structure, either through distinct selectional requirements or through distinct "flavors" of *v* (Folli and Harley 2005), though I abstract away from the details of this here. Second, transfer verbs involve a more complex event structure (Harley 2002, Ramchand 2008, Beavers and Koontz-Garboden 2020). Following Ramchand (2008), I treat this as a causal relation between two sub-eventive heads, both lexicalized by the same verb, in this case *txib* 'dispatch'. Aside from these two points, however, the structure in (26) is similar to that in (25).

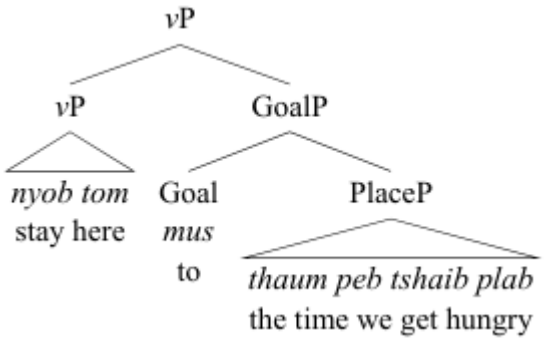
(26)



Finally, the outer locative cases involve a markedly different structure from the other three. In (27), the path predicate merges within an adjunct modifying the vP.[11]

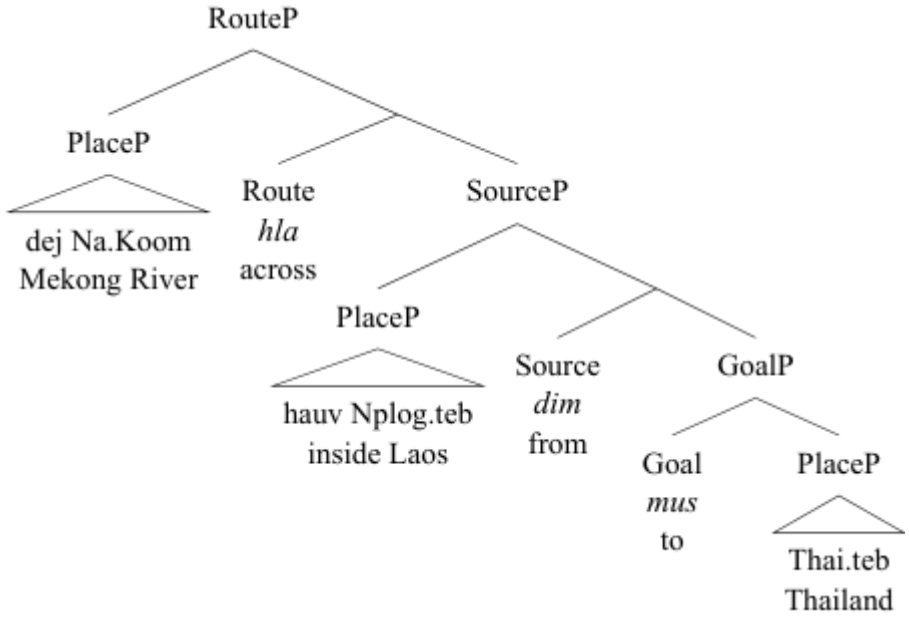
[11] I assume here that there are no categorial differences between temporal and spatial prepositional phrases.

(27)



The four structures in (24–27) represent the basic contrast between environments (1–4). All cases involve a similar syntax for the PathP constituent. Where they differ is in (i) the attachment site of the PathP constituent, and (ii) the lexicalization of *v*. The examples discussed in Section 4 differ from these only in the complexity of the PathP constituent. The prepositional constituent in (22), for example, might receive the fully-articulated structure in (28).

(28)



This structure can in principle appear in any of the environments in (1–3)—though how it interacts with these structures will be slightly different. In (2–3), this structure will simply form the complement to the manner/transfer verb. In the environment in (1), the topmost path predicate will lexicalize *v*. The remaining path predicates will not have the necessary head–complement relationship with *v*, and will therefore only contribute their prepositional meanings in that case. This structure can also appear in truncated form (i.e., as a SourceP, maximally) in environment (4).

This structure falls short in one important respect: it does not correctly capture the word order for Route and Source predicates, which should precede rather than follow their Grounds. From this structure, the correct word order might be derived morphologically (if, perhaps, we assume Path predicates to function as prefixes), or syntactically (if, perhaps, we posit that Source/Route predicates also lexicalize an additional functional layer above Source/Route, allowing them to be linearized before the material in their specifiers).

In this model, Hmong path predicates are necessarily prepositional across all environments in which they appear, and are additionally verbal in only those contexts like (1) where they also lexicalize *v*.

6 Discussion

In this section, I address a few remaining issues. Section 6.1 discusses some previous analyses which likewise claim some "fuzziness" in the boundary between verbal and prepositional domains. Section 6.2 examines the consequences of the Hmong data for the decomposition of PathP. Section 6.3 discusses two questions left open by the insufficiency of the present data.

6.1 Cross-categorial motion predicates

The basic structure proposed here for Hmong path predicates has clear antecedents. Son and Svenonius (2008) analyze variation in directed motion constructions across three types of languages (typified by English, Malayalam, and Korean) by positing that motion verbs in these languages lexicalize a span including zero, one, or two prepositional heads. Inagaki (2002) proposes a similar analysis for Japanese, relying on head incorporation rather than spanning. These previous approaches are schematized in (29).[12] Though Hmong provides no evidence in favor of the Dir head posited by Son and Svenonius, the ability of a single element to lexicalize both *v* and Path places Hmong on par with Japanese- or Korean-type languages. The key contrast between Hmong and Korean/Japanese is the *variability* of this pattern of exponence.

(29)

a.		*v*	Dir	Path	Place	DP
	Japanese	*hairu* 'enter'			*-ni* 'at'	*heya* 'room'
	Korean	*ka* 'go'			*-ey* 'at'	*cip* 'house'
b.		*v*	Dir	Path	Place	DP
	Malayalam	*naṭann-* 'walk'		*-ekkə* 'to'	*il* LOC	*office* 'office'
c.		*v*	Dir	Path	Place	DP
	English	*dance*	∅	*to*	*behind*	*the curtain*

6.2 Decomposition of PathP

The data from Hmong broadly substantiates existing decompositional approaches to the prepositional phrase. Beyond this, however, it offers important contributions relating to two details of the architecture of the Path domain.

The first is the locus of Source interpretations. Throughout this paper, I have assumed the decomposition of PathP proposed by Pantcheva (2011). This approach is notable for, among other features, representing Source and Goal as distinct heads in the decomposition. A competing proposal comes from Radkevich (2010), which, although broadly similar in its outlines, represents Source and Goal paths not as distinct syntactic heads, but as the result of a single, binary-valued feature on the head M, which corresponds to Path.[13] This type of

[12] Other languages in which motion verbs are claimed to span across the V–P boundary include Persian, Kayardild, Yucatec Maya, and Tetun Dili (Pantcheva 2011, pp. 205-207).

[13] Radkevich follows the terminology of Kracht (2002), in which path relations are encoded by a head M(odalizer),

approach faces challenges in Hmong, since it cannot capture the co-occurrence of distinct Source and Goal predicates.

The second is the status of Route within this decomposition. As established, Source interpretations are tied to a particular position in the prepositional spine—that is, they are dependent on the presence of a Goal head. As already noted in Section 4.2, Route predicates do not exhibit a similar requirement that either a Goal or Source predicate be present. A related observation, which until now has not been discussed, is that Route predicates (unlike Source and Goal predicate) may occur multiple times within the same path description, as do *taug* 'follow along, along' and *nqis* 'descend, down' in (30).

(30) **taug~taug** dej **nqis** hav mus (Jarkey 2015, p. 109)
RDUP~follow.along water descend valley away
'…followed the river down the valley away.'

These phenomena suggest a deeper structural asymmetry between Route, on the one hand, and Source/Goal on the other. The behavior of Hmong is simply one piece in a growing body of evidence that suggests that Route may not be as closely connected to other path heads as Source is to Goal. The original evidence provided by Pantcheva in favor of Route containing both Source and Goal is not as robust as that in favor of Source–Goal containment: in a sample of 81 languages, only two attest to the Route–Source relationship, and only one attests to the Route–Goal relationship.[14] This compares to eight languages in which Source markers contain Goal markers. Furthermore, at least some Route paths (through-paths) are claimed to directly predicate a GROUND, omitting most of the proposed intervening functional structure (Ramchand 2012, p. 7–8). This latter observation might explain the lack of Route-Source or Route-Goal containment.

6.3 Robustness of the Hmong data

The Hmong pattern presented here is subject to some additional possible complications, which presently-available data do not allow me to address. Of primary importance is the question of productivity. The present approach predicts that all Hmong path predicates should appear in approximately the same distribution (modulo variation in the particular Path heads they spell out), and it is not clear at present whether this prediction is borne out. The most problematic gap in the data is that, of the fourteen Source, Goal, and Transition predicates identified in (8), only nine are attested in the outer locative use. Without further data, this gap could be interpreted in one of several ways. It might be a coincidental gap, which future data collection will fill in. It might be a matter of genuine ungrammaticality, which the present analysis must be slightly modified in order to capture. Or it might be a matter of preference, which could be due to various factors. Speakers might, for example, display a bias in purely prepositional contexts towards those path predicates whose verbal meanings are the most generic—that is, they may prefer to use as prepositions those lexical items that have "less" verbal semantic content to begin with. Alternatively, this might be due to an in-progress process of grammaticalization, which perhaps, given enough time, will see path predicates split into two (arbitrarily determined) classes: one of lexical verbs without prepositional uses, and one of true prepositions lacking verbal uses.

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and place relations by a head L(ocalizer).

[14] Route marking contains Source marking in Akhvakh and Avar, and Route marking contains Goal marking in Slovak (Pantcheva 2011, p. 51–55).

This brings us to the second point. Durie (1988) claims that similar "verbal prepositions" in Oceanic languages represent an intermediate stage in the diachronic derivation of prepositions from verbs, and shows that these "intermediate categories" have a wide range of properties from language to language. The present model can capture the variable properties of this sort of lexical item in at least two ways: cross-linguistic differences in lexicalization along the lines of Son and Svenonius (2008), and variation in the amount of flexibility in this lexicalization. However, there is no clear evidence that Hmong is in the midst of a diachronic drift. The judgments of my consultants closely mirror those reported by Clark (1979), the earliest work discussing Hmong path predicates in detail. If such a shift is in progress in Hmong, it is occurring over a time scale of centuries, rather than decades.

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Reanalysis and Intervention in English 'tough' constructions

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1. Introduction

Tough-constructions in English, exemplified in sentences in (1), have long been a focal point in generative grammar due to the complexities they present in syntactic derivation.

(1) His problem is tough to solve.

Broadly, two main approaches have been proposed to explain their derivation. One prominent approach is the base-generation analysis, which suggests that an empty or null operator (Op) moves within the embedded infinitival clause while the matrix subject is base-generated in the matrix clause. This subject then enters into a semantic predication relation with the Op-containing embedded clause. This is illustrated in (2):

(2) Derivation of (1) under the base-generation analysis:
His problem is tough [Op PROarb to solve [e]].
↑_____A'-mv_____|

This analysis has been extensively explored in the works of Ross (1967), Akmajian (1972), Lasnik and Fiengo (1974), Chomsky (1977), Chomsky (1981), Williams (1983), Rezac (2006), and Fleisher (2013, 2015).[1]

The second line of analysis, in contrast, suggests that the embedded object DP originates in the embedded gap position and undergoes A'-movement followed by A-movement, a process dubbed the long-movement analysis. Initially, it moves to the periphery of the embedded infinitival clause via A'-movement and then to the matrix subject position through A-movement, as illustrated in (3):

(3) Derivation of (1) under the long-movement analysis:
His problem$_1$ is tough [t_1 PROarb to solve [e]$_1$.
↑____A-mv____|↑_____A'-mv_____|

This approach, the long-movement analysis for tough-constructions, has been explored by scholars including Rosenbaum (1967), Postal (1971), Postal and Ross (1971), Brody (1993), Hornstein (2001), Hicks (2009), Hartman (2011, 2012a, b), Fleisher (2013), and Longenbaugh (2015).

In Chomsky's (2021) recent study, the underlying derivation of tough constructions has been brought into question anew. He asserts that both analytical approaches have their own supporting evidence. First, let us consider the support for the base-generation analysis.

(4) a. X be easy [Y_1 [for John ... Y_2 ...]]
b. many books are easy for John to read
c. John has read many books/many books have been read by John (Chomsky 2021:28)

[1] Notably, Rezac (2006) and Fleisher (2013, 2015) emphasize that the critical linking between the tough-subject (e.g., 'his problem') and the gap (e.g., [e]) is achieved through Agree relations.

To briefly mention, example (4) supports the base-generation analysis of tough constructions, where X is introduced by external merge (EM). In (4c), both active and passive forms imply that John is an avid reader, a reading not possible for (4b). This suggests that raising cannot explain these constructions, hence improper movement must be blocked.[2]

Alternatively, there is evidence that backs the long-movement analysis of tough constructions, particularly from Binding Theory. Consider the following example:

(5) John seems to X [Y to appear to Z [P to like Q]]

If X is 'her', then Z and Q cannot be 'Mary' because of a violation of Condition C, indicating that X c-commands Z and Q. Conversely, if X is 'Mary', then Z and Q cannot be 'herself', though each can be 'himself'. This suggests that a copy of 'John' must be present in position Y, necessitating successive-cyclic movement.

Throughout the years, numerous studies have examined the underlying derivation of tough constructions, yet it remains a topic of debate. Therefore, this study seeks to address this issue by examining intervention effects (which will be presented in the following section) within tough constructions. To address the issue, this paper is organized as follows. In section 2, we thoroughly examine the nature of intervention effects in tough-constructions and assess existing explanations. In section 3, we introduce a novel analysis, proposing that the matrix tough adjective and the embedded infinitive verb combine to form a complex individual-level adjective through the raising of the embedded ⓘ-Pred at LF. However, this raising is blocked when the embedded infinitive clause is extraposed. As a result, in our analysis, the intervention effects in tough-constructions stem from the dislocation or extraposition of the embedded infinitive clause, which prevents the necessary raising of the embedded ⓘ-Pred. Finally, section 4 presents a summary of our findings.

2. Intervention effects

Hartman (2011, 2012a, b) discusses intervention effects in tough constructions by providing examples such as (6b), which do not arise in expletive subject counterparts in (6a):

(6) a. It is important (to Mary) to avoid cholesterol.
b. Cholesterol$_1$ is important (*to Mary) to avoid t_1.

(Hartman 2012a:125)

In (6b), the prepositional phrase (PP) 'to Mary' situated between the matrix tough-adjective 'important' and the subsequent infinitive clause with a gap functions as an intervenor, obstructing the connection between the matrix subject and the gap within the embedded infinitive clause. However, the same PP is inconsequential in (6a), where there is no relation between the matrix subject DP and the inside of the embedded infinitive clause. Furthermore, intervention effects fail to manifest when the same PP is displaced to the initial position of the sentence, as shown in (7):

(7) [To Mary] Cholesterol$_1$ is important to avoid t_1.

[2] Under Chomsky (2021), the solution lies in segregating A- and A'-movements, ensuring the analysis remains within the A-system and preventing improper movement or copying. A- and A'-movements serve distinct roles: A-positions are core semantic, θ- and argument-positions, while A'-structures are discourse and information-related. This distinction underlies the Duality of Semantics in Chomsky (2021).

Hartman demonstrates that the presence of the intervenor significantly induces intervention effects in tough constructions, illustrating how these effects can impact the analysis of such constructions.

Prior to Hartman's research, Chomsky (1973) noted similar effects to the intervention effects discussed here. He observed that in tough-constructions, two 'for'-PPs cannot co-occur, as shown in (8b), whereas this restriction does not apply in expletive subject constructions, as in (8a):[3]

(8) a. It is easy [for the rich] [for the poor] to do the work.
b. The work$_1$ is easy [for the rich] (*[for the poor]) to do t$_1$.

(Chomsky 1973)

To circumvent the intervention effects in (8b), 'for the rich' should not be interpreted as a matrix constituent with an experiencer or 'attitude holder/judge' thematic role, as in (9a). Instead, it should be analyzed as the embedded subject with an Agent thematic role, as in (9b):

(9) a. *The work$_1$ is easy [for the rich] [to do t$_1$].
b. The work$_1$ is easy [for the rich to do t$_1$].

Similarly, the fact that the 'for'-PP preceding the infinitive clause in tough-constructions cannot be part of the matrix clause, but must serve as the subject of the embedded clause, is illustrated by the following contrast. In the expletive subject sentence (10a), the quantifier within the 'for'-PP can have either wide or narrow scope relative to the matrix adjective. However, in the tough-construction (10b), since the 'for'-PP is only interpreted as being at the periphery of the embedded infinitive clause, the quantifier within it can only have narrow scope below the matrix adjective.

(10) a. It is impossible [for every student] to fail this test.
(every student ≫ impossible; impossible ≫ every student)
b. This test$_1$ is impossible [for every student] to fail t$_1$.
(*every student ≫ impossible; impossible ≫ every student)
(Keine and Poole 2017:5)

This demonstrates that in tough-constructions, the 'for'-PP is restricted to a specific syntactic role within the embedded clause, indicating that the for-phrase must be construed as the embedded subject in tough constructions.

Keine and Poole (2017) introduce two additional tests to demonstrate that the 'for'-PP located between the matrix tough-adjective and the embedded infinitive clause is part of the embedded clause, not the matrix clause. The first test involves partial control, as illustrated by the contrast between (11a) and (11b). In (11a), the embedded verb 'gather' requires a plural subject. Crucially, the singular DP 'Mary' cannot fulfill this requirement; instead, the plural subject requirement of 'gather' can only be satisfied in (11a) if the embedded clause contains a plural PRO. This means that 'for Mary' must be interpreted as the experiencer PP of 'tough' and partially control PRO. In other words, the only valid structure for (11a) is one where the for-phrase serves as the experiencer PP of the tough-predicate and partially controls PRO. The expletive construction in (11a) contrasts with the corresponding tough-construction in (11b), which is notably infelicitous:

[3] For simplicity, we will refer to the string 'for+embedded subject' as a 'for-phrase', even though, according to standard analyses, these two elements do not constitute a single constituent. This terminological choice does not affect our analysis.

(11) a. It will be tough for Mary$_1$ [PRO$_{1+}$ to gather in this park].
b. #This park$_1$ will be tough [for Mary to gather in t$_1$].

(Keine and Poole 2017:6)

The infelicity of (11b) indicates that a structure where the for-phrase is an experiencer PP and the embedded subject is plural PRO is not possible in tough-constructions. This contrast between (11a) and (11b) illustrates that experiencer PPs are not allowed in tough-constructions, necessitating that 'for Mary' be interpreted as the embedded subject in (11b).

Furthermore, Keine and Poole (2017) introduce another test to demonstrate that the PP between the matrix tough-adjective and the embedded infinitive clause holds an attitude holder/judge thematic role, meaning the complement DP of the preposition in this PP must be a sentient expression. Thus, in the following examples, the for-phrase cannot be part of the matrix clause but must be part of the embedded infinitive clause:

(12) a. It is easy for the chalk to stick to the blackboard.
b. The blackboard$_1$ is easy [for the chalk to stick to t$_1$].

(Keine and Poole 2017:6)

We have observed that the PP with an attitude holder/judge thematic role situated between the matrix tough-adjective and the embedded infinitive clause acts as an intervenor. However, Bruening (2014) points out that other typical adjunct PPs can also serve this role, as shown in (13):

(13) a. It is always annoying [$_{PP}$ at meetings] to talk about the budget.
b. *The budget$_1$ is always annoying [$_{PP}$ at meetings] to talk about t$_1$.

(Bruening 2014:710)

In contrast, A-movement in raising constructions is not hindered by the same type of intervening adjunct PP, as illustrated in (14):

(14) John$_1$ seemed [PP at the meeting] [t$_1$ to be agitated].

Recall that in the long-movement analysis for tough-constructions, as schematized in (3), the movement from the edge of the embedded infinitive clause to the matrix subject position is considered an instance of A-movement. Supporting this analysis, Hartman (2011, 2012a, b) argues that the intervention effects in (13b) occur because the intervening PP obstructs the A-movement. However, the unimpeded A-movement across the intervening PP in raising constructions, as shown in (14), significantly challenges Hartman's (2011, 2012a, b) explanation for intervention effects in tough constructions.

Furthermore, the base-generation of matrix subject DPs in 'pretty'-type tough-constructions demonstrates that intervention effects in these constructions are unrelated to the long-movement analysis for tough-constructions. Unlike 'tough'-type adjectives, 'pretty'-type adjectives allow tough-constructions but disallow expletive subject constructions, as shown in (15) and (16). This suggests that surface matrix subjects are base-generated in matrix clauses.

(15) a. Marigolds$_1$ are pretty [to look at t$_1$].
b. *It is pretty to look at marigolds.

(16) a. Oatmeal$_1$ is tasty [to eat t_1].
b. *It is tasty to eat oatmeal.

However, similar to other 'tough'-type adjectives, 'pretty'-type adjectives exhibit intervention effects, as seen in (17b). However, dislocating the intervening PP eliminates these effects, as shown in (17c):

(17) a. Mary is pretty [$_{PP}$ to John].
b. *Mary$_1$ is pretty [$_{PP}$ to John] [to look at t_1].
c. [$_{PP}$ To John], Mary$_1$ is pretty [to look at t_1].

This indicates that intervention effects are not a result of the long-movement analysis for tough-constructions.

The combination of 'too ... to' behaves similarly to 'pretty'-type adjectives. This combination does not permit expletive subject constructions but does allow tough-constructions, as shown in (18). This indicates that, similar to 'pretty'-type adjectives, surface matrix subjects are base-generated in matrix clauses.

(18) a. This table$_1$ is too heavy [to lift t_1].
b. *It is too heavy to lift this table.

The extreme degree adverb 'too' can be accompanied by an attitude holder/judge PP, such as 'for John', as in (19).

(19) This table is too heavy for John.

However, such an intervening attitude holder/judge PP is not permitted in tough-constructions, as illustrated in (20). Instead, the apparent PP should be interpreted as the Agent subject of the following embedded infinitive clause. This is evidenced by the scope reading, where 'only one worker' can only have a narrow scope under the matrix degree adverb-modified adjective.

(20) The table$_1$ is too heavy [for only one worker to lift t_1].
(*only one ≫ too heavy; too heavy ≫ only one)

This shows that intervention effects in these constructions are not due to the long-movement analysis.

In addition to the intervening attitude holder/judge PP, other typical adjunct PPs can also cause intervention effects with 'pretty'-type adjectives or the 'too ... to' combination, as shown in (21b) and (22b):

(21) a. Mary will be pretty [$_{PP}$ at her wedding].
b. *Mary$_1$ will be pretty [$_{PP}$ at her wedding] [to look at t_1].

(22) a. [$_{PP}$ With all these books] the table$_1$ will be too heavy [to lift t_1].
b. *The table$_1$ will be too heavy [$_{PP}$ with all these books] [to lift t_1].

We observe that PPs serving as internal arguments of adjectives do not induce intervention effects, as exemplified in (23b) and (24a-b):

(23) a. It is damaging [$_{PP}$ to cars] [to drive over these traffic cones].
b. These traffic cones$_1$ are damaging [$_{PP}$ to cars] [to drive over t_1].

(24) a. John$_1$ is too fond [$_{PP}$ of Mary] [to like t_1].
b. John$_1$ is too angry [$_{PP}$ at Mary] [to invite t_1].

Likewise, Gluckman (2016) also remarks that in 'take-time' constructions, the matrix subject DP is associated with the gap in the subsequent embedded infinitive clause while also permitting the expletive subject counterpart, as depicted in (25):

(25) a. It took John an hour to read the article.
b. The article$_1$ took John an hour [to read t_1].

What (23b), (24a-b), and (25b) have in common structurally is that internal arguments such as 'John' and 'an hour' do not act as intervenors. However, Gluckman (2016) also notes that adding an attitude holder/judge PP results in intervention effects in 'take-time' tough-constructions, as seen in (26):

(26) a. ? It's taking a while [to/for John] for George R. R. Martin to finish the new book.
b. *The new book$_1$ is taking a while [to/for John] for George R. R. Martin to finish t_1.

These examples demonstrate that internal arguments do not trigger intervention effects, while attitude holder/judge PPs do.

In summary, intervention effects occur in tough-constructions when either attitude holder/judge PPs or other typical adjunct PPs intervene between matrix tough-adjectives and the following embedded infinitive clauses. Additionally, these effects also arise in similar structural environments when matrix subject DPs are either derived from embedded infinitive clauses or base-generated in matrix clauses.

3. Towards a proposal: reanalysis/restructuring

In this paper, we explore a reanalysis or restructuring approach for tough-constructions, based on concepts suggested by Chomsky (1981), as exemplified in (27). To address how the DP (formerly NP) in the matrix subject position of tough-constructions is thematically licensed, Chomsky argues that this licensing occurs at S-structure rather than D-structure.

(27) His problem is difficult to solve.
(28) a. D-structure: [$_{NP}$ e] is [$_{AP}$ difficult [$_{s'}$ COMP [$_{s}$ PROarb to solve PRO$_i$]]]
b. PRO-movement: [$_{NP}$ e] is [$_{AP}$ difficult [$_{s'}$ PROarb [$_{s}$ PRO$_i$ to solve t_i]]]
c. Reanalysis: [$_{NP}$ e] is [$_{AP}$ [$_{A}$ difficult-to-solve] t_i]
d. S-structure: His problem$_i$ is [$_{AP}$ [$_{A}$ difficult-to-solve] t_i]

In Chomsky's LGB framework, PRO$_i$ is initially generated in the embedded object position at D-structure. However, since PRO remains ungoverned at S-structure, it undergoes PRO-movement to the COMP position of the infinitive clause. At D-structure, the matrix subject position does not have an assigned thematic role, as seen in sentences such as 'It is easy to please John.' Therefore, no specific lexical item is inserted into the matrix subject position at this stage. Following PRO movement, the adjective and the subsequent infinitive clause are reanalyzed as a complex adjective. This reanalysis allows for lexical insertion into the matrix subject position at S-structure, facilitated by free indexing.

Free indexing establishes a co-indexing relation between the matrix subject and the embedded trace, forming a chain. The chain enables the matrix subject to receive a thematic role and undergo lexical insertion, thereby satisfying the θ-criterion at S-structure. Notably, at S-structure, the embedded trace functions as an anaphor, bound by the matrix subject.

The lexicalization of complex predicates formed in English tough-constructions is evidenced by Nanni (1980). As Nanni (1980:575) points out, a reanalyzed complex adjective derived from a tough adjective and the subsequent infinitive form of a verb can be used as a modifier for the following NP, as shown in (29):

(29) a. a hard to read book
b. a simple to complete task
c. a straightforward to solve puzzle
d. an easy to finish problem

However, as Nanni (1980: 575) also notes, a reanalyzed complex adjective cannot be disrupted by an intervening PP or an adverbial, as illustrated in (30):

(30) a. an easy (*for Bill) to finish problem
b. an easy to (*quickly) clean problem

Chomsky's (1981) analysis of tough-constructions contains several outdated elements, but we aim to adopt his intuitive suggestion that tough-constructions involve the reanalysis or restructuring of a tough-adjective and the subsequent embedded infinitive clause into a single complex adjective. (See Stowell (1991) and Wurmbrand (1998) for the term restructuring instead of reanalysis.) A natural question that arises is why restructuring is necessary for tough-constructions. Based on the observations by Jones (1983), Kim (1995), and Goto (2010), we note that the matrix tough-adjectives in tough-constructions are individual-level (IL) predicates rather than stage-level predicates. This means they describe a defining property rather than a transitory one tied to a specific event. In tough-constructions, the matrix IL tough-adjective requires the embedded infinitive verb form to convert into the same type of IL predicate, thereby forming a single complex adjective that describes a unified property of the matrix subject DP.

To corroborate this observation, we first adopt Svenonius's (1993) proposal that individual-level and stage-level predicates participate in different types of predication, which are mediated by ⓘ-Pred(icate) and Ⓢ-Pred, respectively. Additionally, we adopt Raposo and Uriagerka's (1995) proposal that it is not the IL predicate itself that necessitates tense interpretation or features in the subject-predicate relation, as argued by Campbell (1992) and Miyamoto (1994), but rather its subject in categorical judgment, as dictated by Raposo and Uriagerka's condition (31):

(31) In a PRED(CAT) relation, CAT is anchored in time.
(CAT = category (i.e., the topic/subject of a predicate) and PRED = predicate)

Integrating these two proposals, we schematically represent the tough-construction of (32a) as in (32b):

(32) a. His problem is difficult to solve.

b. [$_{TP}$ T [$_{PredP}$ ⓘ-Pred [$_{VP}$ be [[$_{AP}$ difficult] [$_{PredP}$ ⓘ-Pred [$_{toP}$ to solve his problem.]]]]]]
↑_____LF ⓘ-Pred Raising_____|

As highlighted above, the embedded infinitive clause in this construction involves IL predication, mediated by ⓘ-Pred. The category (i.e., topic of the embedded infinitive clause) is ‘his problem,’ which moves from the embedded object position to the periphery of the embedded infinitive clause. However, ‘his problem’ cannot remain at this periphery; it must be further displaced to the matrix clause, for reasons elaborated below. Consequently, the embedded ⓘ-Pred raises and merges with the matrix ⓘ-Pred at LF, thereby anchoring ‘his problem’ in time within the [Spec,TP] position.

We need to elaborate further on the movement of the embedded object ‘his problem’ to the matrix subject position. By adopting Schwarzer's (2019) analysis of German tough-constructions, we extend her structural removal account to English counterparts. During the derivation process, where the embedded object undergoes A'-movement to the periphery of the embedded infinitive clause (CP), the CP is structurally removed. This leaves the embedded object in the [Spec, CP] position, now dissociated from the constructed structure, as shown in (33).

(33) [$_{TP}$ T [$_{PredP}$ ⓘ-Pred [$_{VP}$ be [[$_{AP}$ difficult [$_{CP}$ [$_{PredP}$ ⓘ-Pred [$_{toP}$ to solve [$_{TP}$ his problem]]]]]]]
↑_____A-mv_____| ↑____RA____| ↑_____A'-mv_____|

However, this dissociated embedded object can be rescued by being re-associated (RA) with the [Spec, AP] position, in compliance with the strict cycle principle (Chomsky 1973). This implies that the embedded object first undergoes A'-movement, then A-movement.[4]

In tough-constructions, a unique aspect is the final positioning of the subject DP in the matrix [Spec,TP], despite its initial A'-movement within the embedded infinitive clause. This unusual derivation occurs due to the structural removal of the CP at the periphery of the embedded infinitive clause, followed by its reassociation with the [Spec,AP] position. In contrast, constructions with ‘pretty’-type adjectives and ‘too ... to’ combinations do not involve such structural removal and reassociation. Instead, as shown in (34a-b), their subjects are directly base-generated in the matrix [Spec,AP] position, linked to an empty/null operator that moves from the embedded object position to the embedded [Spec,CP] position.

(34) a. Mary is pretty [Op to look at [e]].
↑_A-mv_| ↑___A'-mv___|

b. This table is too heavy [Op to lift [e]].
↑_A-mv_| ↑_A'-mv_|

[4] The initial movement of the embedded object in tough-constructions is necessarily an instance of A'-movement, as evidenced by the following examples. In (i), the gap in the embedded infinitive clause can license a parasitic gap, clearly indicating that the gap in the embedded clause is a trace left behind by A'-movement.

(i) These letters are tough to discard [e] without opening [e].

Similarly, while the first object in a double object construction can undergo A-movement, it cannot undergo A'-movement, as demonstrated by the contrast between (ii-c) and (ii-d). In tough-constructions, as seen in (ii-a), the first object gap is not permitted, indicating that the gap in these constructions is created by A'-movement.

(ii) a. *John is not easy to give [e] presents.
b. John is not easy to give presents to [e].
c. *Who did you give [e] the book?
d. John is given [e] presents.

Given the above, it is clear that intervention effects in certain types of tough-constructions cannot be attributed to the movement or reassociation of the embedded object into the matrix clause, as such movements do not occur in tough-constructions with 'pretty'-type adjectives or 'too ... to' combinations. Instead, we propose that the raising of the embedded ⓘ-Pred to the matrix clause, creating a single IL predicate, is responsible for these effects. For instance, in (6b), repeated as (35) with an attitude holder/judge PP, the embedded infinitive clause is extraposed to an adjunct position. These PPs serve as intervenors by blocking the necessary ⓘ-Pred raising. This in turn leads to the failure of proper IL predication in the matrix clause, thereby causing the observed intervention effects.

(35) Cholesterol$_1$ is [[[important] [to Mary]] [ⓘ-Pred to avoid t_1]].

We now attribute the intervention effects in tough-constructions to a violation of the Condition on Extraction Domain (CED) (Huang 1982). Analogously, IL predication mediated by ⓘ-Pred cannot take place when the relevant constituent is displaced, as illustrated below:

(35) a. *What I really consider is [Mary ⓘ-Pred loyal to her friend]. 'Pseudocleft'
b. *All we found was [our in-laws ⓘ-Pred unbearable]. 'Pseudocleft'
c. #[The allegations ⓘ-Pred false], they proved. 'Topicalization'
d. *It was [Leslie ⓘ-Pred in complete control of the situation] that we believed. 'It-cleft'
(Pollard and Sag 1993)

Similarly, (21b) and (22b), now renumbered as (37) and (38), feature matrix subjects that are base-generated in the matrix clause rather than the embedded clause (see examples (15) to (18)). These sentences also involve complex IL predication driven by ⓘ-Pred raising into the matrix clause. Consequently, their embedded infinitive clauses cannot be placed in adjunct positions. The intervention of adjunct PPs leads to the sentences being ungrammatical due to a CED violation.

(36) *Mary$_1$ will be [[pretty [$_{PP}$ at her wedding]] [ⓘ-Pred to look at t_1]].
←---------*---------|

(37) *The table$_1$ will be [[too heavy [$_{PP}$ with all these books]] [ⓘ-Pred to lift t_1]].
←---------*---------|

Next, we emphasize a consequence of the complex adjective formation analysis resulting from ⓘ-Pred raising in tough-constructions. Specifically, as demonstrated in (38a-b), unlike Raising constructions, tough-constructions prevent the existential QP of the matrix subject from undergoing scope lowering. Instead, it must take wide scope over the matrix tough-adjective.

(38) a. Only wide scope in tough-constructions:
Someone is difficult to please.
('someone' >> 'difficult'; *'difficult' >> 'someone'
b. Low scope possibility in Raising constructions:
Someone is likely to be sick.
('someone' >> 'likely'; 'likely' >> 'someone')

Poole, Mendia, and Keine (2022) provide additional examples to support the absence of scope lowering

or reconstruction for matrix subject QPs:

(39) a. Two books were hard for Mary to write.
b. A joke about Sally was only easy to convince Sue to tell.
c. A picture of Bill was easy to persuade any artist to draw.
d. Three questions were easy to answer in ten minutes.

(Longenbaugh 2017:20)

The inability of matrix subject QPs to undergo scope lowering in tough-constructions is consistent with our proposed ⓘ-Pred raising-induced complex adjective formation analysis. This observation aligns with Stowell's (1991) Predicate Scope Principle as outlined in (41):

(40) Predicate Scope Principle
a. A quantifier phrase (QP) must take scope over a predicate (P).
b. For any predicate head P in a chain of head positions (P, t_i, ,,, t_n), QP takes scope over P if and only if QP c-commands P.

(Stowell 1991:202)

Thus, in tough-constructions, since the embedded ⓘ-Pred raises to the matrix clause, the matrix subject existential QP, which takes scope over the now complex predicate, cannot lower its scope below this ⓘ-Pred. This accounts for the absence of scope lowering below the matrix tough-adjective.

4. Conclusion

This paper has explored the intricate nature of intervention effects in English tough-constructions. Initially, Hartman (2011) identified that the presence of an attitude holder or judge PP hinders the matrix subject DP from associating with the gap in the embedded infinitive clause, thereby supporting the long-movement analysis for the matrix subject DP. However, Bruening (2014) observed that other typical adjunct PPs induce similar intervention effects, challenging Hartman's syntactic explanation. This paper responds by proposing a novel analysis inspired by Chomsky (1981).

We propose that the matrix tough-adjective operates as an individual-level (IL) predicate, which transforms the embedded infinitive verb into an IL predicate. This transformation results in the formation of a single complex IL adjective at LF, facilitated by the raising of the functional category ⓘ-Pred. This raising process enables the embedded infinitive verb to partake in IL predication. However, when the embedded infinitive clause is extraposed following the attitude holder or a typical adjunct PP, the raising of ⓘ-Pred is obstructed. This obstruction prevents proper predication in the matrix clause, thus accounting for the intervention effects observed in tough-constructions.

Our analysis shifts the focus from the blocking of A-movement by intervening PPs, as posited in the long-movement analysis, to the structural and semantic integration of the embedded infinitive verb into the matrix IL predicate. This approach offers a coherent explanation for the observed intervention effects by emphasizing the role of ⓘ-Pred raising. By preventing the necessary ⓘ-Pred raising, these PPs serve as intervenors, leading to the failure of proper IL predication in the matrix clause and thereby causing the observed intervention effects.

Furthermore, we have shown that in tough-constructions, unlike in Raising constructions, the existential quantifier phrase (QP) of the matrix subject cannot undergo scope lowering. It must take wide scope over the matrix tough-adjective. This inability to lower scope is consistent with our proposed ⓘ-Pred raising-induced complex adjective formation analysis. This observation aligns with

Stowell's (1991) Predicate Scope Principle.

In summary, our proposed analysis not only addresses the limitations of previous syntactic accounts but also underscores the importance of predicate-raising mechanisms in understanding the intricate syntactic behavior of tough-constructions. By addressing the limitations of previous syntactic accounts, our analysis provides a more comprehensive understanding of the underlying mechanisms in tough-constructions. This approach provides a unified explanation for the intervention effects observed in these constructions, highlighting the critical role of ⓘ-Pred raising in the formation of complex IL adjectives.

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Free Relatives and D-Movement

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1 Introduction

One of the novel ideas that has emerged since the advent of minimalism is that (i) even the dislocated constituent can be the label in the landing site, and (ii) labeling can be reduced to Minimal Search (Donati 2006, Chomsky 2008, 2013, 2015, Cecchetto and Donati 2010, Donati and Cecchetto 2011, Donati, Foppolo, Konrad, Cecchetto 2022, among others). In this approach, *what I like* is a DP in (1) because the dislocated constituent *what* is the closest head to the node α.

(1) a. (this is) [$_{\alpha}$ what [I like]]: Labeling via Minimal Search
b. (this is) [$_{DP}$ what [I like]]

This claim sheds light on many puzzles. For example, this approach provides a principled account for why free relatives pattern like singular DPs. If labels are identified via Minimal Search, *what* is selected as the label in (1), which means that it is the head of the free relative.[1] As the head *what* is a singular D, its projection is a singular DP. Additionally, the Minimal Search Approach can also straightforwardly explain the Anti-Pied-Piping Condition straightforwardly. In (2b) neither *on what* nor *[C she has been working]* is a lexical item. So Labeling Algorithm (LA) cannot determine the label via Minimal Search, resulting in ungrammaticality.

(2) a. I'll proofread what she has been working on.
b. *I'll proofread on what she has been working.

Despite the merits of the Minimal Search Approach, it encounters many problems, as will be discussed in Sections 2 and 3. There are (at least) two types of DPs that challenge the Minimal Search Approach: those that appear to be binary-branching but projects a label, and those that seem non-binary but fail to project a label. This study explores the possibility of resolving these issues while maintaining the claim that the closest head is determined as the label, regardless of whether it is a dislocated constituent or not.

2 Previous Approaches to the Branching Free Relative Phrases

This section is concerned with the type that is binary-branching but projects a label. As illustrated by (3a-d),[2] free relatives can function as DPs even though *what* cannot be the closest head from α.

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[1] One of the representative previous approaches to free relatives is the null head approach. According to this approach, free relatives are DPs because there is a covert antecedent for *what*, as shown in (i) (Groos and van Riemsdijk 1981, Hirschbuhler and Rivero 1983, Suner 1984, Grosu 1988, 1994, 1996, 2003).

(i) [D [$_{CP}$ what$_i$ C [I like t$_i$]]]

In the Minimal Search Approach, the DPhood of free relatives can be captured without resorting to the null D.

[2] The second type will be discussed in Section 3.

(3) a. [$_{\alpha}$ What money she has] is in the bank.
b. [$_{\alpha}$ What books she has] are in the attic. (Huddleston & Pullum 2002: 1069)
c. I sold [$_{\alpha}$ what little food I had]. (Kayne 1994: 154)
d. Bill drank [$_{\alpha}$ what little wine we had]. (Andrews 1975: 76).

This poses a threat to the Minimal Search Approach. After introducing two competing approaches to this problem, this section concludes that neither of them is a viable option.

2.1 The Base-Generation Approach

In an attempt to account for (3a-d), Donati and Cecchetto (2011) propose that *whatever* and *what* of *what NP* do not have a *wh*-feature, being base-generated as determiners for the relative clauses. As illustrated in (4b), *whatever* does not undergo movement but is externally merged with CP.

(4) a. You can read whatever books (that) are on the table.
b. [$_{DP}$ whatever [$_{CP}$ books (that) are on the table]]

Donati, Foppolo, Konrad, and Cecchetto (2022) further elaborate their proposal by employing D-to-D movement. They argue that *ever* is base-generated at the edge of the free relative, and *what* undergoes D-to-D movement to it.

(5) a. [ever [what books C [are on the table]]]: *what*-to-*ever* movement
b. [what ever [~~what~~ books C [are on the table]]]

Caponigro (2019, 2023) provides several arguments against the view that *what* of *what NP* and *-ever* of *whatever NP* are base-generated as the external heads for relative clauses. One argument is grounded in the distribution of the complementizer *that*. If *what* of *what NP* serves as the external head for a relative clause, it would be expected to cooccur with the complementizer *that*. However, akin to plain *what* and unlike *all*, they cannot co-occur with *that*, as shown by (6a). Furthermore, as shown by (7a-b), there is a contrast between the determiners like *every* and *whatever* concerning the presence of *that*. Its occurrence is optional in (7a), but obligatory in (7b). The contrast implies that *whatever* is not invariably used as an external determiner.

(6) a. He read what books (*that) she read. (Caponigro 2019: 365)
b. He read all books (that) she read.

(7) a. The newspapers will criticize [whatever writer (that) wins the prize].
b. The newspapers will criticize [every writer *(that) wins the prize].

The patterns demonstrated in (6-7) strongly endorse the view that *what* of the *what NP*-construction is not base-generated as the external head of the construction, and *whatever* of the *whatever* NP-construction is not consistently base-generated as the external head of the

construction.[3] These observations lead to the conclusion that the base-generation approach is empirically incorrect.

2.2 Free Relatives as Headless Constructions

Caponigro (2023) proposes that free relatives are headless constructions: that is, they are analyzed as [XP YP]. In this approach, the free relative of (8) is derived as in (9a-b).

(8) He truly enjoyed what songs she sang.

(9) a. [$_{\alpha}$ what$_{[\text{Free Relative(FR)}]}$ songs [$C_{[FR]}$ she sang t_i]]: Labeling
b. [$_{DP}$ what$_{[FR]}$ songs [$C_{[FR]}$ she sang t_i]]

In (9a), α is labeled as DP, even if *what songs* is branching. Caponigro is not explicit about how α can be labeled. Instead, he briefly sketches the analysis of the free relative as follows: α is XP if the dislocated *wh*-phrase is XP.

(10) a. [$_{\alpha}$ wh-$XP_{[FR]}$ [$_{CP[FR]}$ $C_{[FR]}$ she sang t_i]]: Labeling
b. [$_{XP}$ wh-$XP_{[FR]}$ [$_{CP[FR]}$ $C_{[FR]}$ she sang t_i]]

One problem with this approach is that it is a construction-specific approach. While supporting the analysis in (10a-b), Caponigro acknowledges that he adopts Chomsky's (2013, 2015) view that there can be headless constructions. According to Chomsky, headless constructions are labeled via Feature Sharing. In (11a), for instance, α is labeled as ΦP via Φ-sharing.

(11) a. [$_{\alpha}$ $XP_{[\Phi]}$ [$T_{[\Phi]}$ […]]: Labeling
b. [$_{\{\Phi P,\ *XP\}}$ $XP_{[\Phi]}$ [$T_{[\Phi]}$ […]]

The question is why α can be labeled as XP in (10a). In other words, why is α not labeled as FR-P in (12a)?

(12) a. [$_{\alpha}$ wh-$XP_{[FR]}$ [$_{CP[FR]}$ $C_{[FR]}$ she sang t_i]]: Labeling
b. [$_{FR\text{-}P}$ wh-$XP_{[FR]}$ [$_{CP[FR]}$ $C_{[FR]}$ she sang t_i]]

The headless construction approach argues that the feature [FR] does not permit labeling via Feature Sharing; instead, the complement of *wh*- projects a label. This is quite stipulative. In addition, this analysis has difficulty capturing the patterns shown by adverbial free relatives. For example, *how* cannot be used as DP. Sentences (13a-b) are ungrammatical because *how* cannot be the object of the transitive verb *despises*. However, the free relative led by *how* can be used as either DP or AdvP. In (14a), the *how*-phrase can be the object of *like*. This asymmetry is hard to explain within the headless construction approach.

(13) a. *Jack dances how$_i$ Mary despises t_i.
b.*Jack adores how$_i$ Mary despises t_i.

[3] The Doubly Filled Comp Constraint can be described as 'two overt constituents *wh*-XP and *that* must not be adjacent'.

(i) *wh-XP that …

(14) a. I like how you dance.
b. I want to dance how you dance.

In short, it achieves neither explanatory adequacy nor descriptive adequacy. In conclusion, neither the base-generation approach nor the headless construction approach can explain the phenomenon that branching *wh*-phrases can project labels.

3 Proposal

There are two types of counterexamples against the Minimal Search Approach. Section 2 introduced the first type—the type that is binary branching but can project their labels. The second type displays the opposite pattern: the DPs that belong to the second type are seemingly non-branching but fail to project labels, as illustrated by (15-16). Let us suppose that pronouns like *him* and *he* are D's: that is, they are not branching. Then, it is predicted that they can be selected as the labels via Minimal Search. For instance, it is predicted that α can be labeled as D in (15a) and (16a), contrary to fact.

(15) a. [$_{\alpha}$ like him]: Minimal Search
b. *[$_{DP}$ like him]

(16) a. [$_{\alpha}$ he [T like Mary]]: Minimal Search
b. *[$_{DP}$ he [T like Mary]]

It seems that apart from the free relative pronouns, there are no other D's that can project their labels via Minimal Search. Let us attempt to resolve the problem raised by (15a) and (16a). This issue can be addressed if we consider that just as extended verbal projections have Φ-features, extended nominal projections also have corresponding Φ-features (person, number, and case features). Given that there are cross-categorial symmetries (Chomsky 1970, among many others), it can be argued that DP is analogous to CP in that it can be divided into three parts, as proposed by Cinque (1994), Picallo (1991), and Ritter (1991).

(17) a. [$_{DP}$ D [$_{Num(ber)P}$ Num [$_{NP}$ N]]]
b. [$_{CP}$ C [$_{ΦP}$ Φ [$_{VP}$ V]]]

It now makes sense that α fails to be labeled as D in (15a) and (16a). However, we encounter a more serious problem which undermines the motivation of the Minimal Search Approach: if every DP is binary, free relative pronouns *what* and *whatever* are also binary, which implies that they cannot serve as labels in free relatives.[4]

(18) [[$_{DP}$ what [$_{Num(ber)P}$ Num [$_{NP}$ ø]]] [C she wrote]]: *Labeling via Minimal Search

Now, the two types of counterexamples against Minimal Search turn out to be of the same nature: free relative words are branching, regardless of whether they take NP as their complement or not, but they project labels. If all DPs are branching, it is predicted that they

[4] Adverbial free relative pronouns *how*, *where*, and *when* also pose a problem for the Minimal Search Approach. They function as AdvPs inside the free relatives, but the free relatives headed by them can behave like DPs as well as AdvPs.

cannot project labels in compliance with Minimal Search. However, free relative words are an exception. This section addresses the puzzling issue.

3.1 Revised Labeling Algorithm

Let us first examine Chomsky's (2013, 2015) generalized theory of labeling, as presented in (19a-b):

(19) a. Suppose SO (syntactic object) = {H, XP}, H a head and XP not a head. Then LA will select H as the label.
b. Suppose SO = {XP, YP}. Then, there are two ways in which SO can be labeled: (i) if X and Y are identical in a relevant respect, providing the same label, it can be taken as the label of the SO, (ii) if YP moves out of {XP, YP}, X is the label, and if XP moves out of {XP, YP}, Y is the label.

According to (19a), if one of the two constituents is a head, it becomes the label because labeling involves Minimal Search, and in (19b), it is stated that if both constituents are phrasal, labeling is determined via Feature Sharing unless one of the two constituents undergoes movement. While assuming that this proposal is on the right track, I slightly modify it as follows: the failure of labeling via Minimal Search motivates either movement or labeling via feature sharing.

(20) a. Suppose SO = {$_{\alpha}$ H, XP}, H a head and XP not a head. Then LA will select H as the label via Minimal Search.
b. Suppose SO = {$_{\alpha}$ XP, YP}. Then, there are two last resort operations enabling SO to be labeled: either movement or labeling via feature sharing takes place as a last resort.

The essence of the claim is that LA goes through two steps. First, if SO comprises H and XP, H is selected as the label via Minimal Search. Second, if SO consists of XP and YP and thus Minimal Search does not yield a label, (i) an attempt is made to produce {H, XP} via movement or (ii) an attempt is made to label via feature sharing.

3.2 Covert D-movement

The major claim made in this paper is that overt D-movement takes place in free relatives. Before discussing free relatives, let us consider covert D-movement in Korean. The Korean nominal, when modified by a relative clause, displays a peculiar pattern in that the definite article *ku* 'the' must intervene between the relative clause and the head noun. Sentences (21a-b) show that the head nominal and the definite article *ku* 'the' must be adjacent.

(21) a. [$_{REL}$ Cheli-ka cohaha-nun] ku sonye.
[$_{REL}$ Cheli-NOM like-C] the girl
'the girl Cheli likes t'
b. ??ku [$_{REL}$ Cheli-ka cohaha-nun] sonye.
the [$_{REL}$ Cheli-NOM like-C] girl

In fact, articles in general must be adjacent to their head nominals, regardless of whether they are definite or indefinite. The indefinite articles *han* ‘a’ and *etten* ‘some’, as well as the definite article *ku* ‘the’, must be adjacent to the head nominals, as shown in (22a-b).

(22) a. [$_{REL}$ Cheli-ka cohaha-nun] {han, etten} sonye.
[$_{REL}$ Cheli-NOM like-C] {a, some} girl
‘a/some girl Cheli likes t’
b. ??{han, etten} [$_{REL}$ Cheli-ka cohaha-nun] sonye.
{a, some}[$_{REL}$ Cheli-NOM like-C] girl

This is a puzzling phenomenon, considering the semantic types of (21a) and (22a). If we assume that the relative clause *Cheli-ka cohaha-nun* ‘that Cheli likes’ is of type <e,t>, and *ku sonye* ‘the girl’ is of type <e> (Heim and Kratzer 1998), then the string in (21a) is of type <t>, which is an undesired result.

(23) [$_{REL}$ [ø$_i$ [Cheli-NOM t_i cohaha]-nun] [ku sonye]]
[$_{REL}$ [ø$_i$ [Cheli t_i like] C] [the girl]]
<e,t> <<e,t> e> <e,t>
<e>
<t>

One way-out to resolve this problem is to employ D-movement; if *ku* ‘the’ undergoes QR, the string (21a) is construed as type <e>.

(24) a.[$_{REL}$ [ø$_i$ [Cheli-ka t_i cohaha]-nun] [ku sonye]]: *Ku*-Movement
[$_{REL}$ [ø$_i$ [Cheli-NOM t_i like] C] [the girl]]
b.[$_{REL}$ ku [[ø$_i$ [Cheli-ka t_i cohaha]-nun] sonye]]
[$_{REL}$ the [[ø$_i$ [Cheli-NOM t_i likes] C] girl]]
<e,t> e <e,t> <e,t>
<e,t>
<e>

In (24a), the raising of *ku* fixes type mismatch and extends its restriction from *sonye* ‘girl’ to the whole NP. This implies that there are two types of QR: one for extending the nuclear scope and another for extending the restriction. Quite naturally, the landing site of QP is a constituent that serves as the nuclear scope of Q, whereas that of Q is a constituent that functions as the restriction.

(25) a. [QP$_i$ [$_{XP}$ …t_i…]]
Nuclear Scope
b. [Q$_i$ [$_{XP}$ …t_i…]]
Restriction

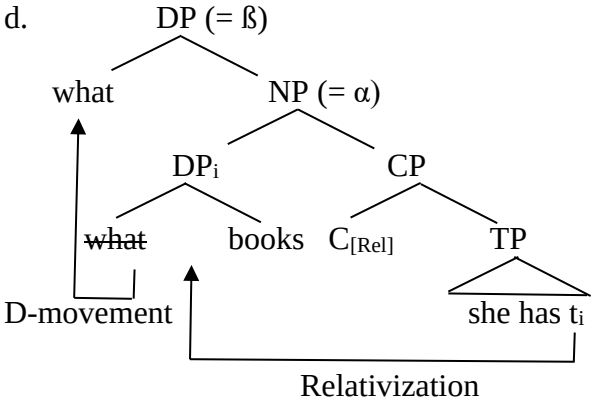
3.3 Overt D-movement in Free Relatives

Let us endeavor to generate (3b), reiterated here as (26), while assuming the Labeling Algorithm in (20a-b) and the possibility of Q-movement.

(26) [$_{\alpha}$ what books she has] (are in the attic).

If *what books* undergoes Relativization in (27a), α cannot be labeled via Minimal Search. Both *what books* and *C she has* t_i are branching. As noted in (20b), labeling failure triggers overt movement, just as type mismatch triggers covert movement. If *what* undergoes movement as a last resort, it becomes the closest head from ß, being determined as the label for the string in (27c). The movement is required anyway at LF for interpretation; without it, there arises a type mismatch problem, and it extends the restriction of *what*: that is, its restriction is extended from *books* to *[books$_i$ [C she has t_i]]*. The role of labeling failure is to cause D-movement to take place in the narrow syntax. Notice that α is labeled as NP via Minimal Search in (27d).[5]

(27) a. [$C_{[Rel]}$ she has [$_{DP}$ what books]]: Relativization
b. [$_{\alpha}$ [$_{DP}$ what books]$_i$ [C she has t_i]]: D-movement
c. [$_{ß}$ what [$_{\alpha}$ [$_{DP}$ ~~what~~ books]$_i$ [C she has t_i]]]: Labeling via Minimal Search
d.



To recapitulate, (i) if *what* undergoes D-movement as a last resort, it can be the label in the landing site via Minimal Search. Sentence (28) is generated in the same fashion. *Whatever books* undergoes Relativization, and then *whatever* undergoes further movement and projects a label in the landing site.

(28) I want to read whatever books you write.

(29) a. [C you write [$_{DP}$ whatever books]]: Relativization
b. [$_{\alpha}$ [$_{DP}$ whatever books]$_i$ [C you write t_i]]: D-movement

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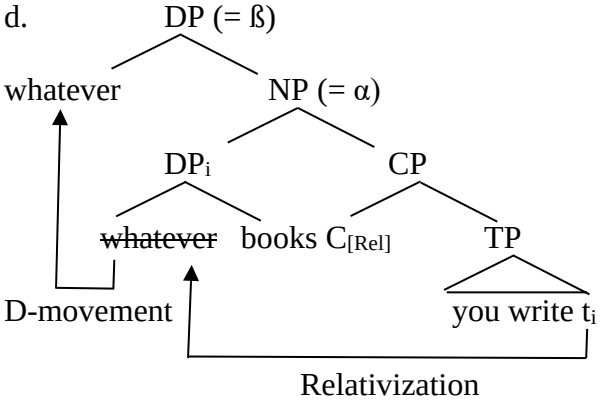
[5] It is noteworthy that free relative *what* is compatible with either plural nouns or mass nouns, but not with singular nouns, when it cooccurs with an NP. Sentence (i) is ungrammatical..

(i) *What book she has is in the attic.

The ungrammaticality of (i) suggests that *what* patterns like *all* if it takes an overt NP as its complement in free relatives.

c. [ß whatever [α [DP ~~whatever~~ books]$_i$ [C you write t$_i$]]]: Labeling via Minimal Search

d.



Notice that movement of *what* in (27) and movement of *whatever* in (29) do not change word order. Fox and Pesetsky (2005) propose that the Phase Impenetrability Condition (PIC) is met if movement does not change word order. Thus, the string vacuous movements in (27) and (29) do not violate the PIC.[6] The essence of the claim made above is that free relative pronouns *what*/*whatever* possess dual properties: the property of a relative pronoun and the property of a determiner. In (27a) *what books* undergoes Relativization because *what* has the property of a relative pronoun, whereas in (27b) *what* undergoes further movement because it is a determiner. D-movement typically takes place at LF. However, labeling failure triggers D-movement in the narrow syntax.

Thus far, we have shown that the D-movement approach can resolve the first problem: the problem that *what(ever) NP* is branching but it can project a label. The D-movement approach can also resolve the second problem: the problem that relative pronoun *what* is a branching constituent, given that every DP is branching, but it is required to project a label. Let us return to (1a), rewritten here as (30).

(30) (this is) what I like.

I have claimed that DP is structured as (31a). In this approach, free relative *what* as well as the other DPs, is binary: that is, it is represented as (31b), in which N is realized as a zero form.

(31) a. [DP D [NumP Num [NP N]]]
b. [DP[Rel] what [NumP Num [NP ø]]]]

If it is branching, α cannot be labelled via Minimal Search in (32a). So *what* undergoes D-movement as a last resort to fix labeling failure, as in (32a-b). In (32b), ß is labeled as DP in accordance with Minimal Search, but α still cannot be labeled via Minimal Search.

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[6] This approach can explain why (i) is ill-formed.

(i) *What books that she has are in the attic.

However, there are speakers who permit the presence of *that* when *whatever* cooccurs with an NP, as noted by Cecchetto and Donati (2011). For those speakers, I assume that *whatever* can be base-generated as the external determiner of the *whatever* NP-construction, as proposed by Cecchetto and Donati (2011, 2022).

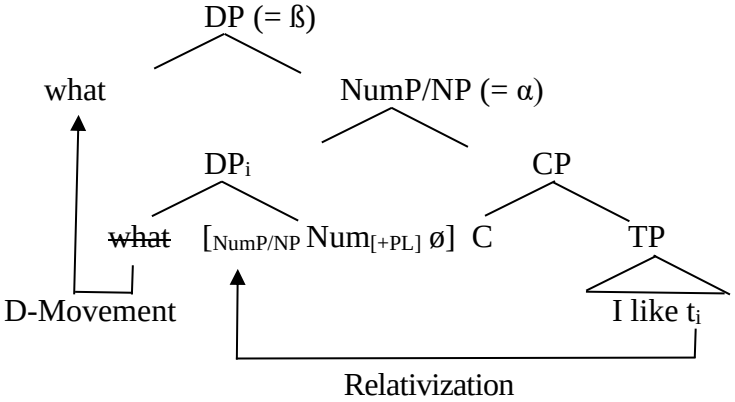
(32) a. [$_{\alpha}$ [$_{DP}$ what [$_{NumP}$ Num [$_{NP}$ ø]]]$_{i}$ [$_{CP}$ C I like t$_{i}$]]: Movement of *What*
b. [$_{ß}$ what [$_{\alpha}$ [$_{DP}$ ~~what~~ [$_{NumP}$ Num [$_{NP}$ ø]]]$_{i}$ [C I like t$_{i}$]]]: Labeling via Minimal Search

I have assumed that *what* is analyzed as (31b). There is a possibility that N is syncretized with Num in the sense of Rizzi (1997), as shown in (33).

(33) [$_{DP}$ what [$_{NumP/NP}$ Num$_{[+PL]}$ ø]]

In this case, α is labeled as NumP/NP via Minimal Search in (34a).

(34) a. [$_{ß}$ what [$_{\alpha}$ [$_{DP}$ ~~what~~ [$_{NumP/NP}$ Num$_{[+PL]}$ ø]]$_{i}$ [$_{CP}$ C I like t$_{i}$]]]: Labeling via Minimal Search
b.



To recapitulate, all DPs are binary branching, so they cannot project labels in the object and subject positions, but D can undergo movement in the overt syntax as a last resort to fix labeling failure, and thus it can project a label in the landing site. It is also noteworthy that D-movement is licensed only if it results in extending the restriction of D. In other words, if D-movement leads to an ill-formed LF, it cannot be licensed. In that sense, D-movement is an overt QR extending the restriction of D. This perspective sheds light on why α cannot be labeled as DP in (35). If the null D of *[D girls]* undergoes QR, the restriction of D cannot be extended because *[like girls]* cannot serve as a restriction.

(35) [$_{\alpha}$ like [D girls]]

Free relative pronouns *what*/*whatever* have dual properties: the property of a relative pronoun and the property of a determiner. In (34b), *[$_{DP[Rel]}$ ~~what~~ [$_{NumP/NP}$ Num$_{[+PL]}$ ø]]* undergoes Relativization because *what* has the property of a relative pronoun, and *what* undergoes further movement because it is a determiner. Another important point is that D-movement in the narrow syntax creates a new labeling possibility, although D-movement at LF does not; D-movement at LF, unlike D-movement in the narrow syntax, is adjunction.

4 Missing Prepositions and P-Movement in Free Relatives

As observed by Bresnan and Grimshaw (1978), Preposition (P) can be missing in *whatever*-constructions.

(36) a. I'll live in whatever town you live.

b. I'll put my books in whatever cupboard you put yours.
c. I'll open an account at whatever bank you open an account.
d. I'll move to whatever town you move.
e. I'll send my books to whatever bookstore John sends his books.
(Bresnan and Grimshaw 1978: 351)

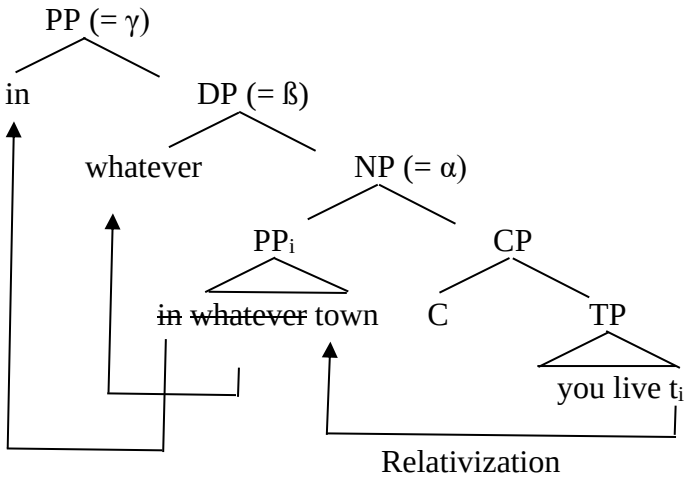
One condition on this construction is that P can be absent only if the same preposition is required by the embedded verb and the matrix verb. For instance, (37) is ill-formed because the matrix verb *move* requires *to*, whereas the embedded verb *live* requires *in*.

(37) *I'll move to whatever town you live.

The Matching Condition follows if P is missing in (36a-e) due to Pied-Piping, as illustrated in (38a-b). If *in whatever town* undergoes movement and the lower copy is deleted, it is unsurprising that *in* is missing in the free relative clause. Notice that movement of *in whatever town* results in labeling failure in (38b); neither *in whatever town* nor *C you live* is a head. I propose that not only D-movement but also P-movement can take place in the context where labeling failure occurs. Let us say that D-movement takes place, which is followed by P-movement, as shown in (38a-e). Then, α, ß, and γ are labeled as NP, DP, and PP, respectively via Minimal Search.[7]

(38) a. [$_{CP}$ C you live [in whatever [$_{Num}$ Num town]]]: Relativization
b. [$_{\alpha}$ [$_{PP}$ in whatever [$_{NumP/NP}$ Num town]]$_i$ [$_{CP}$ C you live t$_i$]]: *whatever*-Movement
c. [$_{ß}$ whatever [$_{\alpha}$ [$_{PP}$ in ~~whatever~~ [$_{NumP/NP}$ Num town]]$_i$ [$_{CP}$ C you live t$_i$]]]: *in*-Movement
d. [$_{\gamma}$ in [$_{ß}$ whatever [$_{\alpha}$ [$_{PP}$ ~~in~~ ~~whatever~~ [$_{NumP/NP}$ Num town]] [$_{CP}$ C you live t$_i$]]]]: Labeling via Minimal Search

e.



Movement of *in* not only resolves labeling failure but also extends the complement of P from *whatever city* to *whatever city C you live*. This is reminiscent of D-movement, which is motivated by (i) labeling failure and (ii) a new scope possibility. It is also noteworthy that

[7] The approach advocated here is similar to Grosu's (1996) proposal in that PP occupies SPEC-C in (36a-e), but the two analyses are quite different. Grosu claims that free relatives are headed by null categories, which I suggest we can avoid by making use of D/P-movement.

there is no change in word order even though D-movement and P-movement take place. Thus, the PIC is satisfied.

To recapitulate, (i) P can undergo movement in free relatives, which gives rise to the P-missing phenomenon, and (ii) P-movement, just like D-movement, is motivated by labeling failure and the extension of its scope.

5 Conclusion

The claim that LA is just Minimal Search is attractive in many respects, but it runs into two types of counterexamples: (i) even branching constituents such as *what books* can project their labels, and (ii) seemingly non-branching constituents fail to project their labels. With an eye towards resolving the problems, this study has asserted that (i) every DP is branching and (iii) D can project a label in the landing site if it undergoes movement as a last resort to fix labeling failure. More generally, I have claimed that D-movement can occur when labeling failure arises. In other words, labeling failure motivates D-movement. There is one more condition on D-movement: it is licensed if it can extend the restriction of D at LF. Therefore, it is allowed when D can be internally merged with a constituent that can serve as its restriction. This proposal can provide a principled answer to the fundamental question: why can't D project a label in the subject and object positions? To recapitulate, this paper has shown that this line of approach can account for the two types of counterexamples to the Minimal Search Approach, and it can also illuminate P-missing. In conclusion, (i) D can undergo movement as a last resort, (ii) labeling failure triggers D-movement in the narrow syntax, whereas type mismatch motivates D-movement at LF, (iii) if D-movement takes place in the narrow syntax, it can project a label in the landing site, and (iv) free relatives are headed.

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Deriving Verb-Echo Answers in Japanese by Referencing (Immediate) QUD Sets*

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1. Introduction

In Japanese, one can respond to a polar question by echoing only the predicates, as illustrated in (1). This paper investigates the nature of such Verb-Echo Answers (VEAs) in Japanese.

(1) Q: Moo hirugohan-o tabe-mashi-ta-ka?
already lunch-ACC eat-POL-PST-Q
'Did you already eat lunch?'
A: Tabe-mashi-ta-yo.
eat-POL-PST-PRT
Lit. 'Ate.' (Intended: Yes, I did.)

(Sato and Hayashi 2018: 73)

Following Holmberg (2016), Sato and Hayashi (2018) and Sato and Maeda (2021) have recently proposed an analysis of VEAs, such as (1A), based on syntactic verb-raising. They propose that VEAs in Japanese are derived via string-vacuous head movement and the remnant TP-ellipsis (i.e., verb-stranding TP-ellipsis). This is schematically illustrated in (2).

(2) [$_{CP}$ [~~$_{TP}$ Subj [$_{VP}$ Obj t_V] $t_{V\text{-}T}$~~] V-T-C]

To support their analysis, Sato and Hayashi (2018) provide data such as (3), in which negation (NEG) is included in the VEA. They report that the scopal relation reverses between NEG and *some*, as in (3Q) and (3A). Although *dareka* 'someone' obligatorily takes wide scope over NEG in the non-elliptic sentence in (4), this interpretation disappears in (3A), in which only the verbal complex is pronounced.

(3) Q: Dareka-ga ki-ta-no?
someone-NOM come-PST-Q
'Did someone come?'
A: Ko-nakat-ta-yo.
come-NEG-PST-PRT
'Nobody came.' (NEG > ∃, *∃ > NEG)

(Sato and Hayashi 2018: 87)

(4) Dareka-ga ko-nakat-ta.
someone-NOM come-NEG-PST
'Someone didn't come.' (*NEG > ∃, ∃ > NEG)

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Referring to Sato and Maeda (2021), Sato and Hayashi (2018) observe negative scope reversal effects in VEAs with NEG such as (3A). They claim that this effect obtains because NEG raises with the verb all the way up to the C-domain, in which NEG obligatorily takes wide scope over *dareka*, which is trapped inside the elided TP. This is schematically illustrated in (5).

(5) [$_{CP}$ ~~[$_{TP}$ dareka [$_{NegP}$ [$_{VP}$ … t_V] $t_{V\text{-}NEG}$]~~ $t_{V\text{-}NEG\text{-}T}$~~]~~ V-NEG-T-C]

(NEG > ∃, *∃ > NEG)

In this paper, we extend our observations to various other kinds of VEAs in Japanese that have not been previously considered. Then, we propose an alternative analysis: VEAs in Japanese are derived by making reference to the QUD set that are accessible in the discourse. The rest of the paper is organized as follows. Section 2 introduces our proposal after overviewing the relevant data and framework. In Section 3, we explain how VEAs are derived under our analysis. Section 4 concludes the paper.

2. A QUD-based Analysis of Japanese VEAs

A novel observation regarding the scope reversal effect is in order. The verb-stranding TP-ellipsis analysis cannot capture interactions of VEAs and quantificational adverbials. Consider a question-answer pair in (6Q) and (6A), in which NEG should take scope over an adverbial *sukoshi* 'a.little' in (6A) under the verb-stranding TP-ellipsis analysis.

(6) Q: Taro-ga kinoo koko-de sukoshi
Taro-NOM yesterday here-at a.little
tabako-o sui-mashi-ta-ka?
cigarette-ACC smoke-POL-PST-Q
'Did Taro smoke a bit of cigarettes here yesterday?'

A: Sui-mas-en-deshi-ta. (#1-katon-mosuttei-mashi-ta-kara.)
smoke-POL-NEG-POL-PST 1-carton-evensmoke-POL-PST-because
'No, he didn't smoke at all.' '#He even smoked a carton of cigarettes.'

The verb-stranding TP-ellipsis analysis of VEAs predicts that (6A) should be understood as 'it is not the case that Taro smoked a cigarette here a bit yesterday', as NEG obligatorily raises all the way up to the C-domain. This proposition can be understood to be, e.g., 'Taro smoked many cigarettes here yesterday' or 'Taro smoked a carton of cigarettes here yesterday'. However, the dominant reading of (6A) is 'Taro did not smoke a cigarette here at all yesterday'. This is further supported by the fact that the continuation in (6A), which is compatible with the wide scope reading of NEG, is infelicitous with the VEA.

Now that we know that there is an empirical problem with the verb-raising analysis of VEAs in Japanese, we alternatively propose that they are derived via argument ellipsis by making reference to the QUD set that are accessible in the discourse in Section 2. We further demonstrate in Section 3 that our analysis can correctly capture Japanese VEAs that involve disjunction and *-dake* 'only', as well as those that have not been previously observed.

2.1. The Semantics of Quantificational Expressions in Japanese

Before moving to the QUD analysis, we will review some semantic assumptions underlying our analysis. Given the widely-held factual assumption that there be a structural parallelism between the elided expression and its antecedent, the head movement analysis of VEAs predicts that the same NEG > ∃ reading in (4) is readily available in (3A), contrary to fact. This is

indicative of the need for a different approach to take in order to elucidate the nature of VEAs in Japanese.

In this connection, it is suggestive to observe that the desired NEG > ∃ reading obtains from the following example, in which *dareka* 'someone' is replaced with the Negative Polarity Item (NPI) *daremo* 'anybody'.[1]

(7) Q: Dareka-ga ki-ta-no?
someone-NOM come-PST-Q
'Did someone come?'
A: Daremo ko-nakat-ta-yo.
anybody come-NEG-PST-PRT
'Nobody came.'

(NEG > ∃, *∃ > NEG)

For the semantics of such NPIs, Shimoyama (1999, 2006, 2011) proposes an interesting account. Shimoyama claims that *daremo* in examples like (7A) be analyzed as universally quantified NPIs which take higher scope than the entire predicate including NEG. Let us assume with Yatsushiro (2009) among others that *daremo* should be further decomposed into the *wh*-expression *dare* 'who' and the suffix *-mo*, which is usually used as an additive suffix, as in (8).

(8) Watashi-mo anata-mo minna hon-o kat-ta.
I-also you-also everyone book-ACC buy-PST
'All of us, including you and I, bought a book.'

Thus, *daremo* does not consist of a single morphological element, contra the assumption that Sato and Hayashi (2018) seem to have, but it is actually constituted by a *wh*-expression *dare* 'who' and the additive suffix *-mo* 'also'. Below, we consistently gloss the expression as *dare-mo* 'who-also', to make explicit that the expression *dare-mo* consists of a *wh*-expression *dare* and the suffix *-mo*, following much previous work (e.g. Shimoyama 2011). We believe that this decision makes the transparency between syntax and semantics clearer. To sum, we argued that the interpretation of (7A) is derived from the ∀ > NEG structure, where the universally quantified indefinite *dare-mo* 'who-also' takes scope over the NEG, not the other way around.

2.2. The QUD Framework

A body of recent studies on ellipsis have suggested that ellipsis licensing makes reference not to the immediately preceding clause but to a Question Under Discussion (QUD) (AnderBois 2011; Barros 2014; Weir 2014; Kotek and Barros 2018; Park 2016; Griffiths 2019; Tanabe and Hara 2021; Tanabe and Kobayashi 2023, among others). If we take this recent update into account, the non-identity between the arguments in (9a) and (9b) does not necessarily reject the ellipsis analysis. Given this, we argue that VEAs are derived via deletion by referencing the immediate QUD set in the discourse.[2]

[1] *Daremo* is ambiguous between an NPI (*anybody*) and a universal quantified expression (*everyone*), the latter of which is usually associated with the nominative case *-ga* as in *daremo-ga*. In this paper, we only use the NPI *daremo* that requires NEG, i.e., the type of *daremo* which does not host the nominative case marker.

[2] Although some may want to derive the elliptic structure by *pro*-dropping of the subject argument, pronouns are generally assumed to be referring expressions that are interpreted via assignment functions (see e.g., Kurafuji

(9) a. [$_{CP}$ [$_{TP}$ ***dare-ka*** [$_{VP}$ $t_{dare\text{-}ka}$ V] T] C]
b. [$_{CP}$ [$_{TP}$ ~~***dare-mo***~~ [$_{NegP}$ [$_{VP}$ $t_{dare\text{-}mo}$ V] NEG] T] C]

The basic idea of the QUD framework is that a discourse proceeds by raising and resolving questions (Roberts 2012). At each stage of a discourse, there is a central question that conversation participants cooperatively engage in addressing, and this question is called a QUD (see also van Kuppevelt 1995; Ginzburg 1996, 2012; Büring 2003, among others). The immediate goal of the discourse is to resolve the QUD. Thus, sentences and their relation to the overall discourse are analyzed in terms of how the sentences uttered by the conversation participants contribute to resolving the QUD (see Velleman and Beaver 2016; Beaver et al., 2017, for an overview of the QUD framework). For example, in (10), A's question itself raises a QUD in the discourse, which is a set of possible answers: {[[*Hideki* is depressed]], [[*Hideki* is doing terrific]], …}, and B's first utterance provides an answer to the QUD. Generally speaking, an answer to a given QUD should be chosen out of the QUD set, which consists of possible answers to the question (see Hamblin 1973 and others; see Ciardelli et al. 2019 for a recent approach to interrogative sentences).

(10) A: So, how is *Hideki* doing these days?
B: (Actually,) he is depressed.

To summarize, in the QUD framework, sentences are analyzed as answers to specific QUDs. Within the QUD framework, we propose that ellipsis involved in the derivation of Japanese VEAs also makes reference to a QUD. In the following section, we propose how ellipsis involved in VEAs are semantically licensed.

2.3. Proposal

We propose the following semantic licensing condition on Japanese VEAs.

(11) An XP can be elided iff the following conditions are met:
(i) The propositional expression to be used as an answer to the QUD, in which the XP appears, conveys either p or ¬p, both of which are in the QUD set {p}∪{¬p}.
(ii) The XP is contained in that propositional expression.

The first condition is trivial: if a VEA correctly addresses the QUD, then what it expresses must be a member of the QUD set, as the set by definition consists of possible answers to it. Of note, however, is the fact that the QUD set consists of logical formulae, in lieu of actual linguistic expressions. To see this point, let us return to (1), repeated here as (12).

2019). In this sense, analyzing quantificational expressions such as *dare-ka* and *dare-mo* as *pro*s is a significant departure from the general idea of *pro*-dropping assumed in the literature. In addition, a traditional ellipsis analysis such as (ib) seems to be problematic if we take into account a syntactic identity condition (Sag 1976; Williams 1977; Fox 2000) or a semantic or LF identity one (Sag and Hankamer 1984; Tancredi 1992; Merchant 2001) that holds between the elided clause and its antecedent. In Kobayashi et al. (2024), we further develop our QUD-based analysis and put forward a PF-deletion analysis of VEAs. In this paper, however, we do not go into this point for reasons of space. Readers are referred to Kobayashi et al. (2024) for more details.

(12) Q: Moo hirugohan-o tabe-mashi-ta-ka?
already lunch-ACC eat-POL-PST-Q
'Did you already eat lunch?'
A: Tabe-mashi-ta-yo.
eat-POL-PST-PRT
Lit. 'Ate.' (Intended: Yes, I did.)

(Sato and Hayashi 2018: 73)

The question in (12Q) is asked as to whether the utterer of (12A) already had their lunch. Thus, the QUD set can be illustrated as (13), where p denotes the proposition that the utterer of (12A) already had lunch. In this paper, we assume that polar questions, which are the primary focus of the present article, are set-theoretically a union of {p} and {¬p}, i.e., {p}∪{¬p}. In the case of (12Q), p corresponds to the proposition [[the addressee has already had lunch]] and ¬p expresses the proposition [[it is not the case that the addressee has already had lunch]]. Therefore, (12Q) has the QUD set {p}∪{¬p}, i.e., (13).

(13) {p, ¬p}

Crucially, the QUD set does not contain "actual" linguistic expressions: i.e., it is not something like this:

(14) {Moo hirugohan-o tabe-mashi-ta-yo, Mada hirugohan-o tabete-masen-yo}[3]

Therefore, the QUD set should not serve as a direct reference to see whether a given XP can be elided or not, as it does not contain any linguistic expression in the first place. That is, the conditions in (11) are the LF condition imposed on VEA licensing. But how does this condition work?

We claim that (11) serves as a filter at the syntax-semantics interface for a given linguistic expression to be licensed as a VEA. Let us see how this works with (12) again. After the structure building is completed, the syntactic object is sent to LF (syntax-semantics interface) to be semantically interpreted. At this stage, (11) comes into play. (11i) first examines whether (12) translates into either p or ¬p. This examination ensures that (12) correctly addresses the QUD. Next, (11ii) is imposed upon (12) as an LF condition to determine the elidable XPs. In this structure, we have three relevant XPs: the subject NP *pro*, the adverbial phrase *moo*, and the object NP *hirugohan-o*. All of these phrases can be thus elided. In this way, we can correctly derive the VEA in (12A).

3. Analysis

In this section, we will carefully look at how the proposal from Section 2.3. works well to derive VEAs in Japanese with no recourse to syntactic verb-raising.

3.1. VEAs with Indeterminate Pronouns

Consider (3), repeated here as (15) with a rich context so that the QUD in the discourse becomes unambiguous.

[3] *Mada* translates 'yet', and *tabete-mas-en-yo* does 'eat-POL-NEG-PRT'.

(15) Context: *Marilla* and *Matthew* live together. When *Marilla* came home, she found two empty tea cups on the table. She wonders whether *Matthew* invited someone that she does not know or he did not invite anyone, and asks (15Q), which *Matthew* answers by (15A).

Q: Dare-ka-ga ki-ta-no?
who-or-NOM come-PST-Q
'Did someone come?'

A: Ko-nakat-ta-yo.
come-NEG-PST-PRT
'Nobody came.'

(∀ > NEG, *∃ > NEG)

In (15), the context is specified in such a way that (15Q) is understood as a question which asks whether there is at least one person who came or nobody came. Hence, the immediate QUD in this discourse is formally represented as in (16).

(16) The QUD set of (15Q)
a. {∃x.(human(x) ∧ came(x))}∪{¬∃x.(human(x) ∧ came(x))}
b. = {∃x.(human(x) ∧ came(x)), ∀x.(human(x) → ¬came(x))}

(16a) corresponds to the set of the possible answers to this question. Note that ¬∃x.(human(x) ∧ came(x) is equivalent to ∀x.(human(x) → came(x)) due to one of De Morgan's Laws. Hence, (16a) can be alternatively represented as (16b). The semantic representations correspond to the Japanese sentences *dare-ka-ga ki-ta* 'someone came' and *dare-mo ko-nakat-ta* 'nobody came', respectively. The structure is sent to LF, and (11i) is first imposed upon it. The condition is satisfied because the structure expresses the proposition ∀x.(human(x) → ¬came(x)). Next, (11ii) dictates that XPs can be elided in this structure. Accordingly, ellipsis of the constituent *dare-mo* is licensed in (15A) as it is an NP.

One of the most important aspects of the condition (11) is the requirement that the to-be-elided constituent should be contained in the element in the QUD set that is to be "used" in the VEA. This condition requires that one of the elements in the QUD set be made use of *in toto*, without tampering its (sub-)constituents. Due to this condition, the VEA in (15A) cannot have, say, *dareka-ga ko-nakat-ta* 'someone did not come', as its underlying sentence. This is because the semantic representation which corresponds to the expression is absent in the QUD set in (16). The condition (11i) examines this structure and finds no element in the QUD set (21) that logically translates it. Thus, the condition is not met, and hence *dareka-ga ko-nakat-ta* does not count as an appropriate VEA in this context. This in turn explains the unavailability of the ∃ > NEG reading in this example.

This analysis gives interesting virtues to the present account. One should be fairly obvious: the verb-stranding TP-ellipsis analysis predicts that the VEA in (15A) should have the underlying form *dareka-ga ko-nakat-ta* with NEG being (structurally) raised up to C. However, this does not yield the correct reading of the VEA. In contrast, our analysis neatly explains the reading of the VEA: the underlying structure of this VEA is (16b), where the universally quantified expression *dare-mo* takes scope over NEG, and this expression is elided, since the conditions in (11) are satisfied.

A particularly noteworthy aspect of the conditions in (11) is that the interpretation of a VEA may differ depending on what kind of propositions are contained in a given QUD. For instance, if the QUD consists of {p, ¬p} and p = [[someone came]], as in (15Q), then the VEA with NEG would be interpreted in accord with ¬p, which corresponds to [[it is not the case that someone came]]. This further translates into [[nobody came]], which corresponds to the VEA in (15A). This is because it is the only proposition in the QUD set that contains NEG. In contrast, if the QUD set is {p, ¬p}, where p = [[someone did not come]], the situation is different. Since the linguistic expression that conveys p itself contains NEG, the VEA with NEG can be derived from this proposition. But the same VEA that contains NEG would not be interpreted as ¬p, because this proposition corresponds to [[¬someone did not come]] = [[it is not the case that someone didn't come]] = [[everyone came]].

To see how this prediction is borne out, consider (17), where the underlying interrogative sentence itself contains NEG. The QUD in this discourse is represented as in (18).

(17) Context: *Akira's* baseball team has only 9 members, which is the minimum numbe required to play a baseball game. On that morning, he left home to play baseball. However, he came home after 30 minutes. His mother thought that *Akira's* team may not have had enough members, and asks:

Q: Dare-ka-ga ko-nakat-ta-no?
who-or-NOM come-NEG-PST-Q
'Did someone not come?'

A: Ko-nakat-ta-yo. Hideki igai-wa ki-ta-nda kedo-ne.
come-NEG-PST-PRT Hideki except-CONT come-PST-COP but-PRT
'Someone did not come. Everyone came except Hideki though.'
(??∀ > NEG, ∃ > NEG)

(18) The QUD set of (17Q)
a. {∃x.(human(x) ∧ ¬came(x))}∪{¬∃x.(human(x) ∧ ¬came(x))}
b. = {∃x.(human(x) ∧ ¬came(x)), ∀x.(human(x) → came(x))}

In this case, the interrogative sentence in (17Q) itself contains NEG, and hence the elements in this set are ∃x.(human(x) ∧ ¬came(x)) and ¬∃x.(human(x) ∧ ¬came(x)), the latter of which is equivalent to ∀x.(human(x) → came(x)). The former propositional expression ∃x.(human(x) ∧ ¬came(x)) corresponds to the Japanese expression *dare-ka-ga ko-nakat-ta* 'there is someone who did not come', which is the only expression that contains NEG, while the latter corresponds to the positive propositional expression *dare-mo-ga ki-ta*. Therefore, the condition (11) predicts that the VEA in (17A) is an expression that asserts that there is someone who did not come. As the follow-up sentence in (17A) shows, this is borne out; the VEA in question presents the affirmative answer to the QUD that there is someone who did not come. Note that since *dare-ka* 'who-or' is represented in the QUD, condition (11) is satisfied. Therefore, our account correctly predicts that *dare-ka* can be elided in (17A), from which the VEA results.

The important point is that even though (15A) and (17A) share the same surface form, their interpretations are significantly different, depending on what kind of questions they are meant to resolve. In (15), the interrogative sentence in (15Q) does not contain NEG, and hence the VEA with NEG in (15A) should be licensed by making reference to the propositional expression ¬∃x.(human(x) ∧ came(x)) = ∀x.(human(x) → ¬came(x)) in the relevant QUD set. On the other hand, the VEA in (17A) obtains by referring to ∃x.(human(x) ∧ ¬came(x)) in

(18b). This speaks to the implausibility of the assumption that a single surface form of a VEA is uniformly derived from some specific arrays of syntactic operations, such as successive head movements and TP-ellipsis.

3.2. VEAs with Quantificational Adverbs

Thus far, we have only elaborated the present proposal with the data concerning the ways of deriving the missing arguments such as *dare-ka* and *dare-mo*. However, we have seen in the last section that the behavior of some scale-introducing adverbial expressions should also be taken into account if we are to thoroughly investigate the interpretation of a VEA. In this connection, let us next turn to the scopal interactions between an adverbial *sukoshi* and NEG in VEAs. The relevant data (6) is repeated here as (19) with a particular context.

(19) Context: Yesterday, *John* invited *Taro*, who is known as a habitual smoker, to his house while his partner *Paul* was away. Smoking is strictly prohibited in *John's* house since *Paul* hates the smell. When *Paul* came back home, he found that the house is a bit smelly. *Paul* was aware of the fact that *John* invited *Taro* yesterday, and asks to *John*:

Q: Taro-ga kinoo koko-de sukoshi
Taro-NOM yesterday here-at a.little
tabako-o sui-mashi-ta-ka?
cigarette-ACC smoke-POL-PST-Q
'Did Taro smoke a bit of cigarettes here yesterday?'

A: Sui-mas-en-deshi-ta. (#1-kaaton-mo suttei-mashi-ta-kara.)
smoke-POL-NEG-POL-PST 1-carton-even smoke-POL-PST-because
'No, he didn't smoke at all. He even smoked a carton of cigarettes.'

We observed that the VEA in (19A) allows only the interpretation that Taro did not smoke at all (i.e., All > NEG). Indeed, the follow-up sentence *1-kaaton-mo suttei-mashi-ta-kara* 'He even smoked a carton of cigarettes' sounds contradictory with the VEA in this example. If the NEG > little reading were available in this example, this sentence would felicitously follow the VEA, contrary to fact. If the VEA in question were to be derived via head movement and subsequent TP-ellipsis, the NEG > little reading should actually be the only reading obtained in (19A), as the NEG should take scope over *sukoshi* from its ultimate landing site. Below, we show that our analysis accounts for the interpretation in (19A).

According to Kamali and Matsumoto (to appear), the adverbial expression *sukoshi* in (19Q) evokes the relevant scale of quantity. In (19Q), the scale evoked by *sukoshi* ranges from *all* through *many* to *a bit*, but the range does not cover the points such as *not at all* or *few*, given that scalar expressions generally evoke either positive or negative scales (Matsumoto 1995). Thus, the QUD in (19Q) would contain propositions such as 'Taro smoked a bit of cigarettes here yesterday', 'Taro smoked many cigarettes here yesterday' and so forth. Therefore, p expressed by (19Q) itself is a set $\{p_{all}, \ldots, p_{bit}\}$, where p_{all} = [[Taro smoked all the cigarettes at John's house yesterday]], p_{bit} = [[Taro smoked a bit of cigarettes at John's house yesterday]]. We further assume that $\neg p_{bit}$ consists of those propositions expressed by "It is not the case that

Taro smoked a bit of cigarettes". Therefore, the QUD set of (19Q) should be the union of these two sets, as in (20).[4]

(20) The QUD set of (19Q)
a. $\{p_{all}, \ldots, p_{bit}\} \cup \{\neg p_{bit}\}$
b. $= \{p_{all}, \ldots, p_{bit}, p_{not.even.a.bit}\}$

Note in passing that the assumption that the points in the scale expressed by *a bit* includes *all* and *many*, and so forth, is supported by the following example, where the VEA *sui-mashi-ta* can be followed by expressions such as 'Actually, he smoked so many cigarettes.' This is illustrated in (21). Thus, the sets of propositions joined by ∪ should be non-singleton.

(21) Context: Same as (19).

Q:	Taro-ga	kinoo	koko-de	sukoshi
	Taro-NOM	yesterday	here-at	a.little
	tabako-o	sui-mashi-ta-ka?		
	cigarette-ACC	smoke-POL-PST-Q		
	'Did Taro smoke a bit of cigarettes here yesterday?'			
A:	Sui-mashi-ta,	takusan	ne.	
	smoke-POL-PST	many	PRT	
	'Yes, he smoked so many cigarettes.'			

Let us turn back to (19). Now we are ready to get at the fact that (19A) only yields the *Taro-didn't-smoke-at-all* reading. Kamali and Matsumoto (to appear) claim that adverbs such as *mattaku* 'at all' and *sukoshi-mo* 'a little-also' behave just like *dare-mo* does, in the sense that they are licensed by NEG by scoping over it. Adopting this idea, we submit that the role of NEG in (19A) is to yield the reading "for all points in this positive scale *s*, p = [[Taro smoked cigarettes here yesterday with the amount of *s*]] does not hold," by being embedded within the scope of *mattaku*/*zenzen*/*sukoshi-mo*. That is, we claim that (19A) has as its underlying form *Taro-wa koko-de kinoo sukoshi-mo (even in a bit) tabako-o sui-mas-en-deshi-ta*, and the VEA results from eliding the XPs contained in it. Since the only proposition with the negative operator is $\neg p_{bit}$ and this proposition can express what this underlying expression conveys, condition (11a) is satisfied. In addition, all of the XPs elided in (19A) are contained in it. (11b) is satisfied as well. Therefore, the VEA is licensed under the present analysis.

Notice here that the proposition $\neg p_{bit}$ that roughly translates as 'It is not the case that Taro smoked a bit of cigarettes at John's house yesterday' in (20a) may be understood in multiple ways. For instance, it can be read as 'Taro smoked many cigarettes at John's house yesterday'. Then, why is its interpretation uniquely determined to be the proposition [[Taro didn't smoke cigarettes at all/even in a bit]] in (20), as we assumed above? We submit that this is because all of the other possible interpretations are represented by other elements in the QUD. For instance, *Taro-ga kinoo koko-de tabako-o zenbu sui-mashi-ta* means that Taro smoked all the cigarettes at John's house yesterday. Therefore, all those possibilities are already present in the set in the left side of the join operator in (20a). The only proposition that cannot be represented by the

[4] To be precise, the sets joined by ∪ are sets of sets, and hence we first have to take unions of them and the results are joined by ∪ to obtain (20a,b). We can easily revise the definition of the QUD set in (11a) accordingly without losing the benefits of the original definition, but we leave this precision for reasons of space)

relevant elements in it is that Taro did not smoke a cigarette at all/even in a bit. Hence, it survives in (20b). And the NEG-containing VEA in (19A) should be understood in accordance with this reading.

3.3. VEAs with Disjunction

Sato and Maeda (2021) present data on Japanese VEAs where logical operators like disjunction and *-dake* 'only' interact with NEG, and they argue that the scopal interactions further support their verb-stranding TP-ellipsis analysis. This section focuses on disjunction and demonstrates that the scope patterns observed with disjunction and NEG are better explained by our QUD-based account.[5]

Let us consider (22). Sato and Maeda (2021) report that the VEA in (22A) has only the wide scope reading of NEG (NEG > ∨ reading): it is not the case that Hanako ate ice cream or cake.

(22) Q: Hanako-wa aisu-ka keeki-o kat-ta-no?
Hanako-TOP ice.cream-or cake-ACC buy-PST-Q
'Did Hanako buy ice cream or cake?'
A: Kawa-nakat-ta-yo.
buy-NEG-PST-PRT
Lit. 'Did not buy.' (??∨ > NEG, NEG > ∨)
(adapted from Sato and Maeda 2021:367-368)

Sato and Maeda (2021) claim that the result is straightforwardly explained if we assume that (22A) is derived via verb-stranding TP-ellipsis. Under their analysis, NEG raises all the way up to C, where it takes scope over the disjunction contained in the TP. However, the analysis faces a serious problem when we take into account the fact that the non-elliptic counterpart in (23) has only the narrow scope reading of NEG, ∨ > NEG. That is to say, if NEG raising were syntactically available in (22A), it should also be available in (23), but this does not seem to be the case.

(23) Hanako-wa aisu-ka keeki-o kaw-anakat-ta-yo.
Hanako-TOP ice.cream-or cake-ACC buy-NEG-PST-PRT
Lit. 'Hanako did not buy ice cream or cake.'
(∨ > NEG, *NEG > ∨)

The non-elliptic sentence in (23) has only the ∨ > NEG reading, which reads 'For an ice cream or a cake, Hanako did not buy either of them'. Crucially, it does not yield the reading 'It is not the case that Hanako did not buy an ice cream or a cake', which should be obtained if NEG head moves up to C. This is incompatible with the assumption that NEG-raising is available as a syntactic operation. In other words, the verb-stranding TP-ellipsis analysis bears a burden of proof as to why ellipsis, which is inherently an interface phenomenon, feeds syntactic head movement.[6]

[5] For reasons of space, we refrain from discussing interactions of *-dake* 'only' and NEG in VEAs in this paper. The reader is referred to Kobayashi et al. (2024) for details.

[6] Recall from Section 1 that the verb-stranding TP-ellipsis analysis of VEAs suffers a similar problem in analyzing the scopal interaction between *dare-ka* 'who-or' and NEG.

In contrast, our QUD-based analysis does not suffer such a problem in accounting for the observation in (22). The QUD in (22Q) is formally represented in (24), where p = [[Hanako bought ice cream]] and q = [[Hanako bought cake]]. The p∨q reading is conveyed by the Japanese expression in (25).

(24) The QUD set of (22Q):
a. {(p∨q)}∪{¬(p∨q)}
b. = {(p∨q), (¬p∧¬q)}

(25) Hanako-wa aisu-ka keeki-o kat-ta-yo.
Hanako-TOP ice.cream-or cake-ACC buy-PST-PRT
'Hanako bought ice cream or cake.'

In contrast, the other reading is conveyed by the propositional expression in (26).

(26) Hanako-wa aisu-mo keeki-mo kaw-anakat-ta-yo.
Hanako-TOP ice.cream-also cake-also buy-NEG-PST-PRT
'Hanako didn't buy ice cream nor cake.'

The ¬p∧¬q reading is correctly obtained in (26), and hence (11i) is satisfied. And (11ii) allows the NP *aisu-mo keeki-mo* to be elided, along with the subject NP *Hanako-wa*. By eliding these phrases, the NEG > ∨ reading of the VEA is correctly derived. As for the awkwardness of the reversed scope reading, it is naturally explained from (11i): it is unavailable because ¬p∨¬q, which should be obtained from the ∨ > NEG scope relation is not a member of the QUD set.

We have seen that under our analysis, the interpretation of VEAs like (22A) depends on what elements are contained in the QUD set. In the case of a QUD with NEG and *ka*, we can formalize the QUD set as {(¬p∨¬q), ¬(¬p∨¬q)}. Since the set is equivalent to {(¬p∨¬q), (p∧q)}, (¬p∨¬q) is the only proposition which translates the corresponding linguistic expression that contains NEG. Thus, we predict that the VEA with NEG should be understood as a linguistic expression for (¬p∨¬q). The following example bears this out. In (27), the QUD is a negative question that itself contains NEG. Because of this, (27A), whose surface form is identical to (22A), has the ∨ > NEG reading.

(27) Q: Hanako-wa aisu-ka keeki-o kaw-anakat-ta-no?
Hanako-TOP ice.cream-or cake-ACC buy-NEG-PST-Q
'Did Hanako not buy ice cream or cake?'
A: Kaw-anakat-ta-yo.
buy-NEG-PST-PRT
Lit. 'Did not buy.' (∨ > NEG, *NEG > ∨)

(28) The QUD set of (27Q):
a. {(¬p∨¬q)}∪{¬(¬p∨¬q)}
b. {(¬p∨¬q), (p∧q)}

The availability of the ∨ > NEG reading in (27A) naturally follows from our QUD-based account. Since the QUD set dictates that the logical formula that contains negation is ¬p∨¬q, the VEA in question should be obtained from a linguistic expression in which the relevant "or"

operator takes scope over NEG. The corresponding expression in Japanese is: *Hanako-wa aisu-ka keeki-o kaw-anakat-ta.* [[(Hanako did not buy ice cream) or (Hanako did not buy cake)]], and the VEA is derived via eliding the arguments in the structure. Since the elided disjunctive object is higher than NEG, the ∨ > NEG reading in (27A) is derived.[7]

In contrast, the verb-stranding TP-ellipsis analysis, which predicts NEG in C to take scope over the disjunction, cannot account for this observation. The fact is that it predicts both (22A) and (27A) to have the NEG > ∨ reading because it dictates that the two superficially identical VEAs are derived via V-to-NEG-to-T-to-C movement followed by TP-ellipsis. Put differently, the advocates of the verb-stranding TP-ellipsis analysis must be armed with the following stipulations. When the VEA has the NEG > ∨ reading, it is derived via TP-ellipsis, but when it has the ∨ > NEG reading, the VEA is derived differently. This, we believe, is ad hoc, and it is likely that such an analysis leaves room for making the entire proposal unfalsifiable. Indeed, Sato and Maeda (2021: 370) seem to consider the data of this sort as a potential counterexample to their verb-stranding TP-ellipsis analysis. On the other hand, the present QUD-based analysis does not suffer this type of conceptual problem(s), deriving the desired readings of VEAs by looking carefully at the QUDs that they are meant to address. In this sense, there is a reason to prefer our analysis.

4. Conclusion

In this article, we presented that once the semantics of expressions such as *dare-ka*, *dare-mo*, *sukoshi* is examined carefully, it becomes clear that a QUD-based syntactic-pragmatic analysis is necessary. VEAs result from making reference to a QUD set with Givenness taken into account. We have shown that our analysis better captures the VEA phenomena in Japanese, such as (3). A syntactic structure of the VEAs such as (3) we assume in this paper is in (29).

(29) $[_{CP}\ [_{TP}\ e_i\ [_{NegP}\ [_{vP}\ e_i\ [_{VP}\ \ldots\ V]\text{-}v]\text{-NEG}]\text{-T}]\text{-C}]$ [e] = *daremo*

It is clear from these structures that verbs or any other predicative heads need not raise in narrow syntax. We have demonstrated that the empirical coverage of the current QUD-based deletion analysis is broader than the verb-raising analysis of VEAs (Sato and Hayashi 2018; Sato and Maeda 2021). Insofar as our arguments are on the right track, we conclude that the verb-raising analysis of VEAs is inconclusive at best. Furthermore, this study provides a lesson that it is important to take into account discoursal factors, such as QUDs, when analyzing VEAs in Japanese, and possibly, ellipsis phenomena in general.

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[7] Again, the scope-taking expression *aisu-ka keeki-o* is assumed to covertly move to a higher position, from which it takes scope over NEG.

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Relativized Minimality and Form Copy in Japanese[1]

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1. Introduction

It has been observed that movement operations obey locality restrictions, such as islands (Ross 1969) and relativized minimality (Rizzi 1990, 2004, 2011). Specifically, Rizzi (2004) argues that features constitute natural class, such as Argumental and Quantificational (e.g. wh, negation, focus), and elements of the same feature class exhibit feature relativized minimality (FRM) (see also Krapova and Cinque 2005, Maeda 2010, Nunes 2010, Rizzi 2011).

(1) a. Argumental: person, number, gender, case
b. Quantificational: wh, negation, measure, focus ...
c. Modifier: evaluative, epistemic, negation, frequentative, celerative, measure, manner ...
d. Topic (Rizzi 2004: 243)

For instance, the adverb *probably*, which resides in a modifier class, may prohibit the movement of another adverb *rapidly*, as shown in (2a). FRM is absent when the movement in question is focus movement, as shown in (2b).

(2) a. * Rapidamente$_i$, i tecnici hanno probabilimente risolto t_i il problema.
rapidly the technicians have probably resolved the problem
'Rapidly, the technicians have probably resolved the problem.'
b. RAPIDAMENTE$_i$ i tecnici hanno probabilimente risolto t_i il problema.
'RAPIDLY the technicians have probably resolved the problem.' (Rizzi 2004: 234-5)

Importantly, Rizzi (1990, 2004, 2011) and Krapova and Cinque (2005) argue that relativized minimality is a representational restriction, applying to movement chains on derived representations (specifically, Rizzi (2011) and Krapova and Cinque (2005) assume that FRM applies to a representation at each phase).

On the other hand, Chomsky (2021) argues that derivations are strictly Markovian; namely the system completely lacks memory. Under such a strictly derivational model, representational notions that operate on syntactic derivations are hard to maintain. Hence, Chomsky tries to "eliminate the notion of chains in favor of a rule FomCopy (FC) assigning the relation copy to certain identical inscriptions (Chomsky 2021: 17)". FC operates at the phase level, selecting an element by Minimal Search (MS) and may assign the copy relation to two identical inscriptions.

(3) a. FormCopy (FC) assigns the relation *Copy* to certain identical inscriptions.

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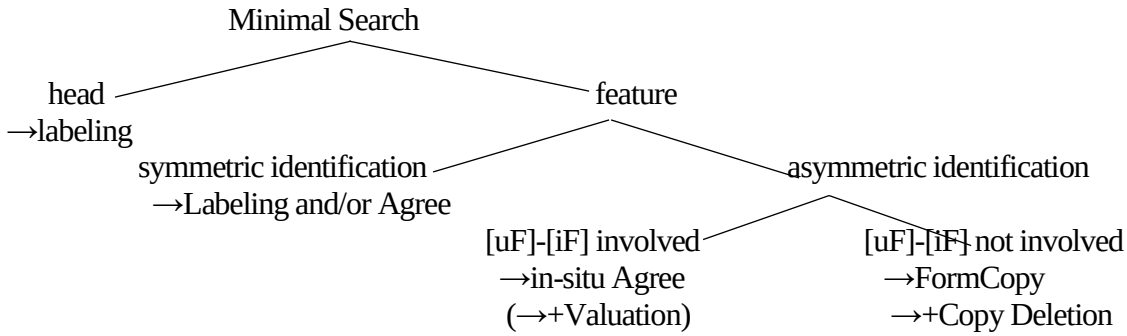
b. FC, like other operations, appropriates Σ from the third factor toolkit and operates at the phase level, keeping to MS to select an element X, then searching for a structurally identical element Y under the conditions on Σ, and assigning the relation *Copy* to <X, Y>. (Chomsky 2021, 17; 20)

However, if we entertain the operation FC under the Markovian syntactic derivations, FRM, which is based on the representational chain relations, needs some modification. Furthermore, the definition of identical inscription may deserve further investigation. As MS for Agree and Labeling looks for features (Chomsky 2021, Ke 2023), it might be plausible to assume that MS in general searches for features, irrespective of its purpose, namely, Agree, Labeling or FC, as classified in (4) (Aycock 2020, Muñoz Pérez 2018):

(4) Minimal Search for Labeling, Agree and FormCopy



In this paper, we argue that this way of looking at MS opens up the possibility that the operation in point searches for features of the same class in the sense of Rizzi (2004), not necessarily an identical feature pair. We further argue that such a feature-based MS for FC gives rise to relativized minimality, as a closer feature of the same kind always terminates the MS, blocking deeper search. We also assume that FRM is sensitive to feature richness (Starke 2001). For instance, WPs with [Q, Arg] feature can be identified as copies over $XP_{[Q]}$, as shown in (5a). In (5b), however, YP is endowed with the same or less amount of features relative to the intervening ZP, and hence FC fails.

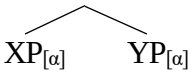
(5) a. [$WP_{[Q, Arg]}$ … $XP_{[Q]}$ … $WP_{[Q, Arg]}$]
b. *[$YP_{[Q (, Arg)]}$ … $ZP_{[Q, Arg]}$ … $YP_{[Q (, Arg)]}$]

Furthermore, as MS for FC is necessary not only for identity interpretation at the LF interface, but for proper linearization at the PF interface, we argue that MS may not return feature-identity information when the result does not conform to the linearization restriction (e.g. Kayne 1994). Specifically, we argue that when the elements are identified as being in symmetric locations, MS for FC cannot identify these XPs as copies, since the linear order of elements in a symmetric relation cannot be determined (Moro 2006). This leads to an expectation that FRM may be absent when two moved elements end up in a symmetric relation. (6) shows the three configurations where XP and YP are identified symmetrically, and hence FC is not possible between them. (6a) is symmetric XP-YP structure, which is not relevant here (see Moro 2000). Regarding multiple specifiers schematized in (6b), we follow Epstein, Kitahara and Seely (2019) and assume that MS is calculated by paths; the path of α is shorter than the path of β iff the path of α is a proper subset of that of β (Epstein, Kitahara and Seely 2019).

Under EKS's analysis, multiple specifiers and the head of a projection are identified in symmetric relations, as none of the members is a proper subset of others.

(6) symmetric identification

a.

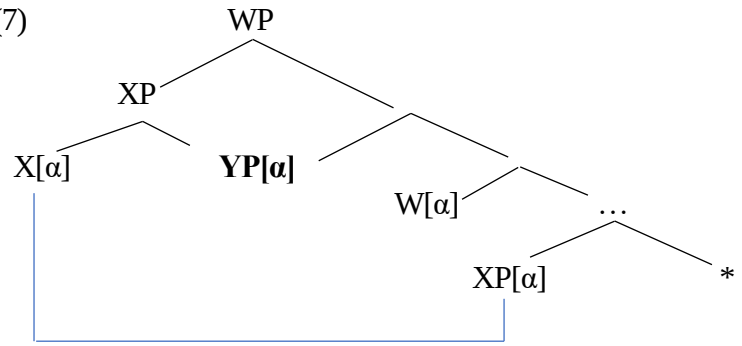


b. multiple specifiers

$[_{HP}\ XP_{[\alpha]}\ [YP_{[\alpha]}\ [\ H_{([\alpha])}]]]$

In the case of covert movement, as a copy is invisible for MS for Labeling (Chomsky 2013, 2015), the symmetric identification between XP and YP is impossible. In return, MS for FC does identify XP and YP, and hence they may be subject to FRM.

(7)



Here is a prediction of our proposal: FRM may be absent when two moved elements end up in a local relation. This is because in a multiple specifier configuration, symmetric identification results, and hence MS fails to send the feature-identity information for FC. For instance, (8a) shows that wh-movement over a focus phrase that is also moved to the CP domain is possible. This is because the configuration in (8b) leads to symmetric feature identification between the wh-phrase and the focus phrase.

(8) a. Lee wonders what (in the world) in no way would Robin eat. (Maeda 2010: 275)

b. $[_{CP}\ wh_{[Q]}\ [_{c'}\ foc_{[Q]}\ \ldots\ [_{vP}\ wh_{[Q]}\ [_{v'}\ foc_{[Q]}\ \ldots]]]]$

c. $[_{CP}\ wh_{[Q]}\ [_{c'}\ foc_{[Q]}\ \ldots\ [_{vP}\ \sout{wh_{[Q]}}\ [_{v'}\ foc_{[Q]}\ \ldots]]]]$

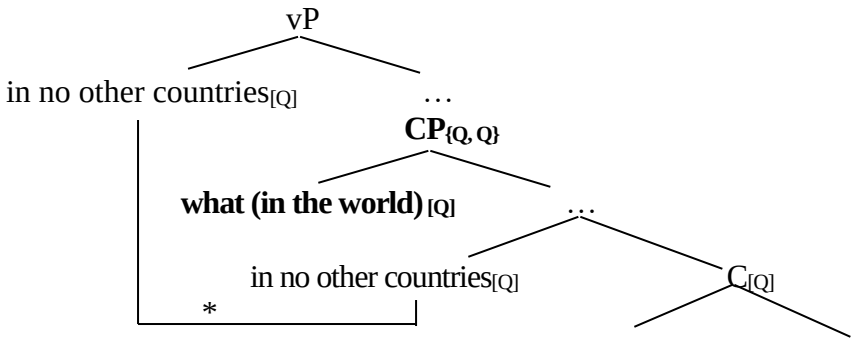
In (8c), MS for FC skips over the wh-phrase in Spec, vP that has already identified as a copy (that is, an element cannot be identified as copies for two distinct phrases), making the copy relations between the focus phrases possible.

Another prediction is that FRM should be respected with long distance movement, as illustrated in (9a). This is because MS for FC operated at the higher phase identifies $[wh_{[Q]}, CP_{[Q]}]$ with the label {Q, Q} (as well as the next embedded wh-phrase with the Q-feature) first, and it cannot identify the more embedded focus phrase as a lower copy, as shown in (9b).

(9) a. * [In no other countries]$_i$ do I wonder $[_{CP}$ **what (in the world)** $[_{C'}\ t_i\ [_{TP}$ you could eat]]]. (Maeda 2010: 279)

*

b.



That is, MS for FC may disregard lower specifier with short-distance movement, while in the case of long-distance movement, MS for FC at the next phase cannot search over the higher specifier into the lower specifier in the lower phase. This in effect leads to a conclusion that local ordering is reduced to locality restriction (Abels 2012, Krapova and Cinque 2005, Fox and Lasnik 2003).[2]

In the following section, armed with MS for FC, in conjunction with the restriction on copy identification with symmetric structure, we give an account for (the absence of) superiority effect in Japanese and the focus intervention effect in Japanese. Section 3 concludes the paper.

2. Feature-based Relativized Minimality in Japanese

2.1. Scrambling and Superiority

We examine the validity of feature-based MS for FC against the Japanese data, as Japanese shows mixed properties with respect to Superiority. First, clause-internal scrambling of a wh-phrase does not show the superiority effect, as shown in (10a, b). Here, we assume that vP-internal scrambling in Japanese is always A-movement, which pied-pipes the argument feature (Miyagawa and Tsujioka 2004); that is, first movement to Spec, vP pied-pipes the [Arg] feature.

(10) a. Dare-ga nani-o tabeta no?
who-NOM what-ACC ate Q
'Who ate what?'

b. Nani-o$_i$ dare-ga t_i tabeta no?
what-ACC who-NOM ate Q

Let us consider the derivation of (10b), which apparently fails to exhibit the Superiority effect. At the derivational point of the vP phase in (11a), MS for *what* searches for an element with the [Arg, Q] feature. This search looks over *who*, as *what* and *who* are located in the specifier positions of the same head, v. MS then finds *what* within VP, identifying it as a lower copy. Then, in (11c), MS for FC identifies *what* in Spec, CP and Spec, vP as copies. Although we assume that the nominative subject in

[2] A similar contrast is observed in Spanish and German as well. The present analysis can be extended to the fact that short-distance movement in Spanish does not show the FRM effect, while long-distance movement does.

(i) a. Quién dijo qué?
who said what
b. Qué dijo quién? (Bošković 1997: 228)

(ii) ?*Qué dijo quién que Juan compra *t*?
what said who that Juan bought
'What did who say that Juan bought?'
(cf. Qué dijo Javier que Juan compra?) (Bošković 1997: 243)

Japanese may remain in Spec, vP, the same prediction holds if the subject moves to Spec, TP and the object undergoes short-distance scrambling to TP, as schematized in (11b).

(11) short-distance scrambling

a. [$_{vP}$ what-ACC $_{[Arg, Q]}$ [$_{v'}$ who-NOM $_{[Arg, Q]}$ [$_{VP}$ V what-ACC$_{[Arg, Q]}$]]]
(MS for FC does not return identity between XP and YP due to symmetric identification)

(b. [$_{TP}$ what-ACC $_{[Arg, Q]}$ [$_{T'}$ who-NOM $_{[Arg, Q]}$ [$_{vP}$ what-ACC $_{[Arg, Q]}$ [$_{vP}$ who-NOM $_{[Arg, Q]}$
[$_{v'}$ what-ACC $_{[Arg, Q]}$]]]]])

c. [$_{CP}$ what-ACC $_{[Q]}$ … [$_{TP/vP}$ what-ACC $_{[Arg, Q]}$ [$_{T'}$ who-NOM $_{[Arg, Q]}$…]]

Now let us turn to long-distance scrambling. (12a) is a multiple wh-in situ sentence, with *nani-o* in the most embedded clause and *dare-ni* in the higher clause. (12b) shows that *dare-ni* can be fronted.

(12) long-distance scrambling

a. John-ga [Bill-ga **dare-ni** [Mary-ga **nani-o** tabeta to] itta to] omotteiru no?
John-NOM Bill-NOM who-DAT Mary-NOM what-ACC ate C said C think Q
'(Lit.) Does John think that Bill told whom that may ate what?'
=Whom does John think that Bill told that Mary ate what?'

b. **Dare-ni$_i$** John-ga [Bill-ga ***t*$_i$** [Mary-ga **nani-o** tabeta to] itta to] omotteiru no?
who-DAT John-NOM Bill-NOM Mary-NOM what-ACC ate C said C think Q
'(Lit.) Whom, does John think that Bill told that Mary ate what?'

c. ***Nani-o$_k$** John-ga [Bill-ga **dare-ni** [Mary-ga ***t*$_k$** tabeta to] itta to] omotteiru no?
what-ACC John-NOM Bill-NOM who-DAT Mary-NOM ate C said C think Q
'(Lit.) What, does John think that Bill told whom that Mary ate? (Takahashi 1993: 664-5)

In contrast, long-distance scrambling of *nani-o* in (12c) is impossible. Here, *nani-o* only pied-pipes [Q] feature. Therefore, *dare-ni* in the matrix VP, which is endowed with richer features [Arg, Q], exhibits the FRM effect.

(13) [$_{vP}$ **nani-o$_{i[Q]}$** [$_{v'}$ [$_{VP}$ **dare-ni $_{[Arg, Q]}$** [$_{CP}$ **nani-o$_{i[Q]}$** […]]]]] (cf. Saito 2005)
└──────*──────┘

2.2. Covert wh-movement and the focus intervention effect

Let us turn to the focus intervention effect. A focus element, such as DP-*sika* 'DP-only' and a negative concord item (NCI) *wh-mo* 'no one', shows the intervention effect on covert wh-movement (14a), but not on overt wh-movement (14b) (Takahashi 1990, de Swart 1992, Tanaka1997, 2003, Beck 1996, 2006, Saito 2005, Endo 2007, Tomioka 2007). Wh-phrases, focus phrases and NCIs all belong to the Quantificational class. Still, in (14b), MS for *what*, which searches for an element with the [Q, Arg] feature, looks over *only-Ken*$_{[Q, Arg]}$ as MS identifies these features symmetrically. Hence, MS for FC can find *what* within VP, as schematized in (15b). In contrast, in (14a),*what* in Spec, vP lacks phonological feature, and hence no problem with linearization occurs. This means that MS for FC may return the feature identity information of *nani-o* and *Ken-sika* in Spec, vP, exhibiting the FRM effect, as schematized in (15a).

(14) a. * Ken-sika nani-o tabenakatta no?
Ken-only what-ACC didn't.eat Q
'What did only Ken eat?'

b. Nani-o$_i$ Ken-sika t_i tabe-na-katta no?
what-ACC Ken-only didn't.eat Q

(15) a. [$_{vP}$ what$_{[Arg, Q]}$ [$_{v'}$ only Ken$_{i[Arg, Q]}$ [$_{VP}$ what$_{[Arg, Q]}$]]] (covert movement)
*

b. [$_{vP}$ what$_{[Arg, Q]}$ [$_{v'}$ Ken-sika$_{i[Arg, Q]}$ [$_{VP}$ what$_{[Arg, Q]}$]]] (overt movement)

On the other hand, long-distance wh-movement over a focus phrase in a higher clause exhibits the FRM effect, as shown in (16). Here, MS for *who*$_{[Q, P]}$ is blocked by the intervening *only Ken*, as the only phrase, being the argument in the matrix clause, bears not only [Q] but also [Arg] feature.

(16) *Dare-ni$_{i[Q]}$ Ken-sika$_{[Arg, Q]}$ [$_{CP}$ ~~dare-ni$_{i[Q]}$~~ [$_{TP}$ Maki-ga t_i atta to] omowanakatta no?
*
who-DAT Ken-only Maki-NOM met C didn't.think Q
'Who didn't only Ken think Maki met?'

In sum, the focus intervention effect exemplified in (14a) is known to be obviated by the overt movement of a wh-phrase, as shown in (14b). Less known is that long-distant movement fails to show the obviation effect, as is illustrated in (16). The contrast may be difficult to explain under an analysis where the surface order of a focus phrase and a wh-phrase plays a key role, as such an analysis does not differentiate (15b) and (16), both of which show wh-focus word order (Beck 1996, 2006, Tomioka 2007, a.o.) In contrast, the current analysis accounts for the contrast in terms of the difference of feature composition between short-distance movement (15b) and long-distance movement (16).

The current analysis is extended to discontinuous *wh…mo* construction, where the focus particle *-mo* is attached to the verb, and wh-indeterminate phrases associated with *-mo* need to be within vP (Kishimoto 2001), as shown in (17a). Now let us consider a sentence that contains the interrogative complementizer *no* and intends to give a (wh)-interrogative reading and the focus particle *–mo* that is related to the NCI reading, as shown in (17b). The sentence can in principle have four possible interpretations: (i) both of the wh-indeterminate phrases are interpreted as wh-interrogative phrases, (ii) the higher wh-phrase is an interrogative phrase and the lower wh-phrase is an NCI, (iii) both are NCIs, and (iv) the higher one is an NCI and the lower one is a wh-phrase. Interestingly, the fourth reading is absent in this sentence.

(17) a. Ken-wa [dare-ni n ani-o age-mo] sinakatta. (dare=NCI, nani= NCI)
Ken-TOP who-DAT what-ACC give-mo didn't.do
'Ken didn't give anything to anyone.'
b. Ken-wa [**dare-ni nani-o** age-mo] sinakatta no?
Ken-TOP who-DAT what-ACC give-mo didn't.do Q
'(i) Who didn't Ken give what?' (dare=wh, nani=wh)
'(ii) Who didn't Ken give anytning?' (dare=wh, nani=NCI)
'(iii) Didn't Ken give anyone anything?' (dare=NCI, nani=NCI)
'(iv) * What didn't Ken give who?' (*dare=NCI, nani=wh)

We argue that the absence of the fourth reading is due to MS for FC on covert wh-movement to CP being blocked by the intervening focus phrase, i.e. the wh-indeterminate phrase licensed by *-mo*.

(18) a. *dare=wh, nani=wh*

[$_{CP}$ **dare-ni nani-o** Ken-wa [$_{vP}$ **dare-ni nani-o** age-**mo**] sinakatta **no**]?

b. *dare=wh, nani=NCI*

[$_{CP}$ **dare-ni** Ken-wa [$_{vP}$ **dare-ni nani-o** [**nani-o** age-**mo**]] sinakatta **no**]?

c. *dare=NCI, nani=NCI*

[$_{CP}$ Ken-wa [$_{vP}$ **dare-ni nani-o** [**nani-o** age-**mo**]] sinakatta **no**]?

d. *dare=NCI, nani=wh*

(i) [$_{CP}$ **nani-o** Ken-wa [$_{vP}$ **nani-o dare-ni** [**nani-o** age-**mo**]] sinakatta **no**]?

*****

(ii) [$_{CP}$ **nani-o** Ken-wa [$_{vP\{Foc, Foc\}}$ **dare-ni nani-o** [**nani-o** age-**mo**]] sinakatta **no**]?

*****

First, the derivation schematized in (18a), where the two wh-indeterminate phrases are interpreted as wh-phrases that need to undergo Spec, CP covertly, is licit because MS for *dare-ni* can skip *nani-o* in Spec, CP. In (18b), where *dare-ni* undergoes covert wh-movement to Spec, CP and *nani-o* moves covertly to Spec, vP, the movement paths are not crossed, so no problem for FC arises. In (18c) as well, the derivation without crossing paths is possible. However, in (18d), where *dare-ni* is interpreted as a focus phrase and *nani-o* is a wh-phrase, the RM effect occurs no matter where in Spec, vP the object moves to. In derivation (i), *nani-o* undergoes covert movement over *dare-ni*. Here, no problem for linearization occurs, and hence MS for FC may identify them as copies, resulting in the RM effect. In the derivation of (ii), a problem arises at the CP phase, where MS for *nani-o*, 'what', cannot identify the lower *what*, as the vP, including *who*, has already been labeled as {Foc, Foc}, and MS identifies this first, exhibiting the FRM effect.

3. Conclusion

In this paper, we have argued that Minimal Search for FormCopy searches for features of the same class, in the sense of Rizzi (2004). We further propose that with asymmetric identification, MS for FC returns feature-identity information for FormCopy/in-situ Agree, while with symmetric identification of the features of the same class, MS for FC returns feature-identity information for Labeling/Agree, but not for FC. This is because symmetric identical elements fail to be linearized (Moro 2000). The restriction is phonological in nature, and so it does not apply to covert movement; when MS finds the features of the same class in a symmetric relation, and at least one of them undergoes covert movement to that position, MS sends the identification information for FC.

Our proposal is in line with Markovian view of syntactic derivation that tries to eliminate chains. Empirically, however, a question remains as to whether our analysis should be preferred to the (whole) chain intervention analysis proposed by Krapova and Cinque (2005) and Rizzi (2011), as these analyses make very similar predictions: the FRM effect arises when a movement path contains another movement path (i.e. a containment configuration), while the FRM effect is absent when movement paths are crossed (Luigi Rizzi, personal communication). We leave a detailed comparison of these analysis for future research.

We would also like to extend our analysis to other intervention phenomena, such as the freezing effect caused by Heavy NP Shift (HNPS). As observed by Rochemont (1992), HNPS disallows not only sub-extraction out of a nominal phrase that undergoes HNPS (19b), but also extraction out of the vP where HNPS occurs, as shown in (19c). Let us assume that HNPS moves a nominal phrase to the

edge of vP, as schematized in (20b).

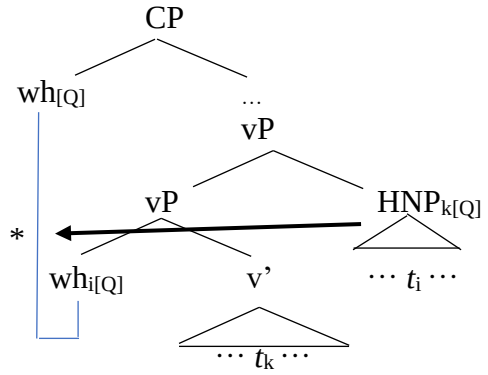
(19) a. John sent to Horace an expensive book about horned frogs.
(Wexler and Culicover 1980: 278)

b. *[About what kind of frogs]$_i$ did John send to Horace [an expensive book t_i]?
(Rochemont 1992: 386)

c. *Guess [which files]$_i$ I located in t_i [a picture of you]? (Bresnan 1994: 88)

(20) a. *[$_{CP}$ XP$_{[F]}$ … [$_{vP}$ YP$_{[F]}$ [$_{vP}$ XP$_{[F]}$ …]]]

b.



Under the rightward focus movement analysis of HNPS (Wexler and Culicover 1980, Rochemont 1992, a.o.), a nominal phrase that undergoes HNPS is regarded to be endowed with a focus feature. Therefore, a heavy NP can be classified as a quantificational element, just as a wh-phrase. Hence, when MS for the moved wh-phrase searches for an element with the quantificational feature, the first hit would be always the HNP, disallowing subextraction out of the HNP (19b) nor out of the vP that HNP is adjoined to (19c). We leave the detailed discussion for future research, in the hope of extending our analysis to other cases of intervention effects such as A-over A and immediate scope constraint.

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(In)sensitivity to Order Preservation and Prominence-driven Linearization in Japanese[1]

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1. Introduction to the Puzzle

This short paper aims to reveal what aspect of prosody affects linearization of sentences by examining word order and its restriction in Japanese. In previous literature, much attention has been devoted to examining how much syntax and phonology interact with each other (Selkirk 1986, Kayne 1994, Richards 2016 among others). Fox&Pesetsky (2005), for example, entertain the idea that syntactic elements are cyclically linearized by proposing *Order Preservation*:

(1) Information about linearization, once established at the end of a given Spell-Out domain, is never deleted at the course of a derivation.

(Fox&Pesetsky 2005, 6)

Adopting an analysis in Chomsky (2000, 2001) that v and C are phase heads, they argue that order relations are established phase-by-phase and deriving an ordering statement that is incompatible with a previous relation leads to ungrammaticality.

Under their analysis, Japanese should show such an ordering effect: a sentence becomes ungrammatical when an ordering statement established in a lower phase is not preserved in a higher phase. Interestingly, this is not true. Japanese shows an insensitivity to (1). Consider a cleft construction in Japanese.

(2) [Naoya-ga t_i tabe-ta-no]-wa [ringo-o mit-tsu]$_i$ da.
Naoya-NOM eat-PAST-FIN-TOP apple-ACC three-CL COP
'It was three apples that Naoya ate.'

(Hiraiwa&Ishihara 2012)

According to Hiraiwa&Ishihara (2012), the cleft construction is derived from a focus in-situ construction headed by *-no da* by movement of a clefted element followed by remnant movement. Its base-structure and derivation is illustrated in (3).

(3) a. *Base-structure*
Naoya-ga [ringo-o mit-tsu]tabe-ta-no-da.
Naoya-NOM apple-ACC three-CL eat-PAST-FIN-COP
'It was three apples that Naoya ate.'

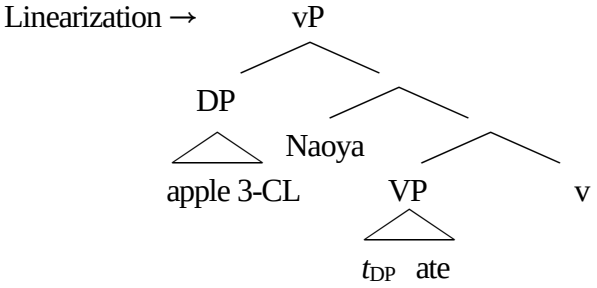
b. [FocP [apple 3-CL]$_i$ [FinP Naoya t_i ate]]

c. [TopP [FinP Naoya t_i ate]$_j$ [FocP [apple 3-CL]$_i$ t_j]]

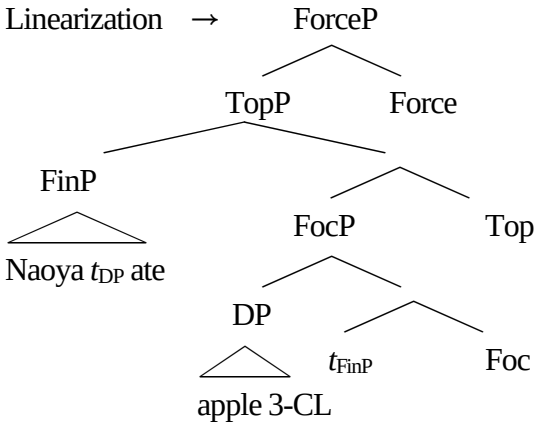
[1] For feedback and discussion on this work, I thank Klaus Abels, Faruk Akkuş, Seth Cable, Ken Hiraiwa, Toru Ishii, Ryoichiro Kobayashi, Shota Momma, Elise Newman, Kensuke Takita and the audience at Glow in Asia XIV. Special thanks to Rajesh Bhatt, Shinichiro Ishihara, Kyle Johnson and Satoshi Tomioka.

Under the assumption that v and C are phases, two ordering statements are established at Spell-Out domains for (2) as in (4).

(4) a. *Spell-Out of vP*



b. *Spell-Out of ForceP*



(i) *Spell-Out of vP*: [vP [apple 3-CL]$_I$ [v' Naoya t_i ate]]
(ii) *Spell-Out of ForceP*: [ForceP [TopP [FinP Naoya t_i ate]$_j$ [FocP [apple 3-CL]$_i$ t_j]]
Ordering Statement Table: **Obj** << Subj << **V** (= (i))
Subj << **V** << **Obj** (= (ii))

Fox&Pesetsky (2005) assume that Spell-Out applies to a whole phase, not just a phasal complement, and it adds ordering statements established at a current phase to ordering statements previously established in a lower phase. The first statement established at vP indicates that the clefted object precedes a verb (Obj <<V indicates Obj precedes V) as in (4a). This is accomplished by a successive cyclic movement of the element via each phase head. In (4b), the clefted Obj moves further to Spec, FocP, and FinP containing the trace of the clefted Obj moves to Spec, TopP, crossing it. Assuming that Spell-Out applies to ForceP, the relation, Obj << V, at vP is now incompatible with their final order, V << Obj at ForceP. A cleft construction like (2) should be ungrammatical under Fox&Pesetsky (2005). But this is contrary to the fact in (2).

I will argue that, despite (2), Japanese shows a sensitivity to (1). Let us examine the cleft with a Negative Concord Item (hereafter NCI):

(5) a. [Naoya-shika t_i tabe-nakat-ta-no]-wa [ringo-o mit-tsu]$_i$ da.
Naoya-NCI eat-NEG-PAST-FIN-TOP apple-ACC three-CL COP
'It was three apples that nobody but Naoya ate.'

b.*[Naoya-ga t_i tabe-nakat-ta-no]-wa [ringo-o mit-tsu-shika]$_i$ da.
Naoya-NOM eat-NEG-PAST-FIN-TOP apple-ACC three-CL-NCI COP
'It was nothing but three apples that Naoya ate.'

As observed in Hiraiwa&Ishihara (2012), an NCI is not allowed to appear in the cleft position as in (5b).[2] Note that NCI can appear in the cleft construction only when it precedes NEG as in (5a). Ordering statements in (5b) are shown in (6).

(6) (i) *Spell-Out of vP*: [vP [apple 3-CL-NCI]$_i$ [v' Naoya t_i ate]]
(ii) *Spell-Out of ForceP*: [ForceP [TopP [FinP Naoya t_i ate-NEG]$_j$ [FocP [apple 3-CL-NCI]$_i$ t_j]]
Ordering Statement Table: **Obj$_{NCI}$** << Subj << **V** (= (i))
Subj << **V-NEG** << **Obj$_{NCI}$** (= (ii))

I assume that ForceP is the highest projection in a CP-layer and Spell-Out applies to it. (6) shows that the ordering statement Obj$_{NCI}$ << V at vP is not preserved at ForceP. The ungrammaticality of (5b) can be accounted for under (1). A natural question arises. Why does Japanese show both insensitivity and sensitivity to (1)? This is the puzzle of this paper.

In this paper, I argue that the problem here arises due to an assumption that Fox&Pesetsky (2005) adopt, not their core insight in (1). By providing a new definition of a phase, I show that the puzzle is explained under Order Preservation in (1) and an analysis that linearization is triggered by focus prosody in Japanese.

2. Proposal

Before seeing a proposal, I briefly review focus prosody in Japanese, which is a key to solving the puzzle. Ishihara (2003) observes that there is a unique prosody for *wh*-questions in Japanese: a F_0 peak appears on a *wh*-phrase (indicated by **BOLD**), and post-focus reduction applies from an element following it until its licenser, Q (indicated by UNDERLINE). Such prosody is not observed when a *wh*-phrase does not appear.

(7) a. Naoya-ga nanika-o non-da.
Naoya-NOM something-ACC drink-PAST
'Naoya drank something.'
b. Naoya-ga **nani-o** non-da no?
Naoya-NOM what-ACC drink-PAST Q
'What did Naoya drink?'

[2] One might think that the ungrammaticality of (5b) can be accounted for by semantic/syntactic properties of NCI: (i) it must be inside a domain of NEG, and (ii) it must appear in the same clause as its licensing NEG, known as the clausemate condition. In (5b), XP-*shika* appears out of a domain of NEG, leading to the ungrammaticality. This account, however, does not capture why XP-*shika* can be scrambled as in (i):

(i) [ringo-o mi-tsu-shika]$_i$ John-wa t_i tabe-nakat-ta.
apple-ACC 3-CL-NCI John-TOP eat-NEG-PAST
'John ate nothing but three apples.'

In addition, the clausemate condition (ii) does not explain the ungrammaticality. Under the mono-clausal analysis in Hiraiwa&Ishihara (2012), the clausemate condition is satisfied because they appears in the same clause. Both analyses, therefore, cannot explain the ungrammaticality of (5b).

More interestingly, an interpretation of a sentence can be disambiguated with prosody. Consider the following sentence.

(8) Mari-wa Naoya-ga nani-o non-da ka oboeteiru no?
Mari-TOP Naoya-NOM what-ACC drink-PAST Q remember.PRESENT Q
a. 'Does Mari remember what Naoya drank?'
b. 'What does Mari remember that Naoya drank?'

A *wh*-phrase and two Q-morphemes appear in a single sentence. This sentence is ambiguous in terms of a scope of the *wh*-phrase: it can take either an embedded scope or a matrix scope. Although a surface string does not indicate which scope the *wh*-phrase takes, prosody shows it.

(9) a. *Embedded Scope Interpretation*
Mari-wa Naoya-ga **nani-o** non-da ka oboeteiru no?
Mari-TOP Naoya-NOM what-ACC drink-PAST Q remember.PRESENT Q
'Does Mari remember what Naoya drank?'
b. *Matrix Scope Interpretation*
Mari-wa Naoya-ga **nani-o** non-da ka oboeteiru no?
Mari-TOP Naoya-NOM what-ACC drink-PAST Q remember.PRESENT Q
'What does Mari remember that Naoya drank?'

In the embedded scope reading, the post-focus reduction stops at the embedded Q, while it extends to the matrix Q in the matrix scope reading. Experimental results in Ishihara (2007a) also show the same prosody pattern in a sentence with NCI XP-*shika*. As in the *wh*-question, a F_0 pitch on NCI is boosted and a pitch of following elements is compressed until its licenser NEG. Hiraiwa&Ishihara (2012) point out that the focus in-situ construction also shows the same effect, namely a pitch of a focused element is boosted and all following elements until a licensing head *-no da*. The distribution of focus prosody is systematically determined by a syntactic licensing relation as summarized in (10).

(10) *Focus Prosody*
a. a F_0 peak on a *wh*-phrase, an NCI or a focused element in a focus in-situ construction is raised and,
b. all the following peaks are strongly reduced until their licenser, a Q-morpheme, NEG and *-no da* respectively.

Now we can see a restriction on linearization. In order to derive focus prosody, these focused elements must precede each licenser; otherwise the post-focus reduction fails to apply.

Now we can turn to the proposal of this paper. I propose *Prominence-driven Linearization* as in (11).

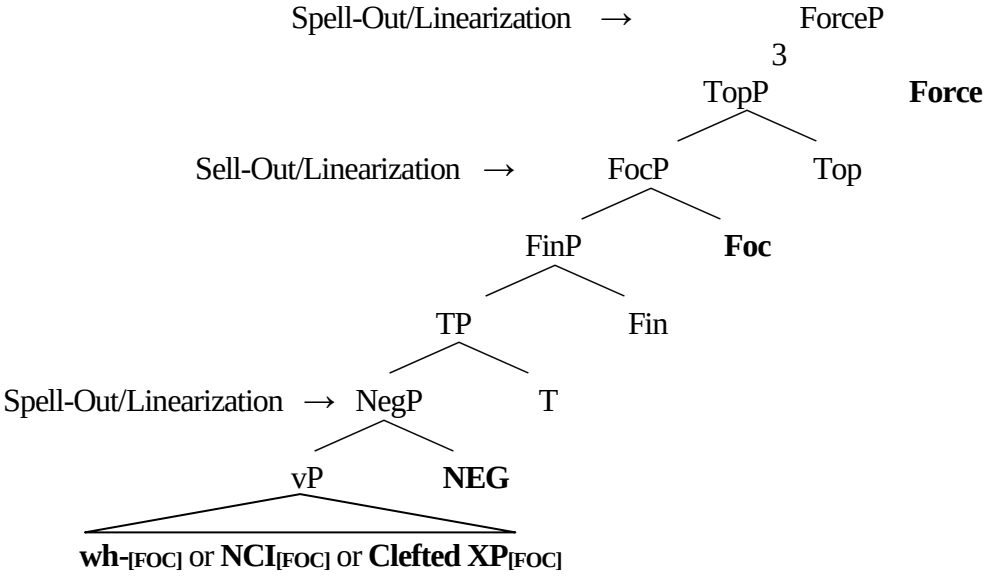
(11) *Prominence-driven Linearization*
Spell-Out/Linearization applies to the smallest phrase, HP,
(i) that is projected by a probe, H, that establishes an Agree relation with a goal with a FOCUS feature, and
(ii) within which the goal also appears.

In order to capture (10), Ishihara (2003) proposes that Agreement activates a FOCUS feature (hereafter [FOC]) on NCI, *wh*-phrase and the clefted XP. So I, adapting this, assume that [FOC] is a phonological

feature shared by focalized phrases which need to be licensed by an overt element to take their scope. I then encode it in the definition of phasehood in (11). Furthermore, I assume that the highest maximal projection is Spelled-Out.

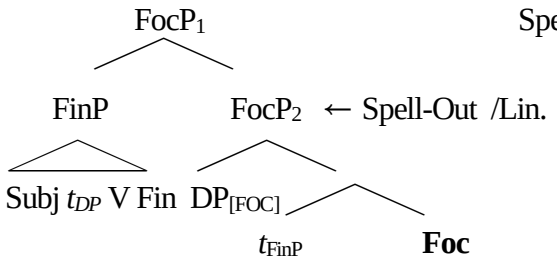
Let us see how this analysis works. (11) predicts that ordering statements should be established only when an Agreement relation of [FOC] is established and the head projects into its maximal projection. Suppose that a Q-morpheme appears on Force head. Spell-Out should obligatorily apply to NegP, FocP and ForceP only when each head of these maximal projections licenses an element with [FOC] as in (12).

(12)

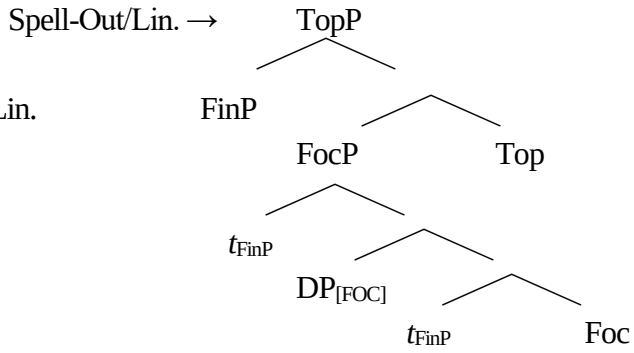


We now turn to the cleft example in (2). A proposed derivation of (2) is shown in (13).

(13) a. *When Foc merges*



b. *Final Spell-Out*



After $DP_{[FOC]}$ moves into Spec, FocP, FinP is moved into a higher Spec, FocP.[3] Since $FocP_2$ is the

[3] An alternative analysis here is that linearization establishes a relative order between an element with [FOC] and its licenser without any elements between them under a syntactic derivation where FinP stays in a complement of FocP. Under this analysis, FinP is not required to move into a higher Spec, FocP because it is invisible to the order statement. I do not have any argument against the alternative right now but the following is its prediction. As argued in Ishihara (2003), the pitch of elements in the post-focus domain is strongly compressed because of the post-focus reduction. If FinP stays between an element with [FOC] and its licenser, the F_0 of elements in

smallest phrase containing the $DP_{[FOC]}$ *ringo-o san-ko* 'three apples' and a Foc head between which an Agree relation is established, Spell-Out applies to $FocP_2$. Information of focus prosody is calculated in this cycle: $DP_{[FOC]}$ gets a higher prominence than following elements until the Foc head, *-no da*. Based on (11), Linearization applies to $FocP_2$ but not $FocP_1$ containing FinP, and an ordering statement Obj << Foc is then established. In the next cycle, FinP moves into Spec, TopP, which is its final landing site. Ordering statements under this derivation are shown in (14).

(14) (i) *Spell-Out of $FocP_2$*: [$FocP_2$ [apple 3-CL]$_i$ t_{FinP} Foc]
(ii) *Final Spell-Out*: [$_{TopP}$ [$_{FinP}$ Naoya t_i ate Fin] [[FocP t_{FinP} [apple 3-CL]$_i$ Foc]] ToP]
Ordering Statement Table: Obj << Foc (= (i))
Subj << V << Fin << Obj << Foc (= (ii))

The ordering statement established at FocP is preserved through a derivation, satisfying (1).

One might think that only C is a phase in Japanese and this is the reason why the cleft in Japanese does not pose any problem for linearization. In a different way from the proposed analysis, the grammaticality of the cleft can be explained if linearization applies to CP only once in (2) as in (15).

(15) *Spell-Out of CP*: [CP [TopP [FinP Naoya t_i ate Fin]$_j$ [FocP [apple 3-CL]$_I$ t_j] Foc]
Ordering Statement Table: Subj << V << Fin << Obj << Foc

This analysis, however, cannot explain why a long-distance cleft is allowed in Japanese:

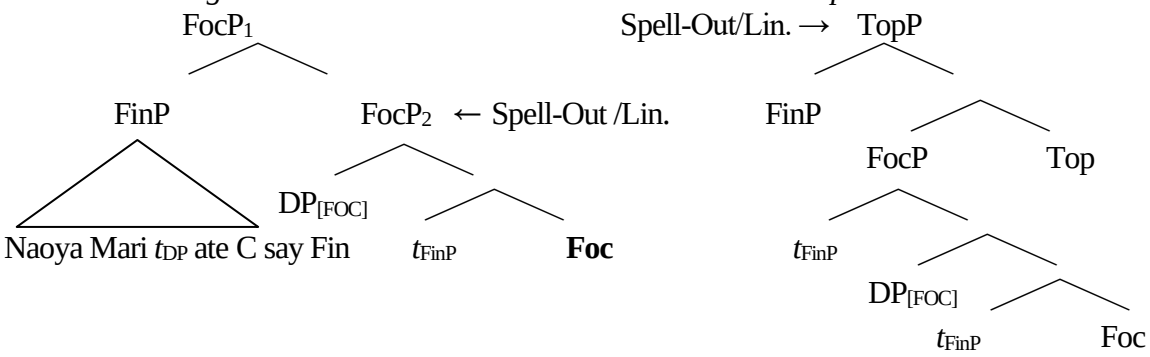
(16) Naoya-ga Mari-ga t_i tabe-ta-to it-ta-no-wa [ringo-o mit-tsu]$_i$ da.
Naoya-NOM Mari-NOM eat-PAST-C say-PAST-FIN-TOP apple-ACC 3-CL COP
'It was three apples that Naoya said that Mari ate.'
(Hiraiwa&Ishihara 2012, 147)

Under the assumption that only C is a phase in Japanese, Spell-Out applies to the embedded CP and the matrix CP in (16). A problem arises in Spell-Out of the embedded CP. There is no way to accomplish the final order in the embedded CP. In other words, the embedded C precedes the clefted object head in the final order but the C head always follows the clefted object in the embedded CP due to a strict head-final property of Japanese. Therefore, I reject the assumption that only C is a phase head.

The grammaticality of the long-distance cleft can be accounted for straightforwardly by the proposed analysis. The derivation looks similar to (14) in that Spell-Out applies to neither vP nor CP.

FinP should be reduced. In other words, their pitch should show the same pitch range as a focus in-situ construction where the focalized object appears in a sentence-initial position. I leave this issue open.

(17) a. *When Foc merges* b. *Final Spell-Out*



(i) *Spell-Out of FocP2*: [FocP2 [apple 3-CL]i t_{FinP} Foc]

(ii) *Final Spell-Out*:

[TopP [FinP Naoya Mari t_i ate C say Fin] [[FocP t_{FinP} [apple 3-CL]i Foc]] Top]

Ordering Statement Table: Obj << Foc (= (i))

$Subj_{Matrix}$ << $Subj_{Embed.}$ << $V_{Embed.}$ << C << V_{Matrix} << Obj << Foc (= (ii))

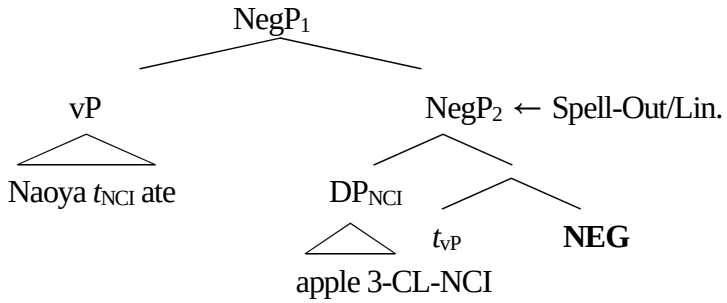
Spell-Out applies to FocP2 since it is the smallest phrase containing both a probe and its goal. The ordering statements established at FocP are preserved at the final Spell-Out, satisfying (1).

How about the cases indicating the sensitivity to (1)? The example in (5b) is repeated as (18)

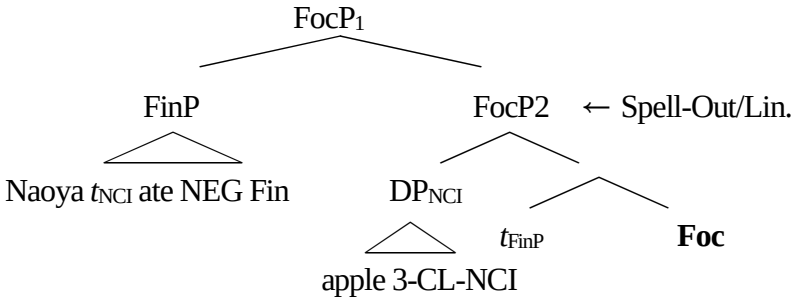
(18) *[Naoya-ga t_i tabe-nakat-ta-no]-wa [ringo-o mit-tsu-shika]i da.
Naoya-NOM eat-NEG-PAST-FIN-TOP apple-ACC three-CL-NCI COP
'It was nothing but three apples that Naoya ate.'

There are two dependencies of focus prosody in (18): NCI and NEG, and a clefted XP and Foc. Spell-Out should apply to each of the smallest phrases containing them under the proposed analysis. A sentence should be ungrammatical if an ordering statement established at NegP is not preserved later. This is the case in (19):

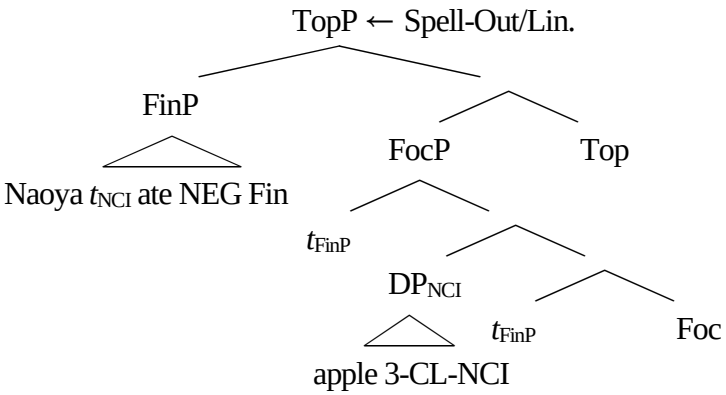
(19) a. *Spell-Out of NegP2*



b. *Spell-Out of FocP*



c. *Final Spell-Out*



(i) *Spell-Out of NegP$_2$* [$_{NegP2}$ [apple 3-CL-NCI] [t_{vP} NEG]]
(ii) *Spell-Out of FocP$_2$*: [$_{FocP2}$ [apple 3-CL-NCI] t_{FinP} Foc]
(iii) *Final Spell-Out*:
[$_{TopP}$[$_{FinP}$ Naoya t_{NCI} ate NEG Fin] [$_{FocP}$ t_{FinP} [apple3-CL-NCI] t_{FinP} Foc]Top]

Ordering Statement Table: **Obj$_{NCI}$ << NEG** (= (i))
Obj$_{NCI}$ << Foc (= (ii))
*Subj << V << **NEG** << Fin << **Obj$_{NCI}$** << Foc (= (iii))

Spell-Out of NegP$_2$ establishes Obj$_{NCI}$ << NEG. The movement of vP can derive V << Obj$_{NCI}$. But the same problem arises as in the (long-distance) cleft. Crucially, there is no way to derive NEG << Obj$_{NCI}$ in NegP. Once Foc merges, FinP containing NEG moves into Spec, a higher FocP, crossing the clefted Obj. An incompatible ordering statement NEG << Obj$_{NCI}$ with the one at NegP is established. This leads to a violation of (1).

The proposed analysis here can also capture an interpretative asymmetry in Right-Dislocation in Japanese. When a whole embedded CP is right-dislocated with a *wh*-phrase, it only takes embedded scope as in (20).

(20) Naoya-ga e_i oboeteiru no, [Mari-ga nani-o nonda-ka]$_i$?
Naoya-NOM remember.PRESENT Q Mari-NOM what-ACC drink.PAST-Q
a. 'Does Mari remember what Naoya drank?'
b. *'What does Mari remember that Naoya drank?'

As we have seen in (8), Japanese does not show a *wh*-island effect, namely (8) is ambiguous in that a *wh*-phrase can take either the embedded scope or the matrix scope. Based on this fact, it is puzzling

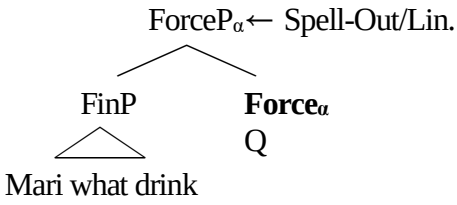
why (20) is not ambiguous. The proposed analysis predicts that a *wh*-phrase should not follow its licenser because establishing prosody of a *wh*-question fixes linearization of a *wh*-phrase and its licenser (a *wh*-phrase precedes its licensing Q). This prediction is born out assuming that Right-Dislocation is derived from a single sentence by a double preposing of a right-dislocated element and its remnant as in (21).

(21) a. $[_{CP}$ $[_{CP}$ Mari what drink Q$]_i$ [Naoya t_i remember Q]]

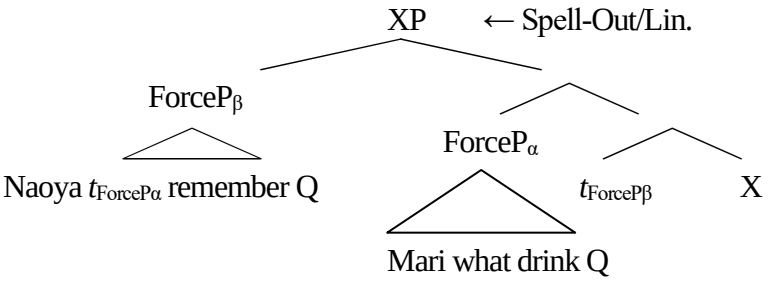
b. $[_{CP}$ [Naoya t_j remember Q$]_j$ $[_{CP}$ Mari what drink Q] t_j]

In the embedded reading, an Agree relation is established between a *wh*-phrase and the embedded licenser. Based on the Agree relation, Spell-Out applies to ForceP$_\alpha$ headed by the embedded Q as in (22).

(22) a. *Spell-Out of ForceP*



b. *Final Spell-Out*



(i) *Spell-Out of ForceP$_\alpha$*: $[_{ForceP}$ [Mari what drink] Q]

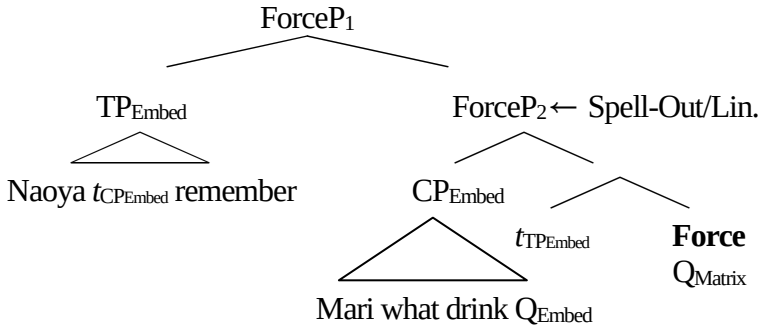
(ii) *Final Spell-Out*: $[[_{ForcePβ}$ Naoya $t_{ForcePα}$ remember Q] $[_{ForcePα}$ Mari what drink Q] $t_{ForcePβ}]$

Ordering Statement Table:

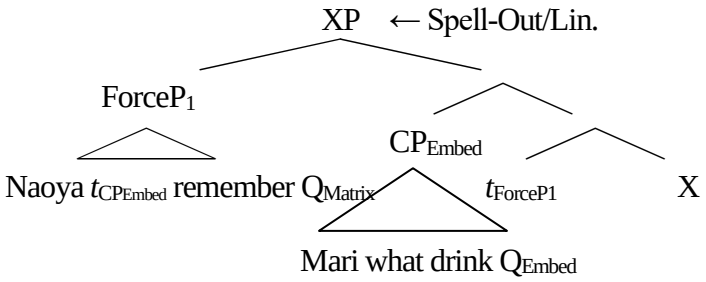
Subj$_{Embed}$ << **Obj$_{what}$** << V$_{Embed}$ << Q$_{Embed}$	(= (i))
Subj$_{Matrix}$ << V << **Q$_{Matrix}$** << Subj$_{Embed}$ << **Obj$_{what}$** << V$_{Embed}$ << Q$_{Embed}$	(= (ii))

An ordering statement of elements between them is established by this Spell-Out. After that, ForceP$_\alpha$ is fronted and its remnant crosses the ForceP. The remnant movement does not causes any linearization problem because ForceP$_\alpha$ contains all and only linearized elements in the first cycle without changing their order. But a problem arises in the matrix interpretation. A derivation and its ordering table are illustrated in (23).

(23) a. *Spell-Out of ForceP$_2$*



b. *Final Spell-Out*



(i) *Spell-Out of ForceP$_2$*: [$_{\text{ForceP2}}$[$_{\text{CPE}}$ Mari what drink Q] t_i Q]
(ii) *Final Spell-Out*: [[$_{\text{CP}}$ [Naoya t_{CPEmbed} remember] t_{CPEmbed} Q] [$_{\text{CPEmbed}}$ Mari what drink Q] t_{CP}]
Ordering Statement Table:

Obj$_{\text{what}}$ << V$_{\text{Embed}}$ << Q$_{\text{Embed}}$ << **Q$_{\text{Matrix}}$**	(= (i))
*Subj$_{\text{Matrix}}$ << V << **Q$_{\text{Matrix}}$** << Subj$_{\text{Embed}}$ << **Obj$_{\text{what}}$** << V$_{\text{Embed}}$ << Q$_{\text{Embed}}$	(= (ii))

Spell-Out of ForceP$_2$ establishes an ordering statement of elements between a *wh*-phrase and the matrix Q including an embedded verb and an embedded Q. The embedded CP, CP$_{\text{Embed}}$, moves with all and only elements that it dominates. The matrix elements in the ordering statement in the first cycle, Q$_{\text{Matrix}}$ is, therefore, stranded in ForceP$_1$. The remnant movement of the matrix CP, then cross the fronted CP$_{\text{Embed}}$ with Q$_{\text{Matrix}}$, deriving an ordering statement that is incompatible with the statement at (i). Therefore, a violation of (1) arises only in the matrix reading.

3. Previous Analysis

As we have seen so far, (11) can explain the cleft in Japanese. According to (11), a phase is defined based on focus prosody and its syntactic manipulation. In this section, I will briefly review a previous approach of linearization in Japanese assuming the phase theory in Chomsky (2000, 2001) that v and C are phase heads, and will then point out its empirical problems.

In previous literature of linearization in Japanese, it has been argued in Ko (2005, 2007) and Takita (2010) that Spell-Out applies to vP and an established ordering statement is not preserved, which leads to ungrammaticality. This argument is based on a subject/object asymmetry of floating numeral quantifiers observed in Miyagawa (1989). Let us examine an object case first:

(24) a. John-ga biru-o san-bon non-da.
John-NOM beer-ACC 3-CL drink-PAST
`John drank three bottles of beer.'
b. biru-o John-ga san-bon non-da.
beer-ACC John-NOM 3-CL drink-PAST

`John drank three bottles of beer.'

In (24a), an object and its numeral quantifier are adjacent. (24b) shows that a subject can appear between them. This does not hold when a numeral quantifier modifying a subject is stranded as in (25).

(25) a. gakusei-tachi-ga san-nin biru-o non-da.
student-PL-NOM 3-CL beer-ACC drink-PAST
'Three students drank beer.'
b. * gakusei-tachi-ga biru-o san-nin non-da.
student-PL-NOM beer-ACC 3-CL drink-PAST
'Three students drank beer.'

(25a) is a base-structure. Unlike (24b), an object cannot separate a subject and its numeral quantifier as in (25b).

Ko (2007) argues that the ungrammaticality in (25b) is accounted for by (1), assuming that Spell-out applies to vP. A derivation of (25b) is illustrated in (26).

(26) (i) *Spell-Out of vP*: [vP Obj_i [v' [Subj NQ] [v t_i V]
(ii) *Spell-Out of CP*: [CP [TP $Subj_j$ [vP Obj_i [v' [t_j NQ][v t_i V]]
Ordering Statement Table: **Obj** << **Subj** << NQ_{Subj} << V (= (i))
*__Subj__ << __Obj__ << NQ_{Subj} << V (= (ii))

At vP, an ordering relation Obj << Subj is established. This statement is, however, not preserved at CP because a subject moves into Spec, TP crossing an object, violating (1).

How about the grammatical case in (23b)? Its derivation is shown in (27).

(27) (i) *Spell-Out of vP*: [vP Obj_i [v' Subj [v [t_i NQ] V]
(ii) *Spell-Out of CP*: [CP Obj_i [TP $Subj_j$ [vP t_i [v' t_j [v [t_i NQ] V]]
Ordering Statement Table: Obj << Subj << NQ_{Obj} << V (= (i))
Obj << Subj << NQ_{Obj} << V (= (ii))

In (27), an object and a subject move into a higher position by keeping their order at vP. Therefore, no violation of (1) arises in (27).

This analysis is not free from empirical problems. First of all, the grammatical judgement of (24b) varies from researcher to researcher. The following example sounds good to my ear, although the word order is same as in (24b).

(28) gakusei-tachi-ga ramen-o huta-ri tanon-da.
student-PL-NOM ramen-ACC 2-CL order-PAST
'Two students ordered ramen.'

This analysis also cannot capture why the word order Subj << Obj << NQ_{Subj} << V is allowed when an object is a pronoun. As observed in Takami (2001), a pronoun can appear between a subject and its numeral quantifier.

(29) gakusei-tachi-ga sore-o go-nin kat-ta.
student-PL-NOM it-ACC 2-CL buy-PAST
'Five students bought it'

A derivation of (29) is exactly the same as that of (26). It is predicted (29) to be ungrammatical too because Spell-Out of vP establishes Subj << Obj but Spell-Out of CP derives an incompatible ordering. Importantly note that the proposed analysis in this paper correctly rules in these examples. This is so because there is no [FOC] in a derivation of these examples and linearization, therefore, applies only to the highest maximal projection. In addition, the cleft examples in (2) and (17) are also problematic. As argued in (4), this analysis predicts that a derivation of (2) should not converge due to a violation of (1). Once again, the assumption that only C is a phase does not solve the problem here. Even if we adopt such an assumption, the grammaticality of the long-distance cleft in (17) is still problematic as discussed in (18).

4. Theoretical Implication

This paper proposes (11) by examining the case where cyclic linearization applies in a limited fashion. This proposal indicates that focus prosody triggers linearization in Japanese. In other words, grammar encodes linearization in information of prosody in natural language, and it is focus prosody within which linearization is encoded in Japanese. If this analysis is on the right track, then a natural question arises: which phonological aspect is linearization encoded within in other languages? Investigating this question might be a key to reveal why word order varies in natural language.

Furthermore, this paper entertains (11) indicating that phasehood is determined by a prosodic requirement. I reject the assumption based on Chomsky (2000, 2001) in this paper because of the grammaticality of the long-distance cleft in Japanese. But I provide a speculation why v or C behaves like a phase in some languages. It has been argued that a prosodic domain interacts with the phase theory (Ishihara 2003, Kahnemuyipour 2004, 2009, Kratzer&Selkirk 2007 among others). Ishihara (2007b) shows that vP as a Spelled-Out domain is mapped onto prosody as a phonological phrase. His argument indicates that a syntactic maximal projection is Spelled-out as a prosodically converged chunk. In other words, there is another possibility of phasehood: it is determined by whether a Spelled-Out domain is a prosodic phrase or not, as well as whether it is propositional or not. The argument in this paper favors an idea that phrasehood should be defined by a prosodic chunk. As we have seen so far, Spell-Out maps syntactic objects onto focus prosody in Japanese in that a certain maximal projection is Spelled-Out only when its head establishes a prosodic relation. As we have seen in (18) and (19), the ungrammaticality can be accounted for by Spell-Out of NegP whose head establishes Agree with an NCI. At NegP, an ordering statement NCI << NEG is established but the ordering statement is not preserved in ForceP because the remnant movement creates an incompatible statement NEG << NCI with it. The proposed analysis here predicts that NegP should not be Spelled-Out when no NCI appears through a derivation. This prediction is born out.

(30) [Naoya-ga t_i tabe-nakat-ta-no]-wa [ringo-o mit-tsu]$_i$ da.
Naoya-NOM eat-NEG-PAST-FIN-TOP apple-ACC three-CL COP
'It was three apples that Naoya did not eat.'

(30) is a minimal pair of (18) in terms of an existence of NCI. A derivation and ordering table of (31) are illustrated below:

(31) (i) *Spell-Out of Foc*: [$_{FocP}$ [$_{FinP}$ Naoya t_{Obj} ate NEG Fin] [apple 3-CL] t_{FinP} Foc]
(ii) *Final Spell-Out*: [$_{TopP}$ [$_{FinP}$ Naoya t_{Obj} ate NEG Fin] [$_{FocP}$ t_{FinP} [apple3-CL] t_{FinP} Foc]Top]
Ordering Statement Table: Subj << V << NEG << Obj (= (i))
Subj << V << NEG << Obj (= (ii))

A contrast between (18) and (30) indicates that Spell-Out does not always apply to the same projection. The propositional approach of phase poses a problem.[4] It cannot capture this, namely it cannot explain why Spell-Out obligatory applies to NegP whose head licenses NCI, while it does not when an NCI does not appear in a derivation. Whether NCI appears or not in NegP should not determine a propositionality of NegP. Therefore, the propositional analysis of phase needs an additional explanation. What determines phasehood? I leave this issue open for future research.

5. Conclusion

This paper entertains the idea that information of linearization is encoded in information of focus prosody in Japanese. The proposed analysis here can explain both insensitivity and sensitivity to *Order Preservation* in (1). The problem in previous analyses is due to the assumption of phase, not the core idea in Fox&Pesetsky (2005) that linearization cyclically applies and the ordering relations must be preserved through a derivation.

As an implication of this paper, grammar encodes linearization as an aspect of prosody in natural language. A variation of a restriction of word order should be explained by examining which phonological phenomena trigger it. In addition, phasehood is determined by prosody, instead of a semantic requirement.

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[4] Like vP or CP, NegP is also a propositional unit in that it takes a truth value of a proposition and provide an opposite truth value. Assuming so, the propositional approach of phase cannot explain the contrast between (19) and (30).

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Make Inaccessible

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1. Introduction

The basic property of the Faculty of Language (FL) is that internalized language or I-language generates an infinite array of hierarchically structured expressions or syntactic objects (SOs), each receiving an interpretation at the CI interface and optionally, external manifestation (typically, in the form of sound) at the SM interface; I-language can be taken to be a system generating thought. One component of FL is Merge, which is considered an ineliminable structure-building operation and yields SOs by conforming to third-factor principles (such as least effort and computational efficiency).

The purpose of this paper is to consider how Merge applies under the assumption of determinate syntax: since linguistic computation is constrained by third-factor principles, it reasonably follows that the computation allows no ambiguous situation for subsequent rule application. I propose a third-factor operation *Make Inaccessible*, which is built into the computational structure of language so that it is hard-wired to be determinate. The operation explains not only strictly Markovian nature of Merge but also the impenetrability of phases.

The organization of this paper is as follows. In Section 2, I introduce background discussions and pave the way for our argument in Section 3, where I make a proposal for determinate syntax. In Section 4, I discuss consequences of the proposal. In Section 5, I summarize and conclude the paper.

2. Background

One instantiation of determinate syntax is Minimal Yield (MY), which is regarded as a condition imposed on Merge. Merge is an operation on the Workspace (WS), which designates the current state of the derivation, and maps one WS into another WS (Chomsky 2019, 2020; Chomsky, et al. 2019). Because of MY, when the WS is mapped, Merge adds only one new accessible element in the derived WS; that is, it increases the number of accessible elements only by one. For instance, consider (1):[1]

(1) a. WS = [X, Y] → b. WS' = [{α X, Y}]

In the mapping from (1a) to (1b), no more than the object α is added to the WS, with X, Y and the object α accessible to the subsequent derivation. Given MY, mapping by Merge works in such a way that resources for computation are restricted in the derived WS.

Now suppose that X and Y remain in WS after Merge applies; that is, (2b), instead of (1b), is generated:

(2) a. WS = [X, Y] → b. WS' = [{α X, Y}, X, Y]

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1 Square brackets are employed to show WS while curly brackets are used to designate SOs created in the WS. In this paper, for expository purposes, Greek alphabets such as α and β are used to refer to such SOs.

In this case, MY is violated since more than one accessible item (i.e., X and Y as well as the object α) is added to the WS. This will lead to an ambiguous situation for subsequent rule application: there are two inscriptions of X and two inscriptions of Y in WS' accessible to the subsequent computation. MY guarantees determinate rule application in the subsequent derivation in that elements in WS' can be unambiguously searched. This is not possible in (2b).

Next, consider (3), a case of movement or Internal Merge (IM), where Y is IMed:[2]

(3) a. WS = [{ …, {X, Y}}] → b. WS' = [{$_{\beta}$ Y_2, { …, {X, Y_1}}}]

Notice that in (3b), two new objects (i.e., Y_2 and the object {$_{\beta}$ }) have been yielded and the number of accessible items has increased by more than one. This is a violation of MY. In the case of IM, a copy is created, which is merged to an object. Consequently, IM necessarily yields two new objects.

Chomsky (2021), however, argues that MY is respected in IM (and hence determinate rule application is warranted) because Minimal Search (MS) selects Y_2, not Y_1, when applied to (3b): Y_1 is inaccessible. The Search operation searches as far as the first element it reaches and no further. In (3b), Y_2 c-commands Y_1 and is selected as it is closer to MS than Y_1: when MS reaches Y_2, it will halt, not searching any further. To employ Chomsky's words, Y_2 "protects" Y_1. It is not the case that both Y_2 and Y_1 are accessible to the computation but only Y_2 is: though there are two inscriptions of Y (Y_2 and Y_1), Y_1 is not counted. As a result, MY is satisfied.

I argue that this approach to warrant MY faces problems. The first problem is that the approach actually allows the derivation to violate MY. Notice that it is when MS applies in the subsequent derivational step (i.e., the step after (3b) is produced) that Y_2 is selected and Y_1 becomes inaccessible due to closer Y_2; Y_1 does not become inaccessible when Merge yields (3b) from (3a). To put it differently, under the relevant approach, determinacy or MY applies to the input to Merge.[3] As Chomsky (2021) notes, however, as far as the Strong Minimalist Thesis (SMT) holds for organic systems, MY should apply to the output of Merge: Merge has no choice but to introduce at most one new accessible term in the derived WS. This suggests that the WS such as (3b), where more than one new element is indeed created, cannot be produced from the beginning as it necessarily violates the relevant condition.

The second problem is the redundancy between MS (c-command) and Transfer. It is argued in Chomsky (2021) that there is another principle that warrants MY: that is, Transfer, which brings about the impenetrability of the phase-head complement or the Phase Impenetrability Condition (PIC). For instance, consider the derivation of (4):

(4) What did John buy?

In this example, *what* is IMed to the edge of *v**P (Spec-*v**), which yields (5):

(5) [{what$_2$, {John, {*v**, {V, what$_1$}}}}]

2 In this paper, for convenience of exposition, copies of an element are marked with subscripted numbers and are sequentially numbered. In (3), Y_1 and Y_2 are in a copy relation, interpreted as one and the same element and Y_1 being deleted when externalized.

3 See Goto and Ishii (2019, 2024) for this proposal.

In the derived WS, there are two *what*'s, *what*$_1$ and *what*$_2$. As discussed, *what*$_1$ is inaccessible because it is protected by *what*$_2$, which c-commands it. The inaccessibility of *what*$_1$ also follows because VP is transferred and is made impenetrable. We can see that there is redundancy between the two mechanisms. If redundancy implies that something is wrong with the theory, it should not be the case that MS and Transfer are both relevant to the satisfaction of MY.

In addition to these problems, there is an empirical problem as well. First consider (6), where *John* is IMed to Spec-T, which adds two new objects (*John*$_2$ and $\{_\gamma\ \}$) to the derived WS:[4]

(6) a. John will discuss the problem.
b. [$\{_\gamma$ John$_2$ {T, {John$_1$ {*v**, {discuss, {the, problem}}}}}}]

(6) is an example of A-movement or phase-internal movement. It does not violate MY for Chomsky because *John*$_2$ c-commands *John*$_1$, protecting it from MS, with the result that only *John*$_2$ is accessible.

Now consider (7), where the subject is a phrase, consisting of some elements:

(7) A student of linguistics will discuss the problem.

In (7), just as in (6), *a student of linguistics* is IMed to Spec-T. In this case, (8) is created and elements in (9) are added to the derived WS by IM:

(8) [$\{_\gamma$ {a, {student, {of, linguistics}}}$_2$ {T, {{a, {student, {of, linguistics}}}$_1$ {*v**, {discuss, {the, problem}}}}}}]

(9) a. $\{_\gamma\ \}$
b. {a, {student, {of, linguistics}}}
c. {student, {of, linguistics}}
d. {of, linguistics}
e. a
f. student
g. of
h. linguistics

Notice that in (8), MS cannot warrant MY. It may be true that the subject as a whole (that is, (9b)) c-commands and protects its counterpart in Spec-*v**; however, the terms of (9b) (elements listed in (9c) through (9h)) cannot protect their counterparts in Spec-*v** in the absence of c-command relations between them.

Moreover, in the case of phase-internal movement, Transfer (PIC) does not help, either, because T is not a phase head and its complement, *v**P, is not transferred upon IM to Spec-T. In (8), neither MS nor Transfer can guarantee MY.

4 Chomsky (2023) says that what we have called T is INFL. In this paper, T is employed since the distinction is irrelevant to our discussion.

Discussing remnant movement cases like (10), Chomsky (2021: 19, footnote 30) suggests that if movement is terminal, not subject to further operations that affect grammatical status or CI interpretation, it wouldn't matter if MY is violated:

(10) (I wonder) how likely to win John is.

In the case of phase-internal movement like (7), the movement of the subject terminates at Spec-T. If so, MY would not be relevant. But the question remains of how the computation knows movement is terminal. It knows that movement is terminal not when the Merge output is created but in the next step. The suggestion implies that there are cases when MY cannot be abided by.

In sum, I have discussed MY, which is one instantiation of determinate syntax following from third-factor considerations, and argued that Chomsky's approach to warrant MY faces problems.

3. Proposal

Given that syntax, which is a computational system, conforms to third-factor principles, we assume that it is hard-wired to be determinate: the choices for subsequent rule application should be restricted so that operations (especially, Merge) can apply without any ambiguity. With this in mind, the question is: What makes syntax determinate? In other words, where does MY stem from? I propose that syntax is equipped with the operation *Make Inaccessible* (MI), which, I argue, is a third-factor operation, motivated by computational efficiency. MI is defined as follows: it applies to two non-distinct SOs in the WS and functions to make either one of them inaccessible to further computational operations. To see how MI works, consider (3) once again, which is repeated below for convenience:

(3) a. WS = [{ …, {X, Y}}] → b. WS' = [{$_{\beta}$ Y_2, { …, {X, Y_1}}}]

In (3), IM yields two new objects {$_{\beta}$ } and Y_2. In the WS', since Y_1 and Y_2 are non-distinct SOs in the WS, MI can apply to either one of the two Y's to render it inaccessible. Suppose that Y_1 becomes inaccessible due to MI. (3b) is now (11b) (inaccessible elements are marked in an outline typeface):

(11) a. WS = [{ …, {X, Y}}] → b. WS' = [{$_{\beta}$ Y_2, { …, {X, Y_1}}}]

The output of Merge (=(11b)) satisfies MY: though {$_{\beta}$ } and Y_2 are added, Y_1 becomes inaccessible thanks to MI, and the number of accessible elements increases only by one in the WS', which is an output of Merge. MI derives MY.

To take a concreate example, consider (4), where *what* is IMed to Spec-*v**:

(12) a. WS = [{John, {*v**, {V, what}}}] → WS' = [{$_{\gamma}$ what$_2$, {John, {*v**, {V, what$_1$}}}}]

In the WS', *what*$_1$ and *what*$_2$ are non-distinct SOs. MI can apply to them and either *what*$_1$ or *what*$_2$ is rendered inaccessible due to MI. The resultant WS' has only one accessible object ({$_{\gamma}$ }) added to it, satisfying MY.

MI can also take care of phase-internal movement. Recall that (7) is problematic in that neither MS nor Transfer (PIC) can guarantee MY. As discussed, the terms of the subject cannot protect their counterparts in Spec-*v** in the absence of c-command relations between them.

This problem can be fixed by MI, which can render inaccessible either one of the two non-distinct subjects (say, the one in Spec-*v**):

(13) [{$_{\gamma}$ {a, {student, {of, linguistics}}}$_2$ {T, {{a, {student, {of, linguistics}}}$_1$ {*v**, {$_{VP}$ … }}}}}]

In (13), thanks to MI, only the object {$_{\gamma}$ } is added to the WS', satisfying MY.

I have demonstrated MI with IM. Besides MY in the case of IM, MI can also explain why the output of EM satisfies MY. Chomsky (2020, 2021) argues that Merge creates copies when it applies, whether it is EM or IM. Provided that EM and IM are both instantiations of one and the same operation and that recursion normally produces copies in the WS', it naturally follows that EM generates copies of elements to which it applies. In (1), when EM applies to (1a), X and Y are duplicated and then merged, which generates (2b). However, (1b) emerges as the output of EM instead, which, according to Chomsky, follows as a consequence of MY. The question, however, is: How is the outcome possible? How can the other X and the other Y, unlike in the case of IM, be removed from the WS'? Notice that MY is a condition, not an operation. Moreover, deletion is not a possible choice as it tampers with the WS.

I contend that (1b) is due to MI. In [{$_{\alpha}$ X, Y}, X, Y], two inscriptions (X's and Y's) are non-distinct SOs in the WS and MI can make either X and either Y inaccessible. Under the proposal here, the output of EM from (1a) is not (1b), where a copy of X and a copy of Y are removed from the WS', but (14b), in which they are indeed present in WS' but have been rendered inaccessible by MI and are computationally not available to the following derivation:

(14) a. WS = [X, Y] → b. WS' = [{$_{\alpha}$ X, Y}, X, Y]

The output of Merge, whether it is that of IM or that of EM, leads to MY thanks to MI.

To recap, I have proposed a third-factor operation *Make Inaccessible*, which functions to make either one of the two non-distinct SOs in the WS inaccessible to further computational operations, with the output of Merge (both IM and EM) being unambiguous for subsequent rule application.

4. Consequences of the proposal

In this section, I discuss some consequences of MI. Recall that MI makes either one of the two non-distinct SOs in the WS syntactically inaccessible; which one is rendered inaccessible, however, is computationally undetermined, which I argue follows from independent considerations. For our purposes, take (4) once again, which is an example of A′-movement, and consider its derivation. Chomsky (2023) argues that contrary to what has been proposed in the literature of generative grammar, A′-movement is a one-time shift to the first/lowest phase edge, where an IMed element is segregated for clausal thought from the propositional thought constructed by EM or from the ongoing derivation (to use Chomsky's metaphor, it is "boxed") and is not accessible to the computation in the subsequent derivation; there is no successive-cyclic A′-movement. A segregated element in the phase edge is consulted by the phase head at each phase, which instructs CI that *what* takes scope over the clause and instructs externalization that *what* is externalized in the vicinity of C, and (4) follows as the result:

(15) a. [{*v**, {V, what}}]
b. [{what$_2$, {John, {*v**, {V, what$_1$}}}}]
c. [{C, {John, {T, {what$_2$, {John, {*v**, {V, what$_1$}}}}}}}]

Segregation or inaccessibility of *what*$_2$ follows if it is subject to MI instead of *what*$_1$. Recall that MI makes either one of the two non-distinct elements inaccessible. Under the proposal here, segregation for clausal thought is the result of MI applying to an element IMed to the first/lowest phase edge and making it inaccessible. MI can deduce segregation of an element that is IMed to the first/lowest edge. On the other hand, under Chomsky's proposal, segregation or inaccessibility of an element IMed to the first/lowest phase edge is simply stipulated.

Notice that given MI, segregation will not always occur at the first/lowest phase edge. Recall that MI simply states that either one of the two non-distinct objects in the WS is rendered inaccessible. Going back to (15b), this suggests that *what*$_1$, instead of *what*$_2$, can be made inaccessible by MI when the WS is mapped. In this case, *what*$_2$ is accessible to further operations at the edge of *v**. Then in examples such as (16), contrary to Chomsky (2023), multiple shifts (or successive-cyclic movement) will be possible for an element even if it is IMed to the first/lowest phase edge:

(16) What do you think that John bought?

As shown in (17), if MI applies to a lower non-distinct element at each WS, *what* can undergo multiple shifts. In (17), the matrix C consults *what*$_4$, with the result that *what* takes scope over the matrix clause and *what*$_5$ is the one to be externalized in such languages as English:

(17) a. [{what$_2$, {*v**, {V, what$_1$}}}]
b. [{what$_3$, {C, { … {what$_2$, {*v**, {V, what$_1$}}}}}}]
c. [{what$_4$, {*v*, { … {what$_3$, {C, { … {what$_2$, {*v**, {V, what$_1$}}}}}}}}}]
d. [{what$_5$, {C, { … {what$_4$, {*v**, { … {what$_3$, {C, { … }}}}}}}}}]

Examples such as (18) endorse the argument that an element can undergo multiple shifts in A′-dependency as predicted by the proposal in this paper:

(18) a. *What is Bill spreading the news that Mary will buy?
b. *What do you wonder who believes that the student bought?
c. *Who was that John hit true?
d. *Who did Mary cry after Peter hit?

For the purposes of our discussion, suppose that there are syntactic domains which an element cannot move over (what Ross 1967 calls syntactic "islands"). Recall that the phase head accesses an element segregated in the phase edge for instructions at each phase level. (19a) shows that access by the phase head is not constrained by phases, being able to penetrate into lower phases: under Chomsky's proposal, *what* moves as far as to the first/lowest phase edge, where it is segregated and is accessed by the phase head in the higher clause across phase boundaries:

(19) a. (Guess) what John thinks that Mary bought.
b. [{C, {John, {T, {*v*, {thinks, {C, {Mary, {T, {what$_2$, {*v*, {bought, what$_1$}}}}}}}}}}}]

Given this, however, in (18), the phase head accesses an element segregated in the first/lowest phase edge in an island, with IM not carrying it out of the relevant domain. Consider (20) (PH = a phase head):

(20) [{C, { … {PH, {$_{\text{ISLAND}}$ … {$_{\text{Phase Edge}}$ X$_3$, {PH, { … X$_1$ … }}}}}}}]

(20) will not end up with an island violation (cf. Kitahara and Seely 2024).

Under the proposal in this paper, on the other hand, segregation is due to MI, which can make a lower non-distinct SO inaccessible to the computation, and the derivation can go as illustrated in (17). (18) demonstrates that an element can undergo multiple shifts in A′-dependency, causing island violations, which is possible under segregation based on MI.[5]

I have argued that segregation follows as one consequence of MI and that it does not always occur at the first/lowest phase edge.

Next consider (21), a case of phase-internal movement, whose derivation is illustrated in (22). In the example, *{the student}* is IMed to Spec-T, which creates (22b):

(21) The student will visit the city.

(22) a. [{T, {$_\gamma$ {the, student}$_1$, {*v**, {visit, the city}}}}]
b. [{$_\alpha$ {the, student}$_2$, {$_\beta$ T, {$_\gamma$ {the, student}$_1$, {*v**, {visit, the city}}}}}]

In mapping from (22a) to (22b), Merge yields two non-distinct SOs (*{the, student}*$_2$ and *{the, student}*$_1$) in the WS and MI applies to either one of them to make it inaccessible, ensuring that the Merge output (22b) is unambiguous for subsequent rule application. Suppose that *{the, student}*$_2$ is subject to MI. If so, the object {$_\alpha$ } and the object {$_\beta$ } would not be labeled, violating Full Interpretation. Chomsky (2015) argues that T is too weak as a label and requires an overt/visible or accessible Spec for labeling purposes. Moreover, if *{the, student}*$_1$ remained accessible, the object {$_\gamma$ }, which is a phrase-phrase (XP-YP) structure, would not be labeled in the absence of feature sharing or agreement between the head of *{the, student}*$_1$ and *v**. These labeling problems will not arise if *{the, student}*$_1$ is rendered inaccessible by MI. The inaccessibility of a lower copy instead of a higher one in (22) or phase-internal movement follows from labeling or Full Interpretation: labeling requires Spec-T to be syntactically accessible.

As regards inaccessibility through MI, notice that copy invisibility results from MI. It has been argued that copies are invisible and hence, inaccessible: only the head of a chain (or the whole chain) is accessible but not lower copies, which has been stipulated. Given the proposal in this paper, the inaccessibility of a lower copy is explained straightforwardly: it is the result

5 The question remains of why MI must apply to lower non-distinct SOs in the derivation of (18). In this paper, this question is left for future. For relevant discussion, the reader is referred to Mizuguchi (2023), who argues that multiple shifts are required for A′-dependency.

of a lower copy being subject to MI, which ensures determinacy at the output of Merge. It follows from MI that IM of an element can make a lower copy inaccessible.

Moreover, as I have discussed, since MI functions to make inaccessible either one of the two non-distinct SOs in the WS, it is not only a lower copy but also a higher one that can be rendered inaccessible by MI. It is not always the case that only the head of a chain or the highest copy is accessible, which is theoretically predicted by the consultation approach to A′-dependency, where the phase head accesses a segregated element in the phase edge.

Let us now consider another case of non-distinct SOs in the WS. Recall that MI applies to two non-distinct SOs in the WS and functions to make either one of them inaccessible to further computational operations. In the discussion so far, two non-distinct SOs are created through IM (in other words, SOs are non-distinct as they are copies) and either one of them is rendered inaccessible through MI, which warrants MY. Notice, however, that two non-distinct SOs can also be yielded by EM. It is then expected that MI will also apply to one of the two non-distinct SOs created by EM. In fact, we have already discussed one example of this in the last section: recall from (14) that when X and Y are EMed, one of the copies of X and Y is rendered inaccessible thanks to MI, with the output of EM (14b) being determinate for subsequent rule application:

(14) a. WS = [X, Y] → b. WS' = [{$_{\alpha}$ X, Y}, X, Y]

In the following, I discuss one more example showing that MI applies to the output of EM, arguing that it can also explain the inaccessibility or impenetrability of phases.

Suppose that C and *v** are originally one and the same head with the same properties (call it PH(ase)) and that what we normally identify as C and *v** result from which category PH selects: when it selects T or a T-headed set, it is externalized as nothing other than C; when it selects V or a V-headed set, it is spelled out as nothing other than *v**. With this assumption in place, phases or phasal objects count as non-distinct objects in the WS. Given the definition of MI, they are subject to the operation: either one of the two phasal objects becomes inaccessible due to MI. To see this, consider (23), where PH designates a phase head and P a phase:

(23) [{$_{P2}$ PH_2 { … {$_{P1}$ PH_1 { … }}}}]

EM of PH_2 yields two phases or non-distinct SOs in the WS, with the result that MI applies and either P2 or P1 is rendered inaccessible to further operations when (23) is outputted.

As I have discussed, MI applies freely to either one of the two non-distinct SOs, and the same is true of (23). Suppose that P_1 becomes inaccessible. In this case, the derivation can continue because P_2 is accessible. On the other hand, if P_2 is made inaccessible via MI, the derivation terminates. This does not cause any problems if the WS contains no inscriptions that have not been EMed. However, if it does contain such elements, the basic desiderata for optimal computation will be violated: that is, a single object must be constructed through the generative procedure. In this case, P_1 must be subject to MI. In the case of phases as well, MI can apply freely but the optimal design of language governs which phase is rendered inaccessible.

Provided that phases, being non-distinct SOs in the WS, are subject to MI, PIC and/or the effects of Transfer, both of which bring about the impenetrability of the phase complement, can be deduced. Phase impenetrability is straightforward in the case of Transfer: a transferred domain becomes inaccessible as it is no longer on the computational plane, though the phase complement is stipulated as such a domain; on the other hand, PIC simply stipulates the

inaccessibility of the phase complement. The deduction from MI is desirable in that it answers the question of what PIC is reduced to. Moreover, it is now considered that there may not be interface levels mediating between the computation and outside systems such as CI and SM; instead, access by CI and SM can take place at any stage of the computation (Chomsky 2021), which Shim (2022, 2024) dubs dynamic access. Given dynamic access, there is no need or reason to postulate Transfer in the grammar and its cyclic application, which is reasonable given that the operation is laden with problems as pointed out in Shim. Then we cannot rely on Transfer to warrant the inaccessibility of a lower phase. Phase impenetrability now falls under a more general principle of MI without assuming PIC and/or Transfer, hence stipulations on phase impenetrability.

Finally, given that two non-distinct SOs, which can be subject to MI, can be created by both IM and EM, it then follows that the effects of movement and those of PIC/Transfer are unified under MI. It has been argued that a copy of a moved element and a domain of a phase become inaccessible, each of which has been independently taken care of. Given the proposal here, these two result from MI. MI makes either one of the two non-distinct SOs syntactically inaccessible. As discussed, in both of these cases, Merge generates two non-distinct SOs in the WS, one of which is made inaccessible by MI so that determinate rule application will be possible in the subsequent derivation.

5. Conclusion

In this paper, I have argued that determinate syntax is warranted by MI: it is a third-factor operation ensuring at the output of Merge no ambiguous situation for rule application in the subsequent derivation. As I have demonstrated, MI leads to strictly Markovian nature of Merge, deducing MY. I have also argued that MI deduces as its consequences segregation/boxing (or inaccessibility of either one of the two copies), and PIC and/or the effects of Transfer (the inaccessibility of a phase).

To the extent that the discussion in this paper is correct, we get the following picture on mapping by Merge: Merge works with MS to select items in the WS and it works with MI to add only one new accessible element in the WS'; the input to Merge is constrained by MS while the output of Merge is constrained by MI, with MS and MI being third-factor operations.

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A Parametric Approach to Nominative Case Assignment in Child English*

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1. Introduction

This paper shows that English-speaking children aged between two and three years can refer to two types of nominative Case assignment mechanisms because of the underspecification of features on the C head.[1] To achieve the goal of this paper, I explore the nominative case manifestation of subjects in sentences uttered by children acquiring English, comparing the realization of nominative subjects in Japanese.

First, I introduce empirical facts concerning the occurrence of nominative subjects observed in child English. It is pointed out in the prior literature that English-speaking children around the age of two to three can produce nominative subjects not only in finite clauses, as shown in (1), but also in apparently tenseless (agreement-less) clauses, as demonstrated in (2) (e.g., Vainikka 1993/1994, Guasti and Rizzi 1996, 2002, Harris and Wexler 1996, Schütze and Wexler 1996, and Ingham 1998, among others). I call the nominative subjects found in (2) erroneous nominative subjects.

(1) a. He has six. (Nina, 2;2) (Schütze and Wexler 1996:674)
b. She stan(d)s up. (Sarah, 3;2) (Schütze and Wexler 1996:676)

(2) a. He bite me. (Sarah, 2;9) (Harris and Wexler 1996:11)
b. She drink apple juice. (Nina, 2;3) (Schütze and Wexler 1996:674)
c. He tickle a feet. (Sarah, 2;9) (Ingham 1998:54)

It is acknowledged that the appearance of nominative Case must coincide with phi-feature agreement in adult English, as shown in (3): Case assignment and phi-feature agreement are two sides of the same coin (e.g., George and Kornfilt 1981, Schütze 1997, and Chomsky 2000, 2001).

(3) a. *He love Mary.
b. He loves Mary.

It would be natural to think that if nominative subjects have valued phi-features specified as third person and singular, they should appear with overt phi-feature agreement morphology on verbs, as shown in

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[1] Following convention, I distinguish abstract Case from morphological case; the upper case 'Case' is used to express abstract Case, whereas the lower case 'case' is utilized when I refer to morphological case.

(3b), in both adult and child English because (adult) English is categorized as a language with phi-feature agreement. However, this expectation does not hold for the sentences in (2), a point that departs from the steady state of grammar in adult English. If English-speaking children employ only phi-feature agreement for nominative Case assignment like English-speaking adults do (Chomsky 2000, 2001), it remains unclear why nominative subjects can be realized in agreement-less clauses such as those in (2).

Of interest to us is that Japanese is widely assumed to lack phi-feature agreement, but nominative subjects can be realized in sentences, as illustrated in (4) (see Saito 1985, 2007, 2016, Kuroda 1988, and Moritake 2022, 2023b, among others for relevant discussion; see also Fukui 1986, 1988).[2]

(4) John-ga banana-o tabe-ta.
John-NOM banana-ACC eat-PST
'John ate bananas.'

Comparing nominative Case assignment in Japanese, a language known to lack phi-feature agreement, I argue that upward Agree for Case in the sense of Moritake (2022) is available for English-speaking children at least at a certain stage of language development, whereby nominative subjects can show up even if no phi-feature agreement morphology surfaces on verbs.

Finally, I address the fact that English-speaking children around two to three years of age sometimes utter sentences with accusative subjects, as illustrated in (5).

(5) a. Him fall down. (Nina, 2;3) (Schütze and Wexler 1996:670)
b. Me got bean. (Stefan, 1;5) (Radford 1990:175)

This type of accusative subjects is not observable in ordinary matrix clauses in adult English, as demonstrated in (6).

(6) a. *Him fall down.
(cf. He falls down.)
b. *Me got a bean/beans.
(cf. I got a bean/beans.)

Thus, accusative subjects such as those in (5) are referred to as erroneous accusative subjects. I explain why English-speaking children at a certain stage of language development can produce erroneous accusative subjects in line with the core proposal presented by Schütze and Wexler (1996). Specifically speaking, based on the analyses put forth by Moritake (2023a, 2024a, c), I argue that the realization of erroneous accusative subjects in (5) is contingent on the optionality of the Case assignment attributed to the optionality of agreement.

2. Previous Analyses

2.1. Nominative Case Assignment: The Presence of Agr

Schütze and Wexler (1996) associate the occurrences of erroneous nominative subjects such as those in (2) with the underspecification of features in the Tense head and the Agr(eement) head in the early minimalist framework (Chomsky 1993). Schütze and Wexler (1996) propose that when subjects are

[2] It should be noted here that some previous studies entertain the possibility that Japanese possesses phi-feature agreement *in some contexts* (see Toribio 1990, Ura 1999, Hiraiwa 2001, 2005, Boeckx and Niinuma 2004, Obata 2010, and Miyagawa 2010, 2017, 2022 for relevant discussion). Although I will not go into any detail, the reader is referred to Kobayashi (2022), who critically reviews the prior literature and provides counterarguments to it.

marked with nominative case in sentences such as (1) and (2), a feature on Agr is necessarily specified, whereas the specification of Tense is irrelevant to the nominative case manifestation, as summarized in (7).

(7) a. [+Tense, +Agr] → Nominative Case
b. [–Tense, +Agr] → Nominative Case

The gist of Schütze and Wexler's (1996) analysis is that the specification of Agr is sufficient to assign nominative Case to subjects, and whether T is finite or nonfinite is orthogonal to nominative Case assignment in child English, in contrast to adult English (see George and Kornfilt 1981, Schütze 1997, Chomsky 2000, 2001, and Moritake 2022 for relevant discussion). According to Schütze and Wexler (1996), sentences like those in (2), in which an overt inflection does not surface on the verbs, are regarded as Root Infinitives, which are commonly observed in European child English; root clauses resemble infinitival clauses in the sense that verbs exhibit no agreement morphology.

Along the lines of the analysis presented by Schütze and Wexler (1996), Guasti and Rizzi (2002) take nominative Case assignment to be independent of the existence of Tense, arguing that in child English, "nominative case is assigned by Agr, not by tense (Guasti and Rizzi 2002:179)." Therefore, these two previous analyses think of nominative Case assignment in child English as the operation solely governed by the feature specification of Agr rather than that of Tense.

2.2. Problems with Previous Analyses and Speculations

Although the previous analyses introduced in Section 2.1 may descriptively capture both erroneous and normal nominative Case assignments in child English, they encounter some conceptual and empirical problems that must be resolved. First, Chomsky (1995, 2000) points out that there is no convincing premise for hypothesizing a projection reserved only for agreement, that is, AgrP headed by Agr, suggesting further that phi-feature agreement should proceed independently of AgrP. This paradigm shift poses a conceptual, albeit somewhat theory-internal, problem to Schütze and Wexler's (1996) analysis; thus, the appeal to the Agr head for nominative Case assignment is unreasonable in the recent minimalist framework (see also Sugisaki 2016 for the similar argument).

Additionally, a few comments should be added regarding Root Infinitives. Guasti (2002, 2016) notes that English-speaking children can produce *wh*-sentences with non-agreeing verbs, as represented in (8), where the verb *go* does not manifest phi-feature agreement morphology despite the presence of the third person singular subjects, *Mary* and *train*.

(8) a. Where Mary go? (Adam, 2;3) (Vainikka 1993/1994:287)
b. Where train go? (Adam, 2;4) (Guasti 2002:139)

However, it should be noted that, as pointed out by Guasti (2002, 2016), no child languages other than child English permit *wh*-questions in cases where no overt agreement morphology appears on verbs.

Additionally, Hoekstra and Hyams (1998) observe that Root Infinitives are subject to a certain constraint: they are licensed in cases where event-denoting predicates are involved but are excluded when other types of predicates appear. Hoekstra and Hyams (1998) then formulate this constraint as the Eventivity Constraint in (9).

(9) The Eventivity Constraint (EC)
RIs [Root Infinitives–NM] are restricted to event-denoting predicates.
(Hoekstra and Hyams 1998:90)

What is of importance here is that Hoekstra and Hyams (1998) report that although other child languages such as child Dutch and French are certain to adhere to the Eventivity Constraint, child English seems to be exempt from this constraint, as illustrated in (10), in which the verb phrases are headed not by event-denoting verbs but by stative ones.

(10) a. Man have it. (Eve, 1;6)
b. Ann need not Mommy napkin. (Eve, 1;8)
c. Papa want xxx apple. (Eve, 1;10) (Hoekstra and Hyams 1998:92)

These observations alone do not render completely untenable the proposals offered by Schütze and Wexler (1996) that sentences as in (2) are taken to be Root Infinitives, but they certainly make it dubious.

Furthermore, Guasti and Rizzi (2002) report that English-speaking children can produce negative sentences with a non-agreeing negative *do*, as demonstrated in (11).

(11) a. He don't want some money. (Adam, 2;11) (Guasti and Rizzi 2002:172)
b. He don't have a baseball. (Adam, 3;4) (Guasti and Rizzi 2002:185)

Considering that the appearance of *do* is ruled out in infinitives and gerunds in adult English, as evidenced by the sentences in (12), Guasti and Rizzi (2002) argue persuasively that sentences with uninflected *do* and *not*, such as those in (11), consist of full finite clauses, except that a verbal inflection happens to be morphologically unrealized (see also Sugisaki 2016 for an alternative analysis).[3]

(12) a. to (*do) not go.
b. for not going/*for doing not go. (Guasti and Rizzi 2002:184)

Based on the observation that the presence of *do* alludes to the tensed property of sentences, Guasti and Rizzi (2002) offer the hypothesis that sentences like those in (2) also arise as finite clauses, with agreement morphology failing to appear overtly on verbs (see also Phillips 1995, 1996, Guasti and Rizzi 1996, and Ingham 1998 for relevant discussion).[4]

It is interesting to note here that, as reported by Guasti and Rizzi (2002), English-speaking children produce *why*-questions with negative *don't* that exhibits no agreement morphology even if subjects have third person and singular values of phi-features. See (13) for an example.

(13) a. Why it don't work? (Adam, 3;3)
b. Why he <don't> [/] don't know how to pretend? (Adam, 3;4) (Guasti and Rizzi 2002:189)

Additionally, according to the CHILDES database (MacWhinney 2000), an English-speaking child named *Adam* (Brown 1973) produces nominative subjects in *why*-questions even if verbs are never inflected for the person and number values of subjects, as illustrated in (14). Note that negative *do* is

[3] Based on the theoretical framework of Chomsky (1995) where a feature can be checked in the overt syntax as well as the covert syntax (LF), Guasti and Rizzi (2002) offer the following principle:
(i) If a feature is checked in the overt syntax, then it is expressed in the morphology.
(Guasti and Rizzi 2002:178)
It follows that no agreement morphology will be expressed on a verb if feature checking (i.e., agreement in the current minimalist framework) takes place at LF.

[4] I would like to thank Masahiko Dansako for calling Phillips's (1995, 1996) work to my attention.

not involved in this case.

(14) a. Why she write dat [:that] name? (Adam, 2;11)
b. Why he sing about something? (Adam, 3;1)

As pointed out by Shlonsky and Soare (2011), infinitival questions headed by *why* sound unacceptable to many native speakers of adult English, as demonstrated by the contrast in (15).

(15) a. ??I asked Bill why to serve spiced aubergines.
b. I asked Bill why I should serve spiced aubergines. (Shlonsky and Soare 2011:653–654)

The contrast observed in (15) suggests that the sentences in (14) should be made up of finite clauses because infinitival clauses are incompatible with the occurrence of *why*. This observation sheds further light on the analysis of the realization of nominative subjects in the sentences in (2), (11), (13), and (14); these clauses may consist of finite clauses rather than infinitival clauses. Given the discussion thus far, I postulate that sentences like those in (2), (11), (13), and (14) contain finite T rather than infinitival T. Furthermore, I argue that finite T is selected by the phase head C in these environments because, as posited by Chomsky (2008), the finiteness of T is originally inherent in C, from which a (finite) tense feature is inherited by T via what Chomsky (2008) calls Feature Inheritance. Importantly, it is plausible to assume that the phase head C in (2), (11), (13), and (14) lacks unvalued phi-features ([*u*phi]) so that no agreement morphology shows up on the relevant verbs; this idea essentially differs from the analysis presented by Guasti and Rizzi (2002), who assume that phi-feature agreement takes place in the covert syntax, that is, LF (Chomsky 1995), in the relevant sentences, and thus, agreement morphology fails to be overtly expressed (see footnote 3 for relevant discussion). Again, I would like to emphasize that in the present analysis, the lack of agreement morphology on the verbs in the sentences in (2), (11), (13), and (14) is attributed to the assumption that no phi-feature agreement proceeds in those sentences because of the lack of [*u*phi] on C.

3. Proposals

3.1. Parameterization of Case Assignment

Before presenting the proposals, I will first clarify the size of the clausal structure produced by children who acquire English. Following Whitman et al. (1991), Poeppel and Wexler (1993), Wexler (1994), Sano (1995), Hyams (1996), and others, I assume that children can project sentences into CP in the same way that adults can. This hypothesis is what Whitman et al. (1991) call the Continuity Hypothesis.[5] On the basis of the view that the full-fledged CP structure is available to English-speaking children (at least) around the age of two to three, I will elucidate why they can utter sentences with nominative subjects irrespective of whether phi-feature agreement morphology is present or absent on verbs.

Moritake (2022) proposes that the mechanism of nominative Case assignment is parameterized depending on whether [*u*phi] is present or absent on the phase head C. Based on the derivational procedure proposed by Chomsky (2020), Moritake (2022) suggests that in English, C inherently bears

[5] Although this paper adopts the Continuity Hypothesis, the size of the clausal structure that children can project into has not been uncontroversial. For alternative analyses, see Radford (1990) and Rizzi (1993/1994, 1998). These previous analyses have in common that the clausal spine produced by children is somewhat 'defective' in the sense that CP is not available around the age of two. For further discussion on this issue, see Vainikka (1993/1994) and Dansako (2022). I leave this issue for future research due to space limitations.

[*u*phi] and a tense feature (Chomsky 2008), whereby nominative Case is assigned to a subject in tandem with phi-feature agreement between C and a subject in much the same manner as Chomsky's (2000, 2001) analysis. In contrast, C in Japanese presumably lacks [*u*phi] on C in view of the discussion in the prior literature (see Saito 1985, 2007, 2016, Kuroda 1988, and Narita and Fukui 2022, among others for relevant discussion; see also Fukui 1986, 1988 for a slightly different but insightful discussion). For example, it has long been observed that the verb form in Japanese is immune to the values of the (semantic) person, number, and gender of the subjects. As shown in (16), a verb always exhibits an invariant form, which is strikingly different from verbs in English.

(16) Watasi-ga/anata-ga/gakusei-ga maitosi ronbun-o kak-u.
I-NOM/you-NOM/student-NOM every.year paper-ACC write-PRES
'I/you/a student (students) write(s) a paper (papers) every year.' (Narita and Fukui 2022:177)

It is then unreasonable to entertain the possibility that phi-feature agreement is operative in Japanese; hence, we should not make recourse to phi-feature agreement to implement nominative Case assignment in Japanese unlike English. Moritake (2022) proposes that nominative Case assignment in Japanese succeeds via upward agreement between C with a nominative Case feature ([NOM]) and a subject with an unvalued Case feature ([*u*Case]) (see Moritake 2022 for details of his analysis and its advantages; see also Zeijlstra 2012 and Bjorkman and Zeijlstra 2014 for the mechanism of upward Agree).[6] See the following rough illustrations of nominative Case assignment in each language (points irrelevant to the present discussion are omitted).[7]

(17) a. $[_{CP}\ C_{[u\text{phi}]}\ [_{TP}\ \text{subject}_{[u\text{Case}],\,[v\text{phi}]}\ [_{T'}\ T\ [_{vP}\ \ldots]]]]$ (English)

phi-feature agreement between C and a subject

b. $[_{CP}\ [_{TP}\ \text{subject}_{[u\text{Case}]}\ [_{T'}\ [_{vP}\ \ldots]\ T]]\ C_{[\text{NOM}]}]$ (Japanese)

upward agreement between C and a subject (Moritake 2022)

Moritake's (2022) analysis is consistent with that of Rizzi's (2014, 2017). In the literature, it is argued that the locus of parameters is limited to the featural distinction on functional heads, an idea referred to as the Borer–Chomsky Conjecture holding that "all parameters of variation are attributable to differences in the features of particular items (e.g., functional heads) in the lexicon (Baker 2008a:353)" (see also Borer 1984, Fukui 1986, 1988, and Chomsky 1995 for relevant discussion). Rizzi (2014, 2017) suggests the intriguing hypothesis that featural differences on functional heads further contribute to syntactic parameterization; thus, the syntactic operations themselves may vary in combination with the

[6] Notice here that children acquiring Japanese can, of course, assign nominative Case to subjects, as exemplified in (i).

(i) a. Boosi-ga ton-da. (A, 2;2)
hat-NOM fly-PST
'(The) hat flew away.'
b. Mikkii-tyan-ga ato huk-u. (Tai, 1;9)
Mickey-NOM rest wipe-PRES
'Mickey Mouse will wipe the rest.' (Sawada et al. 2010:4)

[7] Following Chomsky (2000, 2001), I assume that a subject in English inherently has valued phi-features ([*v*phi]) as well as [*u*Case], as demonstrated in (17a). I set aside the discussion of whether a subject in Japanese bears [*v*phi] for future research as it is irrelevant to the present discussion. For the sake of brevity, I simply assume in this paper that a subject in Japanese possesses [*u*Case].

Borer–Chomsky Conjecture. Building on the Borer–Chomsky Conjecture and Rizzi's (2014, 2017) analysis, I argue that the difference in the way that nominative Case is assigned to a subject in English and Japanese is reducible to the feature specifications of the phase head C intimately connected to the choice of Agree, that is, the directionality of Agree: *downward* Agree between C with [*u*phi] and a subject with [*v*phi] and [*u*Case] (English) or *upward* Agree between C with [NOM] and a subject with [*u*Case] (Japanese).[8, 9]

3.2. Upward Agree for Case as a Default Option

As discussed in the preceding section, Moritake (2022) argues that the C head in English has [*u*phi], whereas the one in Japanese bears [NOM]. Since nothing theoretically or empirically prohibits the existence of [NOM] on the C head in English, I also present the possibility that [NOM] resides on C not only in Japanese but also in English. Summing up the discussion thus far, the featural makeup of C in English and Japanese is illustrated in (18).

(18) a. English: $C_{[u\text{phi}],\,[\text{NOM}]}$
b. Japanese: $C_{[\text{NOM}]}$

Based on Moritake's (2022) analysis, it is expected that [NOM] in English can assign nominative Case only in conjunction with phi-feature Agree. Given this view, languages uniformly possess [NOM] on C, but whether [NOM] is eligible to assign nominative Case on its own (via upward Agree) depends on the presence or absence of [*u*phi] on C. When [*u*phi] and [NOM] are present on C, phi-feature Agree is dominant over upward Agree in a language like English; in contrast, when [*u*phi] is absent on C, upward Agree is executed in a language such as Japanese. With respect to markedness of Agree associated with Case, it follows that upward Agree for Case, which is employed in Japanese, can be regarded as an unmarked operation since no feature specifications other than [NOM] on the phase head C is required to implement it, and that phi-feature Agree is construed as a more marked operation due to the need for [*u*phi] (as well as [NOM]) on the phase head C. Therefore, I hypothesize that upward Agree for Case is designated as a default type of Agree in grammar, and that phi-feature Agree overrides upward Agree for Case if and only if [*u*phi] is specified on C in languages in the first place.[10] Following

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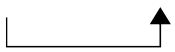
[8] It is worthwhile noting here that Baker (2008b) reaches the same conclusion on independent grounds: a probe may search for a goal bi-directionally, that is, *downwardly* or *upwardly*. The details of Baker's (2008b) analysis, however, differ from the present one in some respects. Although it is intriguing to examine whether the current analysis can be reconciled with Baker's (2008b) analysis, it would take me too far afield to review the whole issue of Baker's (2008b) and compare the two analyses. Therefore, this issue is left for future research. I would like to thank Norimasa Hayashi for bringing Baker's (2008b) work to my attention.

[9] In the next section, I will present an idea that C in English possesses not only [*u*phi] but also [NOM], and that the latter feature is activated only in combination with phi-feature Agree between the C head and the subject.

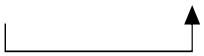
[10] Moritake (2022) proposes that in English, phi-feature agreement between v* with [*u*phi] and an object with [*u*Case] as well as [*v*phi] is responsible for accusative Case assignment, as hypothesized by Chomsky (2000, 2001); in contrast, in Japanese, accusative Case is assigned to an object through upward agreement between v* with an accusative Case feature ([ACC]) and an object with [*u*Case]. See (ia–b) for each illustration (points irrelevant to the present discussion are omitted).

(i) a. $[_{v*P}\ [_{v*'}\ v*_{[u\text{phi}]}\ [_{VP}\ V,\ \text{object}_{[u\text{Case}],\,[v\text{phi}]}]]]$ (English)



phi-feature agreement between v* and an object

b. $[_{v*P}\ [_{v*'}\ [_{VP}\ \text{object}_{[u\text{Case}]},\ V]\ v*_{[\text{ACC}]}]]$ (Japanese)



this hypothesis, I propose that English-speaking children can explicate upward Agree for nominative Case as one of the default options, as long as [*u*phi] is absent on C; in fact, they can use upward Agree to assign nominative Case to a subject until they recognize that English must be specified as a language with [*u*phi] on C. In contrast, when English-speaking children acquire [*u*phi] on the phase head C, nominative Case assignment must occur as a reflection of phi-feature agreement, as assumed by Chomsky (2000, 2001) and Moritake (2022). As noted by Kensuke Takita (pers. comm.), this means that [*u*phi] is not present on the C head in English from the outset; it is seen as just a posteriori feature that English-speaking children eventually acquire during language development (see also Ingham 1988 for the argument in favor of the current view that [*u*phi] is acquired later in the stage of language acquisition).

4. Analysis

First, let us analyze the simple case in (1a), repeated here as (19a). Because overt phi-feature agreement morphology surfaces on the verb in (19a), it is reasonable to consider that [*u*phi] exists on C, forcing children acquiring English to implement phi-feature Agree between C and the subject, as demonstrated in (19b). Therefore, the subject in (19a) receives nominative Case as a reflection of phi-feature agreement (points irrelevant to the present discussion are omitted).

(19) a. He has six. (Nina, 2;2) (Harris and Wexler 1996:674)

b. $[_{CP}\ C_{[u\text{phi}],\,[\text{NOM}]}\ [_{TP}\ \text{He}_{[u\text{Case}],\,[v\text{phi}]}\ [_{T'}\ T\ [_{vP}\ \text{has six}]]]]$

phi-feature agreement → [*u*Case] → [NOM]

In contrast, no phi-feature agreement morphology is realized on the verb in (2a), repeated here as (20a). I argue that English-speaking children are allowed to rely on upward Agree for nominative Case as a default strategy in (20a). Thus, the subject in (20a) upwardly searches for C with [NOM], and consequently, it obtains nominative Case, as schematized in (20b) (points irrelevant to the present discussion are omitted). In view of the discussion in the previous section, this is exactly what we predict under the hypothesis that the sentence in (20a) consists of a full-fledged finite clause but lacks [*u*phi] on the C head.

(20) a. He bite me. (Sarah, 2;9) (Harris and Wexler 1996:11)

b. $[_{CP}\ C_{[\text{NOM}]}\ [_{TP}\ \text{He}_{[u\text{Case}],\,[v\text{phi}]}\ [_{T'}\ T\ [_{vP}\ \text{bite me}]]]]$

upward agreement → [*u*Case] → [NOM]

The current analysis sheds new light on two types of nominative Case realizations in child English in (19a) and (20a) from the parametric view of the Case assignment mechanisms in English and Japanese, eliminating recourse to the Agr head, a direction being desirable in the current minimalist framework. I have argued that whether children exploit phi-feature Agree or upward Agree for

upward agreement between v* and an object

If the present analysis is on the right track, it is conceivable that if [*u*phi] on v* in child English is absent in a certain stage of language development, English-speaking children can make recourse to v* with [ACC] and utilize upward Agree between v* with [ACC] and an object in the same way as Japanese-speaking adults (and children) do. However, it is difficult to identify whether phi-feature agreement takes place in v*P in child English because the result of phi-feature agreement in v*P is not observable at all even in adult English. Thus, I leave this interesting issue for future research.

nominative Case depends on the presence or absence of [*u*phi] on C. This analysis never makes the theory complex, because upward Agree for Case is programmed as the default option of Agree in languages (for relevant discussion, see also footnote 10).

As discussed above, English-speaking children can assign nominative Case to subjects in cases where phi-feature agreement takes place, while they can produce erroneous nominative subjects at the same acquisition stage. Therefore, there is an intermediate stage where both types of the C heads in (18) co-exist in child English. However, Children acquiring English are expected to cease to take advantage of upward Agree for nominative Case when they are fully aware that English is equipped with [*u*phi] on C on the basis of extensive exposure to the primary linguistic data, that is, English. In other words, C with only [NOM] gradually disappears in English; hence, this type of C becomes unavailable in adult English. This expectation is indeed borne out by the fact that English-speaking adults never produce nominative subjects in agreement-less clauses, as demonstrated by the contrast in (3), repeated here as (21).

(21) a. *He love Mary.
b. He loves Mary.

Since English-speaking adults recognize that C inherently possesses [*u*phi] in adult English, with the English grammar being fixed, they cannot resort to C with only [NOM], in contrast to Japanese-speaking adults or English-speaking children around two to three years of age.[11] This means that only phi-feature Agree can be utilized in adult English. From this point of view, the absence of overt phi-feature agreement morphology on a verb indicates that no phi-feature agreement takes place in a sentence. Thus, it is expected that no nominative subjects can surface in this case, given that nominative Case is assigned to a subject only as a reflex of phi-feature agreement in adult English (Chomsky 2000, 2001, Moritake 2022, among others). It follows that the sentence in (21a), where no phi-feature agreement occurs but the nominative subject appears, cannot be generated in the first place in adult English.

5. Speculation: Erroneous Accusative Subjects in Child English

As pointed out by an anonymous reviewer, English-speaking children around the age of two to three sometimes utter sentences with erroneous accusative subjects, as exemplified in (5), repeated here as (22). In the same context, English-speaking adults never use erroneous accusative subjects, as evidenced by (6), repeated here as (23).

(22) a. Him fall down. (Nina, 2;3) (Schütze and Wexler 1996:670)
b. Me got bean. (Stefan, 1;5) (Radford 1990:175)

(23) a. *Him fall down.

[11] Although the current analysis presumes that the C head available for Japanese gradually disappears in English through language development, Yosuke Sato (pers. comm.) points out that there is a possibility that two competing grammars still exist in an allegedly single adult grammar in some languages (see Kroch 2001, Lee 2022, and Sato 2023, among others for relevant discussion). If the scenario suggested by Yosuke Sato (pers. comm.) and by some previous studies is on the right track, the question that needs to be addressed is whether two types of the C heads postulated in the present analysis remain in the mature state of a language with phi-feature Agree. Although this question is worth considering, I could not explore it in terms of the current analysis due to space limitations; hence, that intriguing issue is left for future research. I would like to thank Yosuke Sato for drawing my attention to the hypothesis of two competing grammars in a single adult language.

(cf. He falls down.)

b. *Me got a bean/beans.
(cf. I got a bean/beans.)

According to Schütze and Wexler (1996), in child English, accusative subjects are realizable in the case of [+Tense, –Agr], and accusative Case on such subjects should be treated as default accusative case.[12] Although this proposal can descriptively capture the empirical facts in (22), the present analysis seeks an alternative analysis without assuming AgrP under the current minimalist framework (see Section 2.2 for relevant discussion). Additionally, if the subjects in (22) are pronounced with default accusative case, it is natural to think that there is no specific requirement on the feature specification on Tense and Agr, which is responsible for Case assignment under Schütze and Wexler's (1996) analysis, because, in general, default case is utilized to pronounce DPs as a last resort strategy when Case is not assigned to them (see Schütze 1997, 2001, McFadden 2004, 2007, and Moritake 2023a, 2024a, c for relevant discussion). If this line of argumentation is correct, we do not need to say that features on Tense and Agr should be designated as [+Tense, –Agr] to pronounce subjects with default accusative case in (22). Therefore, it is necessary to come up with an alternative idea to accommodate the examples in (22), in keeping with the core observation presented by Schütze and Wexler (1996) that subjects like those in (22) are pronounced with default accusative case.

It is instructive to note that Moritake (2023a, 2024a, c) proposes a theoretical implementation of default case, according to which DPs are eventually pronounced with default case when their [*u*Case] remains unvalued at the Sensorimotor (SM) interface.[13] According to Moritake (2023a, 2024a, c), this theoretical underpinning does not have to assume default case 'assignment' to DPs in narrow syntax; rather, it is construed as an instruction for the SM interface to interpret DPs with [*u*Case] in the same way as other DPs with the specific Case values like [NOM] or [ACC]. The theoretical formulation of default case developed by Moritake (2023a, 2024a, c) is thus taken to be part of the more general rule for the determination of case manifestation of DPs, relevant at the SM interface. What is of significance here is that Moritake's (2023a, 2024a, c) analysis, unlike Schütze and Wexler's (1996), has no need for features on functional heads to be specified when default case is realized on DPs. Thus, I assume with Moritake (2023a, 2024a, c) that default case is a realization of [*u*Case] on DPs at the SM interface (for environments of, and restrictions on, the realization of default case, see Schütze 2001 and Moritake 2023a, 2024a, c).

To account for the realization of subjects that appear with default accusative case in cases like those in (22), I must assume that Case assignment, that is, the valuation of [*u*Case], is optional to allow [*u*Case] to be unvalued in narrow syntax, so that [*u*Case] is shipped to the SM interface with its value being unspecified. Moritake (2024c) points out that it is necessary to admit the optionality of Agree in order to warrant the optionality of Case assignment, because the execution of phi-feature Agree and upward Agree for Case underlies Case assignment in narrow syntax. Notice here that, as assumed by Schütze and Wexler (1996), it is highly likely that phi-feature Agree does not proceed between C and the subjects in the sentences in (22), because no phi-feature agreement morphology surfaces on the verbs in these examples. Given these points, the subjects in (22) are ultimately pronounced with default

[12] In this paper, I assume with Schütze (2001), McFadden (2007), and Moritake (2023a, 2024a, c) that default case is morphological case rather than abstract Case. For an alternative analysis, see McCloskey (1985), who argues that default case is analyzed as abstract Case on a par with nominative or accusative Case and can be assigned to DPs in narrow syntax by Case assignment.

[13] For the potential problem associated with the presence of [*u*Case] at the SM interface (and the Conceptual–Intentional Interface) and its solutions, see Epstein et al. (2010), Preminger and Kornfilt (2015), and Moritake (2024a, c), among others.

accusative case due to the lack of agreement under Moritake's (2024c) analysis (see also Moritake 2023a, 2024a for relevant discussion). This assumption is not implausible since the valuation of [*u*Case] appears optional in many cases, as discussed in previous studies. For instance, as pointed out by Moritake (2023a, c), accusative Case need not be assigned to an object in Japanese in some contexts (see Saito 1983, 1985 for the discussion on the two types of realizations of objects in Japanese based on a slightly different perspective; see also Bošković 2007 for the argument in favor of the view that the Inverse Case Filter can be abandoned in the theory).[14] Consider the following sentences. In (24a), the object *banana* 'bananas' is marked with accusative case; in contrast, the same object can be realized without accusative case, as exemplified in (24b) (here, 'DP-ø' stands for a DP without an overt case-marker).

(24) a. John-ga (kinoo) banana-o tabe-ta.
John-NOM yesterday banana-ACC eat-PST
'John ate bananas (yesterday).'
b. John-ga (kinoo) banana-ø tabe-ta.
John-NOM yesterday banana-Ø eat-PST
'John ate bananas (yesterday).'

Building on the analysis presented by Moritake (2023a, 2024c), I hypothesize that the valuation of [*u*Case] is optional in child English as well as Japanese, suggesting that [*u*Case] on the subjects in (22) can remain unspecified throughout the derivation. Therefore, subjects can appear with default accusative case in sentences such as (22). While maintaining Schütze and Wexler's (1996) central point appealing to the default case realization on the subjects in (22), their analysis can thus be revised by the current analysis in a way that the latter neither requires the existence of Agr nor specifies the features of Tense and Agr, a seemingly desirable line of analysis being consistent with the current minimalist framework.

6. Conclusion

In this paper, I have discussed the intriguing fact that in child English, there are cases in which the realization of nominative subjects does not seem to be dependent on the presence of phi-feature agreement, in contrast to adult English. This type of nominative subject has been dubbed an erroneous nominative subject in this paper. I have proposed that upward Agree is available in languages as a default strategy for Case assignment, arguing that English-speaking children can employ upward Agree for nominative Case assignment until they recognize that English must be characterized as a language with [*u*phi] on C. What I would like to emphasize is that nominative subjects can be licensed in two ways in child English: one as a reflex of phi-feature agreement (normal nominative subjects), and the other as a result of upward agreement (erroneous nominative subjects).

Additionally, I have addressed the fact that English-speaking children aged between two and three years can produce erroneous accusative subjects in some contexts. Given Schütze and Wexler's

[14] Tateishi (1989), Kageyama (1993), Kato (1997), and Miyagawa et al. (2019) point out that nominative Case can be omitted in Japanese when a subject is linearly adjacent to an unaccusative verb, as demonstrated in (i).

(i) Kinoo (kaisya-ni) blond-no otokonoko-ga/ø ki-ta.
Yesterday office-DAT blond-GEN boy-NOM/Ø come-PST
'Yesterday, a blond boy came (to the office).' (Moritake 2024b:135, slightly revised)

Moritake (2024b) posits that nominative Case assignment can also be construed as an optional operation in Japanese in some cases. For further discussion and other environments where nominative Case can be omitted, see Masunaga 1988, Yatabe 1999, Endo 2021, and Fukuda 2022, among others.

(1996) observation, I have claimed that erroneous accusative subjects are construed as ones pronounced with default accusative case and that their realization follows from the underspecification of [*u*Case] at the SM interface. As mentioned above, this analysis is successful if and only if Case assignments to subjects in child English permit optionality; in other words, there is a need for nominative Case assignments to be suspended in some cases in child English. I have pointed out that optional Case assignment is not confined to child English by referring to Moritake's (2023a, 2024c) analysis suggesting that accusative Case is optionally assigned to objects in Japanese.

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Syntactic aspects of co-occurrence of a wh- and a concealed question in Japanese†

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1. Introduction

In Japanese, as in other languages, wh-questions can be embedded under matrix predicates. (1) shows examples of such wh-questions, i.e. embedded wh-questions (or EQs).[1]

(1) a. Mai-wa [$_{EQ}$ dare-ga hooseki-o nusunda ka](-o) sitteiru.
Mai-TOP who-NOM jewel-ACC stole Q-ACC know
'Mai knows who stole the jewels.'
b. Mai-wa Ken-ni [$_{EQ}$ Eri-ga doko-de ohiru-o tabeta ka](-o) tazuneta.
Mai-TOP Ken-DAT Eri-NOM where-at lunch-ACC ate Q-ACC asked
'Mai asked Ken where Eri ate lunch.'

Japanese also has concealed questions (or CQs), i.e. nominal phrases selected by question-selecting predicates and interpreted as corresponding wh-questions (for general discussions on concealed questions, see, e.g., Grimshaw 1979, Romero 2005, and Frana 2017, 2020; for Japanese concealed questions, see, e.g., Nishiyama 2003 and Nishigauchi 2020). For example, (2a) and (2b) involve a concealed question in the (direct) object position and are interpreted similarly to (1a) and (1b), respectively (see the translations in (2)).[2,3]

(2) a. Mai-wa [$_{CQ}$ [e_i hooseki-o nusunda] hannin$_i$]]-o sitteiru.
Mai-TOP jewel-ACC stole culprit-ACC know
'Mai knows the culprit who stole the jewels.'
≈ 'Mai knows who the culprit who stole the jewels is.'
b. Mai-wa Ken-ni [$_{CQ}$ [Eri-ga e_i ohiru-o tabeta] basyo$_i$]]-o tazuneta.
Mai-TOP Ken-DAT Eri-NOM lunch-ACC ate place-ACC asked
'Mai asked Ken the place where Eri ate lunch.'
≈ 'Mai asked Ken what the place where Eri ate lunch was.'

In addition, Japanese has an interesting construction where an embedded wh-question and a (corresponding) concealed question co-occur within a single sentence (e.g., Eguchi 1990, 1992, 1998, Yamaizumi 2008, Tomioka 2020), as exemplified in (3).

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[1] The following abbreviations are used: ACC = accusative, C = complementizer, CLS = classifier, COP = copula, DAT = dative, GEN = genitive, NOM = nominative, TOP = topic particle, Q = question particle

[2] (2a) can also mean that *Mai is acquainted with the culprit who stole the jewels*; this paper is not concerned with such an "acquaintance" reading.

[3] According to Frana (2010), concealed questions have the interpretation of wh-questions that have the form of specificational sentences, which are one type of copula sentences (e.g. Higgins 1973), as the translations in (2) suggest. See Section 4.2 for more on specificational sentences.

(3) a. Mai-wa [$_{EQ}$ dare-ga hooseki-o nusunda ka](*-o) [$_{CQ}$ sono hannin]-o sitteiru.
Mai-TOP who-NOM jewel-ACC stole Q-ACC that culprit-ACC know
Lit. 'Mai knows [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

b. Mai-wa Ken-ni [$_{EQ}$ Eri-ga doko-de ohiru-o tabeta ka](*-o) [$_{CQ}$ sono basyo]-o tazuneta.
Mai-TOP Ken-DAT Eri-NOM where-at lunch-ACC ate Q-ACC that place-ACC asked
Lit. 'Mai asked Ken [$_{CQ}$ that place], [$_{EQ}$ where Eri ate lunch].'

Intuitively, (3a) and (3b) are interpreted in the same manner as (1/2a) and (1/2b), respectively. In this paper, I refer to such constructions as *EQ+CQs*, and the sequence of an embedded wh-question and a concealed question as an *EQ-CQ sequence*.

Three notes regarding EQ+CQs are in order. First, the concealed question in this construction is typically accompanied by the demonstrative *sono* 'that' (Tomioka 2020) as in (3). This demonstrative is intuitively interpreted as referring to the content of the preceding embedded wh-question. Second, embedded wh-questions cannot be Case-marked in EQ+CQs as (3) shows, although they can be when they do not co-occur with a concealed question as shown in (1). Third, in EQ+CQs, the embedded wh-question must precede the concealed question; reversing this order would result in ungrammaticality, as shown in (4).

(4) a. *Mai-wa [$_{CQ}$ sono hannin](-o) [$_{EQ}$ dare-ga hooseki-o nusunda ka](-o) sitteiru.
Mai-TOP that culprit-ACC who-NOM jewel-ACC stole Q-ACC know
Lit. 'Mai knows [$_{EQ}$ who stole the jewels], [$_{CQ}$ that culprit].' (cf. (3a))

b. *Mai-wa Ken-ni [$_{CQ}$ sono basyo](-o) [$_{EQ}$ Eri-ga doko-de ohiru-o tabeta ka](*-o) tazuneta.
Mai-TOP Ken-DAT that place-ACC Eri-NOM where-at lunch-ACC ate Q-ACC asked
Lit. 'Mai asked Ken [$_{EQ}$ where Eri ate lunch], [$_{CQ}$ that place].' (cf. (3b))

The syntax of EQ+CQs has not been explored in detail in the literature. Against this backdrop, this study aims to provide the first detailed syntactic investigation of EQ+CQs. More specifically, I investigate the two potential structures of EQ+CQs suggested by Eguchi (1992) and argue for one of them, in which the EQ-CQ sequence does not form a constituent. In addition, I discuss the distribution of EQ-CQ sequences, mainly based on the novel observation that they can also appear in the subject position of specificational sentences.

This paper is organized as follows: In Section 2, I introduce two possible syntactic structures of EQ+CQs suggested by Eguchi (1992). In Section 3, I discuss these two potential structures in terms of coordination and light verb constructions, and argue for one of them. In Section 4, I consider the distribution of EQ-CQ sequences, with a particular focus on specificational sentences, and further compare it with the distribution of floating quantifiers. In Section 5, I summarize the discussion and note one remaining question.

2. Two possibilities: Eguchi (1992)

In this section, I introduce the two possible syntactic structures of EQ+CQs provided by Eguchi (1992).

2.1. Adjunct Hypothesis

The first potential structure of EQ+CQs is schematized in (5).

(5) ... [$_{VP}$ EQ [$_{VP}$ CQ V]] ... (based on Eguchi 1992: 126)

In (5), the embedded wh-question adjoins to VP, while the concealed question is the complement of the matrix verb. Given the syntactic status of the embedded wh-question, I refer to this possibility as the *Adjunct Hypothesis*. Under this hypothesis, for example, the structure of the EQ+CQ in (3a) can be represented as in (6).[4]

(6) Mai-wa [$_{VP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka] [$_{VP}$ [$_{CQ}$ sono hannin]-o sitteiru]].
Mai-TOP who-NOM jewel-ACC stole Q that culprit-ACC know
Lit. 'Mai knows [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

Eguchi (1992) considers it reasonable to assume that the embedded wh-question in EQ+CQs is located in the VP-adjunction position, given that it cannot be Case-marked, as noted in Section 1 (see, e.g., (3)). He further notes that an element can intervene in the EQ-CQ sequence as in (7), which is compatible with the Adjunct Hypothesis.

(7) Mai-wa [$_{EQ}$ dare-ga hooseki-o nusunda ka] <u>osoraku</u> [$_{CQ}$ sono hannin]-o sitteiru.
Mai-TOP who-NOM jewel-ACC stole Q perhaps that culprit-ACC know
Lit. 'Mai perhaps knows [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

However, Eguchi (1992) does not provide arguments for this hypothesis.

2.2. Constituent Hypothesis

The second possible structure of EQ+CQs provided by Eguchi (1992) is represented in (8).

(8) ... [$_{VP}$ [$_{XP}$ EQ CQ] V] ... (based on Eguchi 1992: 128-129)

(8) crucially differs from the Adjunct Hypothesis (i.e., (5)) in that the embedded wh-question and the concealed question together form a constituent, which I label as XP. Given this trait, I refer to this possibility as the *Constituent Hypothesis*. According to this hypothesis, for instance, the EQ+CQ in (3a) has the structure in (9).

(9) Mai-wa [$_{VP}$ [$_{XP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka] [$_{CQ}$ sono hannin]]-o sitteiru].
Mai-TOP who-NOM jewel-ACC stole Q that culprit-ACC know
Lit. 'Mai knows [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

Regarding the case in which an element intervenes in the EQ-CQ sequence as in (7), Eguchi (1992) assumes that the embedded wh-question is extracted (or scrambled) from XP. For example, under the Constituent Hypothesis, (7) can be structurally represented as in (10).

(10) Mai-wa [$_{EQ}$ dare-ga hooseki-o nusunda ka]$_i$ <u>osoraku</u> [$_{XP}$ t_i [$_{CQ}$ sono hannin]]-o sitteiru.
Mai-TOP who-NOM jewel-ACC stole Q perhaps that culprit-ACC know

[4] In the following structural representations, for expository purposes, I assume the combination of a verb stem and the tense affix -(*r*)*u*/-*ta* to be located within VP, rather than splitting it into the two elements and positing the tense affix in TP.

One argument that Eguchi (1992) suggests for the Constituent Hypothesis concerns the fact that the embedded wh-question cannot be preceded by the concealed question in EQ+CQs, as noted in Section 1. The relevant example in (4a) is repeated in (11).

(11) *Mai-wa [$_{CQ}$ sono hannin](-o) [$_{EQ}$ dare-ga hooseki-o nusunda ka](-o) sitteiru.
Mai-TOP that culprit-ACC who-NOM jewel-ACC stole Q-ACC know
Lit. 'Mai knows [$_{EQ}$ who stole the jewels], [$_{CQ}$ that culprit].'

With the hypothesis under consideration, (11) can be structurally represented as in (12).

(12) *Mai-wa [$_{XP}$ t_i [$_{CQ}$ sono hannin]](-o)$_j$ [$_{EQ}$ dare-ga hooseki-o nusunda ka](-o)$_i$ t_j sitteiru.
Mai-TOP that culprit-ACC who-NOM jewel-ACC stole Q-ACC know

(12) shows that XP undergoes scrambling after the embedded wh-question is extracted. As a result, the trace of the embedded wh-question within XP cannot be bound, which violates the Proper Binding Condition (e.g. Fiengo 1977), thereby leading to the ungrammaticality.

3. Exploring the structure of EQ+CQs

In this section, I discuss which of the two hypotheses regarding the structure of EQ+CQs introduced in Section 2, the Adjunct Hypothesis or the Coordination Hypothesis, is plausible. For this purpose, I investigate two syntactic properties of EQ+CQs related to coordination (Section 3.1) and light verb constructions (Section 3.2).

3.1. Coordination

First, I discuss EQ+CQs in terms of coordination. Japanese has at least two particles that form coordination: the conjunction marker *to* 'and' and the disjunction marker *ka* 'or'. These particles are involved in the examples in (13).

(13) a. Mai-wa ringo (futa-tu) **to** banana (san-bon)-o katta.
Mai-TOP apple two-CLS and banana three-CLS-ACC bought
'Mai bought (two) apples and (three) bananas.'
b. Mai-wa ringo (futa-tu) **ka** banana (san-bon)-o katta.
Mai-TOP apple two-CLS or banana three-CLS-ACC bought
'Mai bought (two) apples or (three) bananas.'

It has been observed in the literature that *to* 'and' can coordinate elements that arguably do not form constituents (e.g. Koizumi 1995, 2000, Fukui and Sakai 2003). In (14), for example, *to* coordinates a direct object and an indirect object, which should not form a constituent together.

(14) Mai-wa Ken-ni ringo (futa-tu) **to** Kooji-ni banana (san-bon)-o ageta.
Mai-TOP Ken-to apple two-CLS and Koji-to banana three-CLS-ACC gave
Lit. 'Mai gave (two) apples to Ken and (three) bananas to Koji.'

However, this is not the case with *ka* 'or'; it cannot coordinate non-constituents, as (15) demonstrates.

(15) ?*Mai-wa Ken-ni ringo (futa-tu) **ka** Kooji-ni banana (san-bon)-o ageta.
Mai-TOP Ken-to apple two-CLS or Koji-to banana three-CLS-ACC gave

Lit. 'Mai gave (two) apples to Ken or (three) bananas to Koji.'

These facts suggest that coordination by *ka* 'or' serves as a diagnostic for constituency, while coordination by *to* 'and' does not.

With this in mind, observe the EQ+CQs in (16), where two EQ-CQ sequences are coordinated by *to* 'and' in (16a) and by *ka* 'or' in (16b).

(16) a. Mai-wa [$_{EQ}$ Ken-ga nani-o tabeta ka] [$_{CQ}$ sono tabemono] **to** [$_{EQ}$ Kooji-ga nani-o nonda ka] [$_{CQ}$ sono nomimono]-o sitteiru.
Mai-TOP Ken-NOM what-ACC ate Q that food and Koji-NOM what-ACC drank Q that beverage-ACC know
Lit. 'Mai knows [$_{CQ}$ that food], [$_{EQ}$ what Ken ate] and [$_{CQ}$ that beverage], [$_{EQ}$ what Koji drank].'

b. ?*Mai-wa [$_{EQ}$ Ken-ga nani-o tabeta ka] [$_{CQ}$ sono tabemono] **ka** [$_{EQ}$ Kooji-ga nani-o nonda ka] [$_{CQ}$ sono nomimono]-o sitteiru.
Mai-TOP Ken-NOM what-ACC ate Q that food or Koji-NOM what-ACC drank Q that beverage-ACC know
Lit. 'Mai knows [$_{CQ}$ that food], [$_{EQ}$ what Ken ate] or [$_{CQ}$ that beverage], [$_{EQ}$ what Koji drank].'

Of importance here is the degradation of (16b), which indicates that EQ-CQ sequences cannot be coordinated by *ka* 'or'. Given that *ka* serves as a diagnostic for constituency as shown above, this shows that the EQ-CQ sequence in EQ+CQs does not form a constituent. (Note incidentally that the acceptability of (16a) follows from *to* 'and' being able to coordinate non-constituents as noted above.)

One might suggest that (16b) is degraded because EQ-CQ sequences cannot be coordinated by *ka* 'or' for a semantic rather than syntactic reason. To examine this possibility, consider (17), where *ka* coordinates two embedded wh-questions in (17a) and two concealed questions in (17b).

(17) a. Mai-wa [$_{EQ}$ Ken-ga nani-o tabeta ka] **ka** [$_{EQ}$ Kooji-ga nani-o nonda ka]-o sitteiru.
Mai-TOP Ken-NOM what-ACC ate Q or Koji-NOM what-ACC drank Q-ACC know
'Mai knows [$_{EQ}$ what Ken ate] or [$_{EQ}$ what Koji drank].'

b. Mai-wa [$_{CQ}$ [Ken-ga e_i tabeta] tabemono$_i$] **ka** [$_{CQ}$ [Kooji-ga e_j nonda] nomimono$_j$]-o sitteiru.
Mai-TOP Ken-NOM ate food or Koji-NOM drank beverage-ACC know
'Mai knows [$_{CQ}$ the food that Ken ate] or [$_{CQ}$ the beverage that Koji drank].'
(≈ 'Mai knows [what the food that Ken ate was] or [what the beverage that Koji drank was].')

The acceptability of (17) indicates that an embedded wh-question and a concealed question can be coordinated by *ka* 'or' with another embedded wh-question and concealed question, respectively, without any semantic problems. This suggests that the degradation of (16b) should not arise for a semantic reason, given that the EQ-CQ sequence in EQ+CQs is intuitively interpreted in the same way as a corresponding embedded wh-question and concealed question. I thus argue that (16b) is degraded for a syntactic reason, i.e. because the EQ-CQ sequence does not form a constituent. Given the non-

constituency of the EQ-CQ sequence, the current discussion argues against the Constituent Hypothesis (i.e., (8)), thereby lending support to the Adjunct Hypothesis (i.e., (5)).

3.2 Light verb constructions

The second relevant property of EQ+CQs concerns light verb constructions, where the light verb (i.e., semantically vacuous verb) *suru*/*sita* 'do/did' takes as its complement a verbal noun that assigns theta roles to arguments (e.g., Grimshaw and Mester 1988, Saito and Hoshi 2000). In the light verb construction in (18), for instance, the verbal noun *zyooto* 'giving' assigns its theta roles of Agent, Goal, and Theme to *Mai*, *Ken*, and *toti* 'land', respectively.

(18) Mai-ga Ken-ni toti-no zyooto-o sita.
Mai-NOM Ken-to land-GEN giving-ACC did
'Mai gave a piece of land to Ken.'

An important fact regarding light verb constructions is that a verbal noun can assign its theta roles not only to arguments within its projection, i.e. NP, but also those outside the NP. To understand this, it should first be noted that in Japanese, any elements inside an NP must be marked by the genitive Case *-no*, even if those elements are PPs or CPs, as (19) shows.

(19) a. [$_{NP}$ Mai*(-no) [$_{PP}$ Ken-e]*(-no) toti*(-no) zyooto](-wa yurusigatai.)
Mai-GEN Ken-to-GEN land-GEN giving-TOP unforgivable
'Mai's giving a piece of land to Ken (is unforgivable.)'
b. [$_{NP}$ [$_{CP}$ Mai-ga Ken-to wakareta to]*(-no) uwasa](-ga hiromatta.)
Mai-NOM Ken-with broke.up C-GEN rumor-NOM spread
'The rumor that Mai broke up with Ken (has been spread.)'

Then, consider again (18), where *Mai* and *Ken-ni* 'to Ken' are not marked by the genitive Case *-no*, while *toti* 'land' is. This means that the former elements are located outside the NP headed by the verbal noun *zyooto* 'giving', whereas the latter is inside that NP, as schematized in (20).[5]

(20) Mai-ga [$_{VP}$ Ken-ni [$_{NP}$ toti-no zyooto]-o sita]
Mai-NOM Ken-to land-GEN giving-ACC did

Hence, in (18/20), *zyooto* assigns theta roles to elements both inside and outside its projection.[6]

Bearing this property of light verb constructions in mind, consider now the verbal noun *hookoku* 'report', which assigns an Agent, Goal, and Theme theta role. When used in light verb constructions, it can take an embedded wh-question or a concealed question as its Theme argument; see, e.g., (21), where the Theme argument appears within the NP headed by *hookoku*, while the other arguments are outside that NP.

[5] In this paper, I assume that nominative subjects surface in Spec,TP, being outside VP.

[6] This paper is agnostic about how the verbal noun in light verb constructions assigns its theta roles to arguments outside its projection, since it is irrelevant to the current discussion. For this point, see, e.g., Grimshaw and Mester (1988), who propose a special mechanism called Argument Transfer, and Saito and Hoshi (2000), who argue that the verbal noun assigns its theta roles to arguments outside its projection after being incorporated into the light verb in LF.

(21) a. Mai-ga [$_{VP}$ keesatu-ni [$_{NP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka]-no hookoku]-o
Mai-NOM police-to who-NOM jewel-ACC stole Q-GEN report-ACC
sita].
did
'Mai reported to the police who stole the jewels.'

b. Mai-ga [$_{VP}$ keesatu-ni [$_{NP}$ [$_{CQ}$ [e_i hooseki-o nusunda] hannin$_i$]-no hookoku]-o
Mai-NOM police-to jewel-ACC stole culprit-GEN report-ACC
sita].
did
'Mai reported to the police the culprit who stole the jewels.'
(≈ 'Mai reported to the police [who the culprit who stole the jewels was].')

Then, observe the light verb construction in (22), which involves the verbal noun *hookoku* 'report' and the EQ-CQ sequence.

(22) Mai-ga keesatu-ni [$_{EQ}$ dare-ga hooseki-o nusunda ka] [$_{CQ}$ sono hannin]-no
Mai-NOM police-to who-NOM jewel-ACC stole Q that culprit-GEN
hookoku-o sita.
report-ACC did
Lit. 'Mai reported to the police [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

Notice in particular that in (22), the embedded wh-question is not marked by the Genitive case *-no*, while the concealed question is followed by it. Given that, the Adjunct Hypothesis (see (5)) and the Constituent Hypothesis (see (8)) predict that (22) will be structurally represented as in (23).

(23) a. With the Adjunct Hypothesis:
Mai-ga [$_{VP}$ keesatu-ni [$_{EQ}$ dare-ga hooseki-o nusunda ka] [$_{NP}$ [$_{CQ}$ sono hannin]-no
Mai-NOM police-to who-NOM jewel-ACC stole Q that culprit-GEN
hookoku]-o sita].
report-ACC did

b. With the Constituent Hypothesis:
Mai-ga [$_{VP}$ keesatu-ni [$_{NP}$ [$_{XP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka] [$_{CQ}$ sono
Mai-NOM police-to who-NOM jewel-ACC stole Q that
hannin]]-no hookoku]-o sita].
culprit-GEN report-ACC did

The two structures in (23) crucially differ in the position of the embedded wh-question. In (23a), the embedded wh-question occurs outside the NP headed by *hookoku* 'report', adjoining to the VP. In (23b), it is located within that NP, as well as within XP (i.e., the constituent consisting of the EQ-CQ sequence). Of crucial relevance in determining which structure is plausible is the fact that the embedded wh-question in (22) can precede *keesatu-ni* 'to the police', the Goal argument located outside the NP headed by the verbal noun, as shown in (24).

(24) Mai-ga [$_{EQ}$ dare-ga hooseki-o nusunda ka] keesatu-ni [$_{CQ}$ sono hannin]-no
Mai-NOM who-NOM jewel-ACC stole Q police-to that culprit-GEN
hookoku-o sita.
report-ACC did

Lit. 'Mai reported to the police [$_{CQ}$ that culprit], [$_{EQ}$ who stole the jewels].'

Based on the structures in (23a) and (23b), the structure of (24) can be represented as in (25a) and (25b), respectively.

(25) a. With the Adjunct Hypothesis:
Mai-ga [$_{VP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka]$_i$ keesatu-ni t_i [$_{NP}$ [$_{CQ}$ sono
Mai-NOM who-NOM jewel-ACC stole Q police-to that
hannin]-no hookoku]-o sita].
culprit-GEN report-ACC did

b. With the Constituent Hypothesis:
Mai-ga [$_{VP}$ [$_{EQ}$ dare-ga hooseki-o nusunda ka]$_i$ keesatu-ni [$_{NP}$ [$_{XP}$ t_i [$_{CQ}$ sono
Mai-NOM who-NOM jewel-ACC stole Q police-to that
hannin]]-no hookoku]-o sita].
culprit-GEN report-ACC did

In (25a), the embedded wh-question, which was originally located outside the NP, is scrambled over *keesatu-ni* 'to the police'. Since such movement should not give rise to any problems, the acceptability of (24) is correctly expected. In (25b), the embedded wh-question undergoes scrambling across the NP (as well as XP). Note, however, that scrambling across an NP is generally not allowed in Japanese, as exemplified in (26).

(26) *Ken-no$_i$ Mai-wa [$_{NP}$ t_i hahaoya]-o sagasiteiru.
Ken-GEN Mai-TOP mother-ACC is.looking.for
Lit. '[Of Ken]$_i$, Mai is looking for [the mother t_i].'

The acceptability of (24) is thus not expected with (23b). Hence, the current discussion argues for the Adjunct Hypothesis and against the Constituent Hypothesis.

In summary, this section has discussed two syntactic properties of EQ+CQs concerning coordination and light verb constructions, and shown that these properties bolster the Adjunct Hypothesis rather than the Constituent Hypothesis. Before closing this section, recall that the Constituent Hypothesis is supported by the fact that the concealed question cannot appear before the embedded wh-question in EQ+CQs (Eguchi 1992), as described in Section 2.2; under the Constituent Hypothesis, this fact can be accounted for in terms of the Proper Binding Condition. However, as the Adjunct Hypothesis has turned out to be more plausible, another account should be given to the word order restriction in question. Recall here that the concealed question in EQ+CQs is typically accompanied by the demonstrative *sono* 'that' and intuitively interpreted to refer to the content of the embedded wh-question, as noted in Section 1. Based on this, I suggest that the embedded wh-question must precede the concealed question in EQ+CQs because of the general tendency for discourse anaphors, such as *sono* 'that', to follow their antecedents.

4. Distribution of EQ-CQ sequences

In this section, I discuss the distribution of EQ-CQ sequences, with a special focus on specificational sentences (Section 4.1). In addition, the distribution in question will be compared with that of floating quantifiers (Section 4.2).

4.1. Subject of specificational sentences

Specificational sentences, such as (27), are a type of copula sentence that expresses that the referent of the predicate noun is the (exhaustive) member of the domain represented by the (non-referential) subject (e.g., Higgins 1973, Nishiyama 2003).

(27) [[e_i hooseki-o nusunda] hannin$_i$]-ga Ken dearu (koto)
jewel-ACC stole culprit-NOM Ken COP fact
'(the fact that) the culprit who stole the jewels is Ken'

Notably, (apparent) EQ-CQ sequences can appear even in the subject position of specificational sentences; observe, e.g., (28), where the subject of the specificational sentence in (27) is replaced with a corresponding EQ-CQ sequence. Note also that (28) is intuitively interpreted in the same manner as (27).

(28) [dare-ga hooseki-o nusunda ka] [sono hannin]-ga Ken dearu (koto)
who-NOM jewel-ACC stole Q that culprit-NOM Ken COP fact
Lit. '(the fact that) [who stole the jewels], [that culprit] is Ken'

This hitherto unnoticed observation itself may lend support to the claim in the literature that the subject of specificational sentences and concealed questions should be analyzed uniformly (e.g., Nishiyama 2003, Romero 2005).

Concerning the structure of (28), I assume that the (apparent) concealed question is located in the canonical subject position, i.e. Spec,TP, and the embedded wh-question adjoins to TP, given the Adjunct Hypothesis. Thus, (28) can be structurally represented as in (29).

(29) [$_{TP}$ [dare-ga hooseki-o nusunda ka] [$_{TP}$ [sono hannin]-ga [$_{VP}$ Ken dearu]]] (koto)
who-NOM jewel-ACC stole Q that culprit-NOM Ken COP fact

With this assumption, the observation under consideration suggests that EQ-CQ sequences can appear not only within VP, as in EQ+CQs, but also within TP, as in (28/29). Notice that VP and TP have in common that a proposition appears in those projections (given, in particular, the VP-Internal Subject Hypothesis). I thus propose (30) as the structural condition which allows for EQ-CQ sequences.

(30) An embedded wh-question associated with a concealed question can appear as an adjunct of a *propositional* projection, such as VP and TP, that contains that concealed question.

4.2. The distribution of floating quantifiers

Note that the condition in (30) is reminiscent of the distribution of floating quantifiers in Japanese (e.g., Miyagawa 1989).[7] When a floating quantifier is associated with a subject, it must originate within TP and cannot appear in VP; see, e.g., (31), where the floating quantifier *san-nin* is intended to be associated with the subject *gakusee* 'students'.

(31) a. [$_{TP}$ Gakusee-ga san-nin [$_{VP}$ hon-o katta]].
student-NOM three-CLS book-ACC bought

[7] Eguchi (1990, 1998) discusses some similarities and differences between embedded wh-questions and floating quantifiers from a perspective different from that presented in this paper.

'Three students bought books.'

b. *[TP Gakusee-ga [VP hon-o san-nin katta]].
student-NOM book-ACC three-CLS bought

However, when a floating quantifier is associated with an object, it must originate within VP, as shown in (32a), where the floating quantifier *san-satu* is associated with the object *hon* 'books'. Incidentally, the floating quantifier in question can be scrambled across the subject, as (32b) shows.

(32) a. [TP Mai-ga [VP hon-o san-satu katta]].
Mai-NOM book-ACC three-CLS bought
'Mai bought three books.'

b. [TP San-satu$_i$ Mai-ga [VP hon-o t_i katta]].
three-CLS Mai-NOM book-ACC bought

The two distributions under consideration differ in some respects, however. For example, as Eguchi (1990, 1998) notes, they are different in terms of word order. In the case of EQ-CQ sequences, the embedded wh-question must precede the concealed question, as discussed above. However, the word order between a floating quantifier and the associated noun phrase is rather free. For instance, the word order in question in (31a) and (32a) can be reversed, as shown in (33a) and (33b), respectively.

(33) a. [TP San-nin gakusee-ga [VP hon-o katta]].
three-CLS student-NOM book-ACC bought
'Three students bought books.' (cf. (31a))

b. [TP Mai-ga [VP san-satu hon-o katta]].
Mai-NOM three-CLS book-ACC bought
'Mai bought three books.' (cf. (32a))

Future studies can explore the implications obtained from the above similarities and differences in the distribution of EQ-CQ sequences and floating quantifiers. For relevant discussions, see Eguchi (1990, 1998).

5. Summary

In this paper, I have presented the first detailed syntactic exploration of EQ+CQs, aiming to determine which of the two potential structures of EQ+CQs suggested by Eguchi (1992), the Adjunct Hypothesis or the Constituent Hypothesis, is plausible. In particular, I have investigated the syntax of EQ+CQs in terms of coordination and light verb constructions. As a result, I have argued in support of the Adjunct Hypothesis, according to which in EQ+CQs, the embedded wh-question adjoins to VP, while the concealed question appears as the complement of the matrix predicate. I have also discussed the distribution of EQ-CQ sequences, building on the novel observation that an EQ-CQ sequence can appear in the subject position of specificational sentences as well. Accordingly, I have proposed a structural condition for EQ-CQ sequences, according to which they can appear within propositional projections such as VP and TP. This condition has also been compared with the distribution of floating quantifiers.

One remaining question is how the structure of EQ+CQs reflects the semantic relationship between the embedded wh-question and concealed question in the EQ-CQ sequence. For instance, Yamaizumi (2008) posits that EQ+CQs involve left-dislocation, with the embedded wh-question being a left-dislocated element. Building on this claim, in a future study, I will explore how the Adjunct

Hypothesis is compatible with the properties of left dislocation in EQ+CQs, which might require a more refined structure.[8]

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[8] For example, given the topical nature of left-dislocated elements, the syntactic structure of EQ+CQs might involve a topic projection, or TopP, within the cartographic structure of *v*P (i.e., the low periphery; e.g., Belletti 2001, 2004).

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Numeral Classifiers in Japanese and (Anti-)Labeling*

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1. Introduction

This study investigates the syntax of numeral classifier phrases in Japanese, which occur in the pre-nominal position (1)a, the post-nominal position (1)b, or the floating position (1)c.

(1) a. Pre-nominal classifier phrase
[**san-nin**-no gakusei-ga] kyoositsu-ni kita.
three-CL-LINK student-NOM classroom-LOC came
'Three students came to the classroom.'

b. Post-nominal classifier phrase
[gakusei **san-nin**-ga] kyoositsu-ni kita.
student three-CL-NOM classroom-LOC came
''Three students came to the classroom.'

c. Floating classifier phrase
[gakusei-ga] kyoositsu-ni [**san-nin**] kita.
student-NOM classroom-LOC three-CL came
'Three students came to the classroom.'

Two types of analyses have been proposed in the literature regarding the role of classifiers in the grammar, as shown in (2).

(2) a. Classifier-for noun structure b. Classifier-for-numeral structure

One view holds that classifiers are for nouns: see Chierchia (1998), Nguyen (2004), Watanabe (2006, 2010a, b), Jenks (2011), Nomoto (2013), and Scontras (2013, 2014). According to Chierchia (1998), for example, all nouns in classifier languages are mass-like and need a classifier for counting. The idea is that a classifier serves to partition mass-like nouns in classifier languages into countable units so that they can be the target of counting. This 'classifier-for-noun' analysis can be represented by (2)a, in which a classifier and a noun form a constituent, to which a numeral is added. Another prominent approach holds that classifiers are for numerals (see Krifka (1995), Bale & Coon (2014), and Wągiel & Caha (2020, 2021)). According to this view, numerals in classifier languages do not come with a

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measure function and thus need to combine first with a classifier, which provides such function, before they get combined with a noun, as shown in (2)b.

Watanabe (2006) offers a unified account of the three variants of Japanese classifier phrases, arguing for the classifier-for-noun structure in (2)a (although he does not endorse the view that classifier languages like Japanese lack the count-mass distinction). In this paper, we also present a unified analysis, but it is crucially based on the classifier-for-numeral structure in (2)b.

This paper is organized in the following manner. Section 2 introduces our proposal that classifiers are weak heads in the sense of Saito (2016, 2018). We demonstrate that pre-nominal, post-nominal, and floating classifier configurations come from underlying structures that are nearly identical to one another. We also discuss how our analysis accommodates the well-known observation that numeral classifiers cannot float out of PPs. In section 3, we discuss several consequences of our proposal. Section 4 concludes the paper.

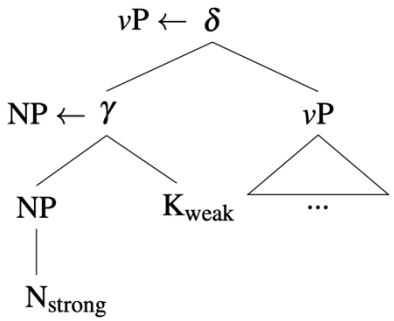
2. Weak heads as an anti-labeling device

Our proposal is based on Saito's idea that certain grammatical elements in languages such as Japanese are weak heads in the labeling framework (Chomsky 2013, 2015). The relevant definition is given in (3).

(3) Weak heads as an anti-labeling device (Saito 2018:6)
Search {α, β} for a label. If α is a weak head or search into α yields a weak head, then search on the α side is suspended and it continues only on the β side.

The anti-labeling device resolves symmetric configurations that pose a problem for labeling. Consider a VP-internal subject configuration (i.e., δ = {NP, *v*P}). The operation Minimal Search (Chomsky 2013:43) locates N and *v* in δ, both of which are strong heads, and the label of δ cannot determined unless δ is somehow modified. According to Saito, one strategy to break this type of symmetry is to employ a case particle (K head), which is a weak head in the sense defined in (3). Let us briefly illustrate this point by considering the structure in (4).

(4) NP arguments



Here, NP and K (= a case particle) merge before γ = {NP, K} is merged with *v*P. When Minimal Search operates on γ, it locates N and K. The search on the K side is suspended because of the anti-labeling nature of K. Hence, N(P) provides the label of γ. In the next step, Minimal Search operates on δ = {γ, *v*P}. Minimal Search on the side of γ comes to a halt as soon as K, a weak head, is located. Search continues only on the side of *v*P, locating *v*, a strong head. As a result, δ's label is provided by *v*.

We now turn to our main proposal given in (5).

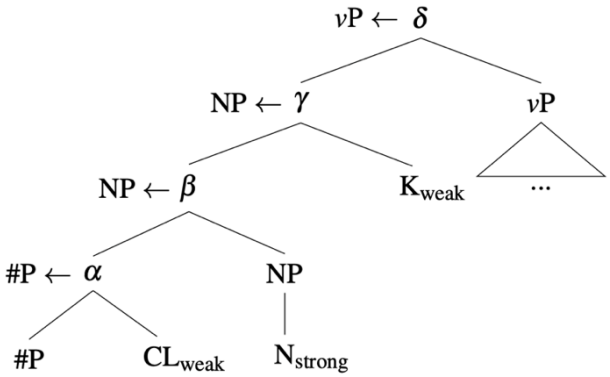
(5) Classifier heads (CLs) in Japanese are either weak or strong in Saito's (2018) sense.

While (5) states that classifiers in Japanese can freely take either of the two values under consideration (i.e., weak or strong), our tentative conjecture is that 'weak' may be the default value (i.e., it is an anti-labeling element). In what follows, we illustrate that this proposal, coupled with the classifier-for-numeral analysis in (2)b, correctly predicts the properties of classifier phrases in Japanese.

2.1. Deriving classifier phrases in Japanese

Suppose that a classifier in a given derivation takes the 'weak' option. Under the classifier-for-numeral view in (2)b, we obtain the structure shown in (6).

(6) [CL_{weak} N_{strong}] = Pre-nominal classifier phrases



For α = {#P, CL}, its label is provided by #, due to the weak nature of CL in the sense of (3). Note that we assume that numerals are always phrasal in Japanese (see Tatsumi (2021) for the syntactic status of numerals from a cross-linguistic perspective). When α and NP are merged, the label of the structure β is provided by N, because of the weak nature of CL. The rest of the derivation follows the derivational path as explicated by Saito (2016, 2018). We argue that (6) is the structure of Japanese pre-nominal classifier phrases (see (1)a).

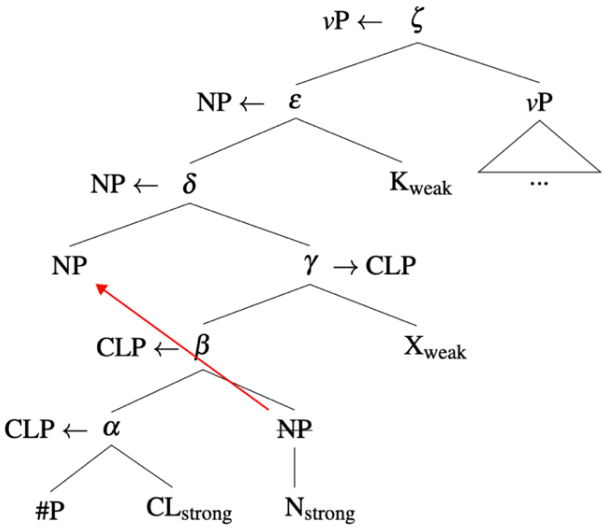
Two points should be mentioned here. First, we assume that the linker *-no* is inserted post-syntactically (Kitagawa & Ross (1982)) and plays no role in labeling. We will return to this issue in section 3. Second, we assume that Japanese arguments are realized as NPs: see Bošković (2008, 2012), Talić (2015), 2017, and Oda (2022). This point will play an important role in our analysis.

Next, we argue that the structure of post-nominal classifier phrases (e.g., (1)b) is obtained when CL takes the 'strong' option. Consider (7). In this case, β instantiates a problematic XP-YP configuration because both CL and N are strong heads. We suggest that, to avoid labeling failure, NP moves to the nominal edge, deriving the word order in which the noun precedes the classifier phrase (see Watanabe (2006, 2010a), Jenks (2011), Huang & Ochi (2014) for similar analyses of Japanese post-nominal classifier phrases). We assume that NP moves and (re)merges with γ consisting of β and the weak head X. After the relevant movement process, only CL is visible for labeling algorithm, and hence provides the label of β. As for δ = {NP, γ}, NP provides its label (note that the head X may be responsible for the specificity effect: see Huang and Ochi (2014) for discussion).[1] Due to the weak

[1] An interesting question arises as to linearization in the nominal domain (thanks to Hiromu Sakai for raising this issue). Take δ = {NP, γ} in (7). As discussed in the main text, our labeling-based approach dictates that NP provides the label of δ. In terms of the traditional conception of phrase structure building, N(P) "projects" and functions as the head of the entire noun phrase. And yet, N(P) should precede elements contained in γ (i.e., #P and CL), thereby giving rise to the 'post-nominal' classifier phrase. Japanese is known to be a strict head final language. If syntactic

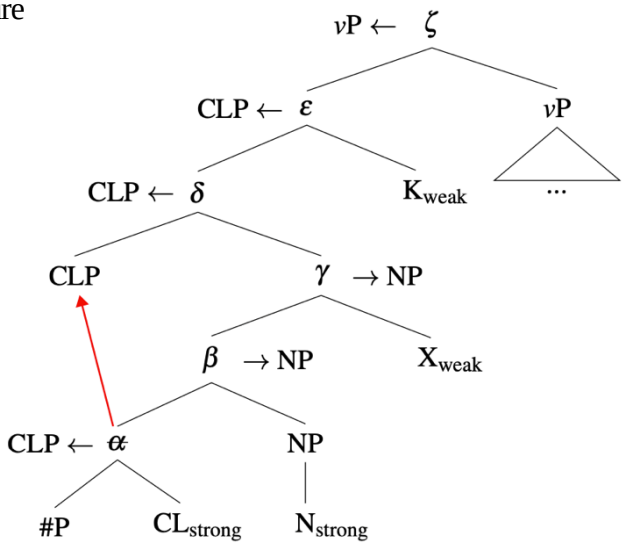
nature of X, the entire nominal phrase (= δ) is labeled by NP. In the next step, δ combines with K and the derivation continues like the one in (6). The proposed structure of Japanese classifier phrases is consistent with the view that nominal arguments in Japanese are syntactically realized as NPs.

(7) [CL_{strong} N_{strong}] = Post-nominal classifier phrases



In (7), moving NP out of β resolves the labeling failure. There is, however, another derivation available for nominals modified by a classifier phrase. Instead of moving NP, suppose that CLP is moved out of β, as illustrated in (8). This movement process should also resolve the labeling problem.

(8) Illegitimate structure



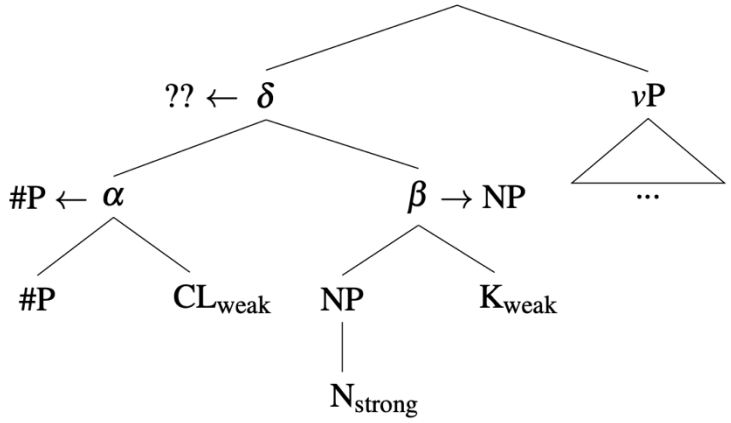
This derivation, if legitimate, would yield the pre-nominal classifier phrase (NP follows #P and CL). However, this structure disallows the thematic role assignment to NP (= γ): the whole extended nominal projection is interpreted as CLP, and NP is deeply embedded in it. Hence it cannot receive a thematic

headedness strictly correlates with the head-finality in Japanese, we cannot obtain post-nominal CLPs under the current analysis. We need to leave this issue for another occasion.

role from the predicate. We thus conclude that (7), but not (8), yields the legitimate output.

Regarding floating classifier phrases like (1)c, we propose that they are derived when NP and K(ase) merge before they are merged with the combination of #P and CL. Consider (9), in which CL is assumed to be weak. Note that K is always weak (see Saito's (2016, 2018) work).

(9) [CL_{weak} [N_{strong} K_{weak}]] = Floating classifier phrases



Unlike in the derivation in (7), NP combines directly with K in (9). Here α is labeled by # because CL is weak. And β is labeled by N due to the weak nature of K (as in Saito's work). Now consider δ. Recall that Minimal Search comes to a halt when it locates a weak head and the search continues only on the other side. Crucially, we have a symmetric configuration here: α (= #P) and β (= NP) both contain a weak head (CL and K, respectively). As a result, both #P and NP are ignored for Minimal Search, and δ cannot be labeled. We suggest that either α (= #P) or β (= NP) moves to a higher position in the clausal spine, so that δ can be labeled: see (10). This yields the word order variations shown in (11).

(10) a. [[$_{\#P}$ #P CL_{weak}]$_1$ … [$_{VP}$ [Δ_1 [$_{NP}$ N K_{weak}]] V]] (Movement of α = #P)
b. [[$_{NP}$ N K_{weak}]$_1$ … [$_{VP}$ [[$_{\#P}$ #P CL_{weak}] Δ_1] V]] (Movement of β = NP)

(11) a. [**san-nin**] kyoositsu-ni [gakusei-ga] kita.
three-CL classroom-LOC student-NOM came
'Three students came to the classroom.'
b. [gakusei-ga] kyoositsu-ni [**san-nin**] kita.
student-NOM classroom-LOC three-CL came
'Three students came to the classroom.'

To repeat, δ instantiates a symmetric structure, with two prominent heads being weak, δ cannot be labeled unless one of the constituents of δ moves out of δ. We argue that this is the source of floating/splitting. According to this line of approach, floating/splitting is not optional but is mandatory.

Now recall that (7) also involves a symmetric XP-YP configuration, and that the NP movement to the nominal edge helps avoid a labeling failure. Importantly, the floating/splitting pattern cannot be derived from this structure: CL and N are both strong, so if they are split, both CLP and NP give rise to a labeling failure in their respective positions at the clausal domain. For instance, if CLP with the strong CL head moves to a clausal domain and merges with, say, TP (instead of moving to the nominal edge as in (7)), then {CLP, TP} cannot be labeled because both CL and T are strong.

(12) *[[$_{CLP}$ #P CL_{strong}]$_1$ [$_{TP}$ … [$_{VP}$ [[Δ_1 [$_{NP}$ N]] K_{weak}] V] T]] (Movement of CLP)

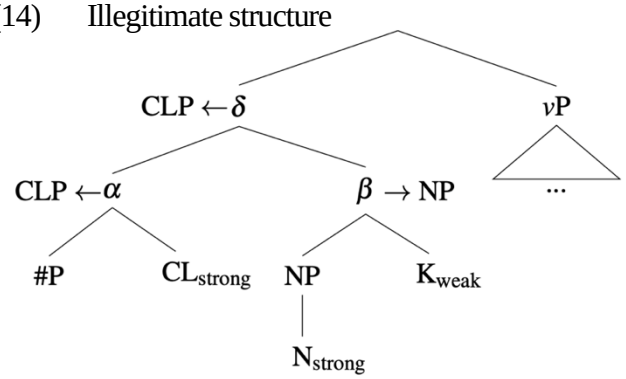
It is thus predicted that the floating pattern is possible when CL is weak (9), but not when it is strong (12).

To summarize, under the current analysis, the three word orders of Japanese classifier phrases have essentially the same underlying structure, in which #P and CL merge before NP (in line with the classifier-for-numeral analysis). They give rise to word order variations due to two factors: the weak vs. strong nature of CL and the timing of the introduction of the K head. In (13), we only represent the relevant heads (CL, N and K) in the structures.

(13) a. [[CL_{weak} N_{strong}] … K_{weak}] (→ pre-nominal numeral classifier phrase)
b. [[CL_{strong} N_{strong}] … K_{weak}] (→ post-nominal numeral classifier phrase)
c. [CL_{weak} [N_{strong} K_{weak}]] (→ floating numeral classifier phrase)

Note that there is one more logical possibility (i.e., [CL_{strong} [N_{strong} K_{weak}]]), but it is ruled out, independently. The hypothetical structure is given below:

(14) Illegitimate structure



In this case, δ = {α, β} is labeled as CLP because CL is strong and K is weak, and thus the NP cannot receive a thematic role from the predicate, in much the same way as in (8).

2.2. On PP

The proposed analysis can explain the distribution of floating classifier phrases. As shown in (15)a,b, pre-nominal and post-nominal classifier phrases can cooccur with a postposition. On the other hand, floating classifier phrases cannot be associated with the complement noun of a postpositional phrase.

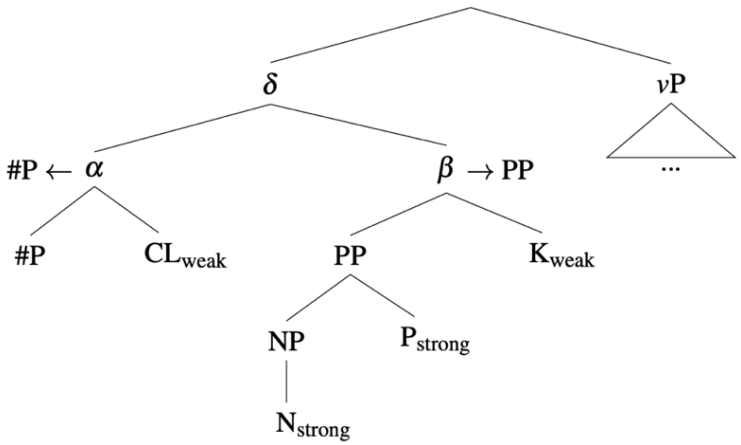
(15) a. Pre-nominal classifier phrase
John-wa [**san-nin**-no gakusei-kara] tegami-o moratta.
John-TOP three-CL-LINK student-from letter-ACC receivd
'John received letters from three students.'
b. Post-nominal classifier phrase
John-wa [gakusei **san-nin**-kara] kinoo tegami-o katta.
John-TOP student three-CL-from yesterday letter-ACC receivd
'John received letters from three students.'
c. Floating classifier phrase
* John-wa [gakusei-kara] kinoo [**san-nin**] tegami-o moratta.
John-TOP student-from yesterday three-CL letter-ACC received
'John received letters from three students.'

The present analysis can explain the unacceptability of (15)c. We assume that postpositions are always strong in Minimal Search. Unlike CL and K, they have semantic contents and assign a thematic role to a noun phrase. Furthermore, we follow Saito (2018) in that postpositional phrases (PP) combine with K, which functions as an anti-labeler.[2] As Saito (2018) observed, one piece of evidence for this assumption comes from the fact that K can be overtly realized after a postposition in some cases, as in (16).

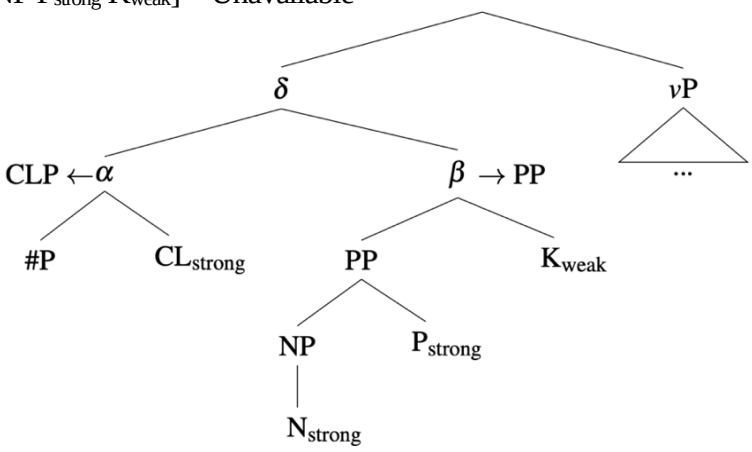
(16) Tokyo-eki-kara-ga ichiban chikai.
Tokyo-station-from-NOM first close
'The closest is from Tokyo Station.'

With these assumptions, there are two logically possibilities represented in (17) and (18).

(17) CL_{weak} & [NP P_{strong} K_{weak}] = Unavailable



(18) CL_{strong} & [NP P_{strong} K_{weak}] = Unavailable



In (17) and (18), NP is trapped inside PP. This means that it does not merge directly with the modifiers (#P or CLP). We claim that the structures in (17) and (18) are unavailable because CLP and #P are

[2] Note that multiple PP adjuncts are possible in Japanese. Moreover, PPs can undergo scrambling, like case-marked NPs.

dissociated from the target NP embedded in PP. In other words, CLP and #P cannot be modifiers of PP. A similar claim has been made by Miyagawa (1989). He proposes the mutual c-command requirement shown in (19), to which (17) and (18) do not conform.

(19) Mutual C-Command Requirement (Miyagawa 1989: 30)
For a predicate to predicate of an NP, the NP or its trace and the predicate or its trace must c-command each other.

Notice that in (17) and (18) a postposition combines directly with an NP. One may wonder whether it is possible to introduce a postposition after an NP and its modifier (CLP or #P) combines with each other. Such derivations do not yield (15)c. Suppose that α = {#P, CL} and NP directly merge before P is introduced into the structure. We obtain the two constituents give in (20).

(20) a. [[[$_{\beta}$ [$_{\alpha=\#P}$ #P CL$_{weak}$] NP] P] K]
b. [[[$_{\beta}$ [$_{\alpha=CLP}$ #P CL$_{strong}$] NP] P] K]

(20)a poses no labeling problem and yields the pre-nominal classifier structure (see (6)). (20)b, on the other hand, gives rise to a labeling problem unless it is somehow modified. In particular, β in (20)b has a symmetric structure, containing two strong heads; CL$_{strong}$ and N. Suppose that α, which is labeled by CL$_{strong}$, moves out of β and remerges with a clausal projection such as TP, which would potentially create the floating numeral classifier configuration. However, since CL and T are both strong, a labeling failure is bound to occur. A similar problem arises even when NP moves out of β. We thus conclude that no derivational option is available to generate examples like (15)c.

3. Implications

3.1. Raising from nominals

Under the present analysis, K merges with NP before or after a modifier of NP is introduced ((6)/(7) or (9)). When K merges with NP sooner, we have a symmetric structure, and one of the members of the constituent moves to a higher position to resolve labeling failure. On the other hand, when K merges with NP later, we have an asymmetric structure and modifiers of NP can remain in the base-generated position. In this section, we would like to suggest that such derivational options can be the source of some raising constructions in Japanese.

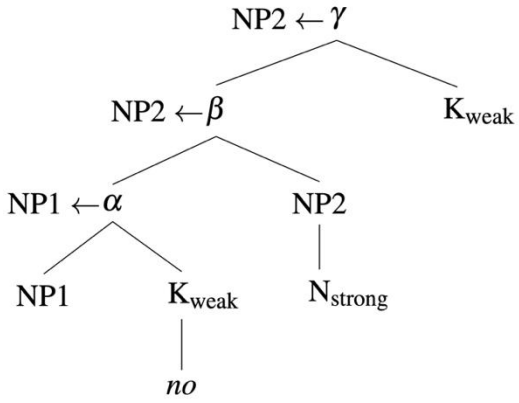
It has been independently argued that some Japanese constructions involve syntactic raising out of a nominal phrase. In (21)a, the possessor phrase is base-generated in the noun phrase. If the possessor phrase moves to a higher position in the clausal spine, we obtain the multiple nominative sentence in (21).

(21) Possessor Raising (Kishimoto 2013, see also Tsujioka 2002)
a. [Taro-no kata-ga] kotteiru.
Taro-GEN shoulder-NOM get.stiff.ASP
'Taro has a stiff shoulder.'
b. Taro-ga$_1$ [Δ_1 kata-ga] kotteiru.
Taro-NOM shoulder-NOM get.stiff.ASP
'Taro has a stiff shoulder.'

Our proposal can shed light on the alternation in (21): the raising alternation arises from two similar and yet distinct derivations. We have two NPs here; a nominal modifier and a nominal modifiee. Suppose

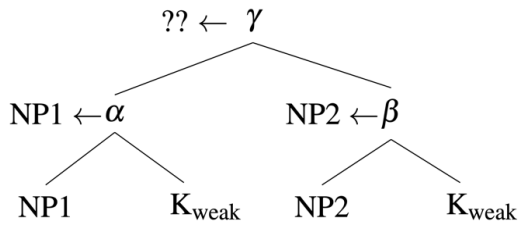
that the nominal modifier combines with K, which is realized as the genitive case *no*. The resulting constituent α (= {NP1, K}) then merges with the nominal modifiee (NP2), as shown in (22). In this case, we obtain an asymmetric structure (= β), with K being weak and N being strong, and no labeling issue arises with β. Consequently, the modifier can stay in the pre-nominal position (e.g., (21)a). Finally, another K head, which is realized as the nominative case particle *ga* in (21)a, merges with β = {α, NP2}, yielding γ labeled by NP2.

(22) Pre-nominal nominal modifiers



The present analysis allows another structure. Suppose that both NP1 and NP2 first merge with K, in which case we obtain α = {NP1, K} and β = {NP2, K}, as in (23). When α and β merge, we obtain a symmetric structure. Minimal Search locates K on both sides of γ, giving rise to labeling failure.

(23) The underlying structure of possessor raising



If α undergoes movement, γ is successfully labeled by NP2 because α = NP1 is no longer contained in γ. Now imagine that α is merged with TP, thus creating the configuration {α, TP}. No labeling issue arises in such a configuration.

According to the current approach, the alternation in (21) is thus due to a difference in the timing of the introduction of K associated with NP2. From the structure in (22), we obtain an ordinary pre-nominal modifier configuration, and from (23), we obtain a possessor raising configuration. A similar analysis can be applied to other constructions, too, which presumably involve some kind of raising out of a nominal phrase. Examples of subjectivization are given in (24). The nominal modifiers in (24)a occurs in the clausal spine in (24)b, being marked by the nominative case particle *ga*.

(24) Subjectivization (Kuno 1973)
a. [bunmeikoku-no dansei-no heikin-zyumyoo-ga] mizikai.
civilized.country-GEN male-GEN average-life.span-NOM short
'It is in civilized countries that the average life-span of men is short.'
b. bunmeikoku-ga dansei-ga [heikin-zyumyoo-ga] mizikai.
civilized.country-NOM male-NOM average-life.span-NOM short
'It is civilized countries that the average life-span of men is short in.'

3.2. On the particle *no*

In Section 3.1., we proposed that the genitive case particle *no* is a K head (e.g., (22) and (23)). Recall, in this connection, that we have assumed that the particle *no* in the pre-nominal classifier construction is a linking element, which is inserted post-syntactically (e.g., (1)a).This means that there are two distinct instances of *no* in Japanese. One piece of evidence for this view comes from nominal ellipsis. The two instances of *no* behave differently in nominal ellipsis (Saito et. al. (2008), Watanabe (2010b), Hiraiwa (2016)). (25)b is uttered after (25)a. As shown in (25)b, the particle *no* in the pre-nominal classifier construction disallows nominal ellipsis of a nominal modifiee.

(25) Classifier phrases + linker
a. Taro-wa ni-dai-no kuruma-o aratta.
Taro-TOP two-CL-LINK car-ACC washed
'Taro washed two cars.'
b. Hanako-wa go-dai-no *(kuruma)-o aratta.
Hanako-TOP five-CL-LINK car-ACC washed
'Hanako washed five (cars).'

In contrast, the genitive case particle *no* does allow nominal ellipsis as in (26)b.

(26) Possessors + genitive case
a. Taro-wa John-no kuruma-o aratta.
Taro-TOP John-GEN car-ACC washed
'Taro washed John's cars.'
b. Hanako-wa Mary-no (kuruma)-o aratta.
Hanako-TOP Mary-GEN car-ACC washed
'Hanako washed Mary's (cars).'

Notice that when the particle *no* follows a postposition, it behaves like the genitive case particle. The acceptability of (27)b indicates that *no* in (27) is K. This is consistent with the current analysis in which postpositions combine with K (see the discussion in Section 2.2.).

(27) Postpositional phrase + genitive case
a. Tokyoo-kara-no nimotsu-wa suguni todoku.
Tokyo-from-GEN package-TOP soon arrive
'The package from Tokyo will arrive soon.'
b. Okinawa-kara-no (nimotsu)-wa zikan-ga kakaru.
Okinawa-from-GEN package-TOP time-NOM take
'Packages from Okinawa take time.'

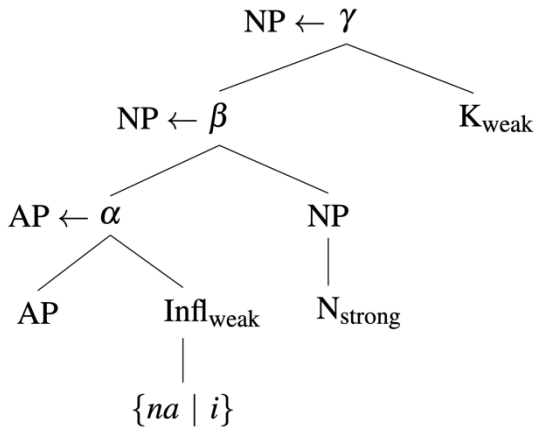
3.3. Other pre-nominal modifiers

Saito (2016) suggests a possibility that inflection on predicates also serves as an anti-labeling device. A relevant example is given in (28). The nominal adjective *sizuka* 'quietness' is followed by the inflectional suffix *-na*, and the adjective stem *hiro* by the inflectional suffix *-i*.

(28) {sizuka-na | hiro-i} heya
quietness-INFL large-INFL room
'a {quiet | large} room'

As shown in (29), when α = {AP, Infl} and NP merge, β = {α, NP} is labeled by NP because of the weak nature of the adnominal inflectional head (Infl).

(29) Pre-nominal adjectival modifiers

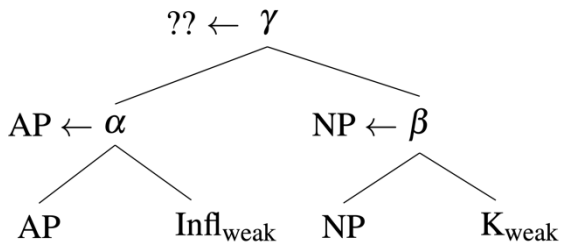


Unlike classifier phrases, however, these adjectival modifiers do not have floating/raising options, as in (30).

(30) *{sizuka-na | hiro-i} Taro-ga heya-ni sundeiru.
quietness-INFL large-INFL Taro-NOM room-LOC live.ASP
'Taro lives in a {quiet | large} room.'

What distinguishes these cases from floating classifier phrases? Consider the structure of hypothetical 'floating' of pre-nominal adjectival modifiers given in (31):

(31) The underlying structure of the hypothetical raising constructions

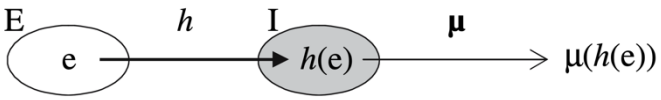


We assume that the structure in (31) cannot yield a legitimate output because adnominal APs cannot

combine with a clausal constituent, semantically.

For floating classifiers, there is an independent semantic analysis in which floating classifier phrases (measure functions) are semantically applied to events (Krifka (1989), Nakanishi (2007)). In particular, Nakanishi advances a mechanism that maps events in the verbal domain to individuals in the nominal domain, arguing that the floating numeral classifier construction "indirectly measures events by measuring individuals" (Nakanishi 2007: 248). Our proposal (as well as many other 'stranding' analyses of floating numeral classifiers) is quite consistent with such a view, because the numeral classifier initially merges with a nominal element before it re-merges into a verbal domain. The illustration in (32) is taken from Nakanishi (2007: 252).

(32)



It is important to note that when adjectival stems are followed by adverbial suffixes, they can function as event modifiers. In (33), *sizuka* appear with the adverbial suffix *-ni*, and the adjectival stem *hiro* with the suffix *-ku*.

(33) a. Taro-wa sizuka-ni hasitta.
Taro-TOP quietness-INFL ran
'Taro ran quietly.'

b. Hanako-wa zibun-no heya-o hiro-ku sekkei sita.
Hanako-TOP self-GEN room-ACC large-INFL design did
'Hanako designed her room widely.'

We hypothesize that these adverbial suffixes enable adjectives to function as event modifiers, semantically. The acceptability of the sentences in (33) supports our conjecture that the source of ill-formedness of (30) is the presence of the adnominal Infl head in the clausal domain.

3.4. Word order typology

Lastly, the current view, in which CL merges with #P, can accommodate Greenberg's (1972) observation summarized below, which is taken from Tatsumi (2021) (see also Jones (1970), and Aikhenvald (2003)).

#-CL-N	frequent	Bangla [Indic], Chinese [Sino-Tibetan], Vietnamese [Austro-Asiatic], Hmong [Hmong-Mien], Uzbek [Turkic], Hungarian [Uralic]
N-#-CL	frequent	Burmese [Sino-Tibetan], Japanese [Japanese], Khmer [Austro-Asiatic], Lahu [Sino-Tibetan], Mal [Austro-Asiatic], Thai [Tai-Kadai]
CL-#-N	rare	Ibibio [Niger-Congo]
N-CL-#	rare	Abun [Papuan], Bodo [Sino-Tibetan]
#-N-CL	*	unattested
CL-N-#	*	unattested

As stated at the outset of this paper, our analysis builds on the classifier-for-numeral analysis of classifier phrases. Since CL and #P merge first to the exclusion of N, it is predicated that the unattested orders (#-N-CLS and CLS-N-#), where N intervenes between CL and #, are ruled out.

4. Conclusion

Our uniform analysis can derive the three variants of Japanese classifier phrases in (1). The differences among the three word-orders are due to two factors: (i) the syntactic nature of CL and (ii) the timing of the merger of NP and K. When CL is weak (= an anti-labeling device), we get the pre-nominal classifier structure: when {#P, CL} merges with NP, we obtain an asymmetrical structure and hence no labeling problem arises within the nominal domain. When CL is strong, on the other hand, merging {#P, CL} and NP will create a symmetrical structure. NP moves within the nominal domain to resolve the potential labeling failure. In both cases, K is introduced into the structure after {#P, CL} and NP merge. When K is introduced earlier, merging with NP before the latter merges with {#P, CL}, we obtain a symmetrical structure: {{#P, CL}, {NP, K}}. We argued that this is the source of the floating numeral classifier configuration. According to this line of analysis, 'floating' of the numeral classifier arises whenever NP and K merge early. Let us finally reiterate that the current analysis is crucially based on the classifier-for-numeral hypothesis: CL always merges with #P, whether CL is weak or strong.

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Silent Presupposition in Japanese Clefts: Ellipsis vs. Proform[1]

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1. Introduction

The syntax of null arguments in Japanese has been hotly debated in the literature, especially in light of how they should be theoretically derived. To be more specific, they have been traditionally analyzed as a null pronoun (*pro*) (Kuroda 1965), but the literature has accumulated evidence that they should be able to be derived through ellipsis as well (Otani and Whitman 1991, Oku 1998). In this paper, we will investigate a particular instance of a null argument in Japanese, i.e. a null subject functioning as a presupposition in the cleft construction, showing that it is best analyzed by ellipsis and that the ellipsis operation is operative in the Japanese grammar.

The following example is a typical instance of the Japanese cleft construction.

(1) [$_p$ Taroo-ga yubiwa-o ageta]-no-wa Nancy-ni da.
Taro-NOM ring-ACC gave-C-TOP Nancy-to COP
'It is to Nancy that Taro gave a ring.'

Here, the nominalized clause is a presupposition part (hereafter indicated as *p*) and *Nancy-ni* 'Nancy-to' functions as a pivot. Of importance for us here is that under an appropriate context, the presupposition part can be phonologically empty as shown in (2)).

(2) a. John-wa [[$_p$ Taroo-ga yubiwa-o ageta]-no-ga Nancy-ni da to] omotteiru.
John-TOP Taro-NOM ring-ACC gave-C-NOM Nancy-to COP C think
'John thinks that it is to Nancy that Taro gave a ring.'
b. Bill-wa [[$_p$ *e*] Mary-ni da to] omotteiru.
Bill-TOP Mary-to COP C think
'Bill thinks that it is to Mary that Taro gave a ring.'

Although the presupposition part of the cleft construction within the embedded clause in (2)b) is null, it can be interpreted as *that Taro gave a ring* in the same way as the non-elided counterpart in (2)a). It has been controversial whether the silent part in (2)b) is derived via ellipsis (Saito 2004, Kizu 2005) or silent proform (*pro*) (Nishiyama, Whitman, and Yi 1995), as illustrated in (3)a) and (3)b), respectively.

(3) a. Bill-wa [~~[$_p$ Taroo-ga yubiwa-o ageta] no-ga~~ Mary-ni da to] omotteiru.
b. Bill-wa [[$_p$ *pro*] Mary-ni da to] omotteiru.

Under the ellipsis analysis in (3)a), the presupposition part has full-fledged structure, being phonologically empty; under the *pro* analysis in (3)b), the presupposition part is occupied by pro, being interpreted as that *Taro gave a ring* through, for example, co-indexation with the

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anteceded presupposition in concert with the assignment function (Heim and Kratzer 1998). Whether the presupposition part is derived via ellipsis or *pro,* we can obtain an appropriate interpretation.[2]

Given the above discussions, we will investigate several situations where the ellipsis analysis and the *pro* analysis make different predictions regarding grammaticality, showing that the former analysis must be available in deriving a null presupposition part in the Japanese cleft construction. This paper is organized as follows. In section 2, we discuss interactions between the cleft construction and the binding phenomenon, arguing for the ellipsis view. In section 3, that the pivot of a cleft construction can take a narrower scope than an element within a silent presupposition part is shown to necessitate the ellipsis analysis. In section 4, we show that the pivot can constitute an idiomatic interpretation with an element inside of a phonologically empty presupposition, which we take to indicate the availability of the ellipsis operation. In section 5, we discuss the E-type pronoun strategy, which can be a potential argument against the ellipsis view, showing that it is not operative in deriving the silent presupposition part in Japanese clefts, which in turn means that the availability of the ellipsis analysis is not undermined. Section 6 concludes the paper.

2. Argument for Ellipsis I: Binding

2.1 Condition A and Variable Binding

It has been observed that Japanese clefts exhibit binding reconstruction effects in light of Binding Condition A and variable binding, as shown in (4)a) and (4)b), respectively (Kizu 2005).

(4) a. [$_p$ Taroo-to-Hanako$_1$-ga aisatusita]-no-wa otagai$_1$-no hahaoya-ni da.
Taro-and-Hanako-NOM said.hello-C-TOP each.other-GEN mother-to COP
(Lit.) 'It is to each other's mother that Taro and Hanako said hello.'

b. [$_p$ Taitei-no dansi$_1$-ga kisusita]-no-wa soitu$_1$-no hahaoya-ni da.
most-GEN boy-NOM kissed-C-TOP the.guy-GEN mother-DAT COP
(Lit.) 'It is the guy's mother that most boys kissed.'

In (4)a), the anaphor *otagai,* which must be licensed by an appropriate c-commanding antecedent (Saito 1989, 2003), is located in the pivot position, thereby seeming not to be c-commanded by its antecedent *Taro-to-Hanako* 'Taro and Hanako' within a presupposition part, but the sentence is grammatical, satisfying the Binding Condition A. In (4)b), the anaphor *soitu* 'the guy' (Hoji 1990), which is on the surface not c-commanded by the quantificational expression *taitei-no dansi* 'most boys' within a presuppositional clause, can yield a bound variable interpretation. That (4)a) and (4)b) are grammatical with an appropriate binding interpretation leads us to conclude that the pivot of Japanese clefts exhibits a reconstruction effect into a presuppositional part.

Given the above discussions, consider the following examples.

(5) a. John-wa [$_p$ Taroo-to-Hanako$_1$-ga aisatusita]-no-ga otagai$_1$-no
John-TOP Taro-and-Hanako-NOM said.hello-C-NOM each.other-GEN

[2] In the literature, that the silent presuppositional part of Japanese clefts can yield a variety of interpretations, e.g. sloppy identity, has been adopted as an argument for the ellipsis analysis. However, such an argument has been somewhat controversial, e.g. because the overt pronoun *sore* is sometimes claimed to allow sloppy identity (Tomioka 2003, 2014, Kasai 2014, among others).

hahaoya-ni da to omotteiru.
mother-to COP C think
(Lit.) 'John thinks that it is to each other's mother that Taro and Hanako said hello.

b. Bill-wa [$_p$ *e*] otagai-no titioya-ni da to omotteiru.
Bill-TOP each.other-GEN father-to COP C think
'Bill thinks that it is to each other's father that Taro and Hanako said hello.'

(6) a. John-wa [[$_p$ taitei-no dansi$_1$-ga kisusita]-no-ga soitu$_1$-no hahaoya-ni da to omotteiru.
John-TOP most-GEN boy-NOM kissed-C-NOM the.guy-GEN mother-DAT COP C think
(Lit.) 'John thinks that it is the guy's$_1$ mother that most boys$_1$ kissed.'

b. Bill-wa [$_p$ *e*] soitu-no kanozyo-ni da to] omotteiru.
Bill-TOP the.guy-GEN girlfriend-DAT COP C think
'Bill thinks that it is his$_1$ girlfriend that most boys$_1$ kissed.'

With (5)a) and (6)a) as their antecedent, (5)b) and (6)b) are both grammatical with appropriate binding interpretations. This follows if the null presuppositional part in these examples are derived through ellipsis as follows.

(7) a. [=(5)b)]
Bill-wa ~~[$_p$ Taroo-to-Hanako$_2$-ga aisatusita] no-ga~~ otagai$_2$-no titioya-ni da to omotteiru.

b. [=(6)b)]
Bill-wa ~~[$_p$ taitei-no dansi$_2$-ga kisusita] no-ga]~~ soitu$_2$-no kanozyo-ni da to omotteiru.

Here, the presupposition part involves full-fledged internal structure despite its phonological emptiness, so that whatever accounts for the reconstruction effect in Japanese clefts should account for the grammaticality of (5)b) and (6)b). On the other hand, given that *pro* is an atomic element, it would be hard to explain the reconstruction effect in question (Wei & Yoshida 2017) if the silent part in (5)b) and (6)b) were always *pro*. This is empirically confirmed by the fact that if we replace the part in question by the overt pronoun *sore* 'it,' the sentence becomes ungrammatical, as illustrated below.

(8) a. [anteceded by (5)a)]
* Bill-wa [$_p$ sore]-ga otagai-no titioya-ni da to omotteiru.
Bill-TOP it-NOM each.other-GEN father-to COP C think
'Bill thinks that it is to each other's father that Taro and Hanako said hello.'

b. [anteceded by (6)a)]
* Bill-wa [$_p$ sore]-ga soitu-no kanozyo-ni da to] omotteiru.
Bill-TOP it-NOM the.guy-GEN girlfriend-DAT COP C think
'Bill thinks that it is his$_1$ girlfriend that most boys$_1$ kissed.'

That (8)a) and (8)b) are ungrammatical, i.e. that they cannot yield appropriate binding interpretations, indicates that binding reconstruction cannot apply into a proform, the anaphors *otagai* 'each other' and *soitu* 'the guy' being not licensed, which in turn shows that the null presuppositional subject in (5)b) and (6)b) should be derived via ellipsis.

2.2 Condition C

The above argument for the ellipsis analysis of the silent presupposition in Japanese clefts can be "replicated" in light of the Binding Condition C. Let us consider the following example (cf. Kizu 2005).[3]

(9) * [$_p$ Kare$_1$-ga hihansita]-no-wa John$_1$-no sensei-o da.
he-NOM criticized-C-TOP John-GEN teacher-ACC COP
(Lit.) 'It is John$_1$'s teacher that he$_1$ criticized.'

The ungrammaticality of (9)) indicates that the pivot of Japanese clefts, here *John-no sensei-o* 'John's teacher,' exhibits a connectivity effect with an element within the presuppsotional clause, here *kare-ga* 'he-NOM,' violaing the Binding Condition C. Given this, consider (10)).

(10) a. Hanako-wa [[$_p$ kare$_i$-ga hissini sagasiteiru]-no-ga
Hanako-TOP he-NOM desperately is.looking.for-C-NOM
Nancy-no shasin-o da to] omotteiru.
Nancy-GEN picture-ACC COP C think
'Hanako thinks that it is Nancy's picture that he is looking for desperately.'

b. *Ayaka-wa [[$_p$ *e*] John-no shasin-o da to] omotteiru.
Ayaka-TOP John-GEN picture-ACC COP C think
'Ayaka thinks that it is John$_i$'s picture that he is looking for desperately.'

With (10)a) as its antecedent, (10)b), where the presuppositional part is phonologically empty, is ungrammatical. This can be accounted for if the part in question is derived through ellipsis, as shown in (11)).

(11) Ayaka-wa [~~[$_p$ kare$_i$-ga hissini sagasiteiru]-no-ga~~ John-no shasin-o da to] omotteiru.

Specifically, that (10)b) is ungrammatical follows in light of whatever accounts for the ungrammaticality of (9)): the pivot, i.e. *John-no shasin-o* 'John's picture,' reconstructs into the elieded presuppositional clause, yielding the Binding Condition C violation.

What is of interest for us here is that if we replace the silent presupposition part in (10)b) by an overt pronoun, the violation of the Binding Condition C is salvaged as illustraed below.

(12) [anteceded by (10)a)]
Ayaka-wa [[$_p$ sore]-ga John-no shasin-o da to] omotteiru.
Ayaka-TOP it-NOM John-GEN picture-ACC COP C think
'Ayaka thinks that it is John$_i$'s picture that he is looking for desperately.'

It then follows that if the silent presuppositional clause in (10)b) is an instance of *pro*, we end up with predicting (10)b) to be grammatical in the same way as (12)), contrary to the fact. Thus, the contrast between (10)b) and (12)) argues for the ellipsis analysis of the null presupposition part in Japanese clefts over the *pro* analysis.

[3] The argument here is based on the discussions in Wei and Yoshida (2017).

3. Argument for Ellipsis II: Quantifier Scope

Another reconstruction/connectivity effect that can be adopted for the current purpose is related to quantifier scope. Specifically, Nishigauchi and Fujii (2006) observe that a QP in the pivot of a cleft sentence can take a narrower scope than a QP within a presupposition part as shown below.

(13) Hanako-wa [[$_p$ 2-ri-no gakusei-ga utatta]-no-ga J-POP-o 3-kyoku
Hanako-TOP 2-CL-GEN student-NOM sang-C-NOM J-POP-ACC 3-CL
da to omotteiru.
COP C think
(Lit.) 'Hanako thinks that it is 3 J-POPs that 2 students sang.' [3»2;2»3]

Here, the QP pivot *J-POP-o 3-kyoku* '3 J-POPs,' which is on the surface not c-commanded by the QP *2-ri-no gakusei* '2 students' within a presupposition part, can take either a narrower or wider scope. This means that the pivot of Japanese clefts can reconstruct into a presuppositional clause in terms of scope. Given this, consider the following example.

(14) [anteceded by (13))]
Taroo-wa [[$_p$ *e*] K-POP-o 3-kyoku da to] omotteiru.
Taro-TOP K-POP-ACC 3-CL COP C think
(Lit.) 'Taro thinks that *e* is 3 K-POPs.' [3»2;2»3]

Important for us here is that the availability of the inverse scope is kept even with a silent presuppositional clause: the QP pivot *K-POP-o 3 kyoku* '3 K-POPs' can take a narrower scope than a QP which is "hidden" within the clause in question, i.e. the QP *2-ri-no gakusei-ga* '2 students.' This can straightforwardly be accounted for if we derive the silent presuppositional part in (14)) via ellipsis, as shown below.

(15) Taroo-wa [~~[$_p$ 2-ri-no gakusei-ga utatta]-no-ga~~ K-POP-o 3-kyoku da to] omotteiru.

Here, the presuppositional clause has full-fledged structure, thus allowing the QP pivot to reconstruct into the part in question, yielding the relevant inverse scope.

Again, if we replace the silent presuppositional clause in (14)) by an overt pronoun, the scope reconstruction effect disappears, as illustrated in (16)).

(16) [anteceded by (13))]
Taroo-wa [[$_p$ sore]-ga K-POP-o 3-kyoku da to] omotteiru.
Taro-TOP it-NOM K-POP-ACC 3-CL COP C think
(Lit.) 'Taro thinks that it is 3 K-POPs.' [3»2;*2»3]

Here, only the surface scope is possible: the QP pivot *K-POP-o 3-kyoku* '3 K-POPs' cannot take a narrower scope than an element which is "hidden" inside of the overt pronoun. Thus, it would be mysterious why the inverse scope is available in (14)) if the silent part is occupied by *pro*, which in turn constitutes another supporting evidence for the ellipsis analysis.

4. Argument for Ellipsis III: Idiom Reconstruction

Our last argument for the ellipsis view of silent presuppositions in Japanese clefts is on the basis of the idiom reconstruction (Rottman & Yoshida 2013, Wei & Yoshida 2017, a.o.). Let us first consider the following example.

(17) a. Kinoo [tekisetuna koohosha-ni siraha-no ya-ga tatu
yesterday appropriate candidate-DAT white.feather-GEN arrow-NOM stand
yooni] nat-ta.
C.INF happen-PST
'Yesterday, it happened that appropriate candidates were nominated as a natural consequence from the situation.'

b. Siraha-no ya_1-ga kinoo [tekisetuna koohosha-ni t_1 tatu
white.feather-GEN arrow-NOM yesterday appropriate candidate-DAT stand
yooni] nat-ta.
C.INF happen-PST
'Yesterday, it happened that appropriate candidates were nominated as a natural consequence from the situation.' (Uchibori 2000:90)

(18) a. Kyoozyukai-wa Yamada-sensei-ni gakubutyoo-no
faculty.meeting-TOP Yamada-teacher-DAT department.head-GEN
siraha-no ya-o tate-ta.
white.feature-GEN arrow-ACC stand-PST
'Prof. Yamada was nominated for the department head as a natural consequence from the situation.'

b. Gakubutyoo-no siraha-no ya_1-o kyoozyukai-wa
department.head-GEN white.feature-GEN arrow-ACC faculty.meeting-TOP
Yamada-sensei-ni t_1 tate-ta.
Yamada-teacher-DAT stand-PST
'Prof. Yamada was nominated for the department head as a natural consequence from the situation.'

Both in (17)) and (18)), *siraha-no ya* 'white feature' and *tatu* 'stand' constitute an idiomatic interpretation 'nominate as a natural consequence from the situation.' What should be noted here is the fact that in (17)b) and (18)b), the former has undergone movement, leaving the latter in-situ, but the idiomatic interpretation is still available. This indicates that there are several cases where movement does not affect the availability of an idiomatic interpretation (Miyagawa 1997, Uchibori 2000).

Given the above discussions, consider the following cleft sentence.

(19) John-wa [[$_p$ kyoozyukai-ga Yamada-sensei-ni tate-ta]-no-ga
John-TOP faculty.meeting-NOM Yamada-teacher-DAT stand-PST-C-NOM
gakubutyoo-no siraha-no ya-o da to] omotteiru.
department.head-GEN white.feature-GEN arrow-ACC COP C think
'John thinks that Prof. Yamada was nominated for the department head as a natural consequence from the situation.'

Here, a part of the idiomatic expression, i.e. *gakubutyoo-no siraha-no ya-o*, is located in a pivot position of the cleft sentence, thus being dislocated from the rest part of the idiom, i.e. *tateru*

'stand' within a presuppositional clause, but the relevant idiomatic interpretation is still possible. This leads us to conclude that the pivot of Japanese clefts exhibits a reconstruction effect into a presuppositional clause in light of idioms as well as binding and quantifier scope. What is then crucial for the current purpose of this paper is the availability of the idiomatic interpretation in the following example.

(20) [anteceded by (19))]
Mary-wa [[$_p$ *e*] kenkyuukatyoo-no siraha-no ya-o da to]
Mary-TOP grad.school.dean-GEN white.feature-GEN arrow-ACC COP C
omotteiru.
think
'Mary thinks that Prof. Yamada was nominated for the dean of the graduate school as a natural consequence from the situation.'

Here, the pivot *kenkyuukatyoo-no siraha-no ya* can conctitute an idiomatic interpretation with an element inside of the silent presuppositional part, i.e. *tate-* 'stand,' and this can be accounted for under the ellipsis analysis as shown in (21)).

(21) Mary-wa [~~[$_p$ kyoozyukai-ga Yamada-sensei-ni tate-ta] no-ga~~ kenkyuukatyoo-no siraha-no ya-o da to] omotteiru.

Specifically, the pivot reconsucts into the silent presuppositional clause, which in turn ends up with permitting (20)) to yield an idiomatic interpretation in the same way as its non-elliptical "counterpart" (19)).

In summary, from section 2 to section 4, we have shown that the pivot of Japanese clefts exhibits a connectivity effect with an element inside of a silent presuppositional clause in light of binding, quantifier scope, and idiomatic interpretation, also demonstrating that such a connectivity effect disappears once the silent part in question is replaced by a pronoun, which we take to mean that the phonologically empty presuppositional clause in Japanese is better analyzed by ellipsis, which provides the part in question with full-fledged structure, allowing a pivot to reconstruct into the position.

5. A Note on the E-type Pronoun Strategy

One might argue that *pro* located in the silent presupposition of Japanese clefts is not a phonologically empty counterpart to the overt pronoun *sore* 'it,' but it is an instance of a silent counterpart of E-type pronouns (cf. Evans 1980), which are occassionally claimed to involve rich internal structure in LF (Heim and Kratzer 1998), thus potentially allowing the pivot of Japanese clefts to reconstruct into the presuppositional part.

In the literature, it has been claimed that the availability of the E-type pronoun faces what is called the Formal Link Problem (Heim 1990, Elbourne 2001, 2005). Consider the following example.

(22) a. Every woman who has *a wife* is sitting next to *her*.
b. *Every married man is sitting next to *her*. (Elbourne 2005:64)

In (22)a), the pronoun *her* is licensed, being anaphoric on its antecedent *a wife*. On the other hand, in (22)b), the pronoun in question is not licensed, making the sentence ungrammatical:

if the E-type pronoun strategy were available, the subject *every married man* should be able to provide us with an enough context for the pronoun to be licensed: the 'married-to' relation.

Given the above discussions, consider the following Japanese example.

(23) [$_p$ Hanako$_1$-ga *(danna-to) kekkonsita]-no-wa motomoto tanni kodomo-ga
Hanako-NOM husband-to got.married-C-TOP originally just child-NOM
hosikatta-kara da-kedo, kanozyo$_1$-wa imaninatte *pro* totemo aisiteiru.
wanted-because COP-though she-TOP now very.much love
(Lit.) 'It was originally just because she wanted a child that Hanako got married (to her husband), but she now love *pro* very much.'

If a silent version of E-type *pro* were available to be anaphoric on the presuppositional clause of Japanese clefts, (23)) should be grammatical even without the overt NP *danna* 'husband': the presupposition part without the NP in question should be able to provide an enough context for the E-type *pro* to be licensed, i.e. [λx.x is married to Hanako]: the Formal Link Problem. Therefore, the main claim in this paper, i.e. that the silent presuppositional part of Japanese clefts can be derived via ellipsis, should not be undermined.

6. Concluding Remarks

In this paper, we argued that the phonologically empty presuppositional part of Japanese clefts should be derived via ellipsis in light of the fact that the pivot exhibits a reconstruction effect into the part in question. To be more specific, we showed that the pivot demonstrates a connectivity effect with an element "hidden" inside of the silent presupposition part regarding binding, quantifier scope, and idioms. We also mentioned that the pivot becomes not to exhibit any reconstruction effects once we replace the silent presupposition by the overt pronoun *sore* 'it,' which we take to be an argument against the *pro*-based analysis.

Two notes are in order here. First, it seems that it has been tacitly assumed in the literature that *pro* is basically always an option in the Japanese grammar to derive null arguments, and an ellipsis option only becomes available once, e.g., there is a linguistic antecedent which can license the option, but let us reconsider (10)) and (12)), repeated here as (24)) and (25)), respectively.

(24) a. Hanako-wa [[$_p$ kare$_i$-ga hissini sagasiteiru]-no-ga
Hanako-TOP he-NOM desperately is.looking for-C-NOM
Nancy-no shasin-o da to] omotteiru.
Nancy-GEN picture-ACC COP C think
(Lit.) 'Hanako thinks that it is Nancy's picture that he is looking for desperately.'

b. *Ayaka-wa [[$_p$ *e*] John-no shasin-o da to] omotteiru.
Ayaka-TOP John-GEN picture-ACC COP C think
'Ayaka thinks that it is John$_i$'s picture that he is looking for desperately.'

(25) [anteceded by (24)a)]
Ayaka-wa [[$_p$ sore]-ga John-no shasin-o da to] omotteiru.
Ayaka-TOP it-NOM John-GEN picture-ACC COP C think
'Ayaka thinks that it is John$_i$'s picture that he is looking for desperately.'

If the *pro* option were available for (24)b), we should predict the Binding Condition C violation to be "lifted," making the sentence grammatical in the same way as (25)), contrary to the fact. Thus, it follows that if the above discussions are on the right track, that (24)b) is ungrammatical provides us with not only an argument for the ellipsis analysis but also a context where the use of *pro* is prohibited and ellipsis must be conducted obligatorily.

Second, though the pivot of Japanese clefts does not exhibit any connectivity with an element inside of the overt proform *sore* 'it,' Daiko Takahashi (p.c.) pointed out that it does exhibit connectivity regarding case, as illustrated below.

(26) a. John-wa [[$_p$ Taroo-ga yubiwa-o ageta]-no-ga Nancy-ni da to] omotteiru.
John-top Taro-NOM ring-ACC gave-C-NOM Nancy-to COP C think
'John thinks that it is to Nancy that Taro gave a ring.'
b. Bill-wa [[$_p$ sore]-ga Mary-ni da to] omotteiru.
Bill-TOP it-NOM Mary-to COP C think
'Bill thinks that it is to Mary that Taro gave a ring.'

In (26)b), the pivot *Mary* is accompanied by the dative case marker *-ni*, which should have been "assigned" by an element inside of the overt pronoun, i.e. the verb *ager-* 'give.' If we assume that the overt pronoun *sore* 'it' does not allow any reconstruction effects, it would be mysterious why case connectivity can be observed between the two elements in question. To be more specific, we observe a "peculiar" context where an element does not exhibit connectivity with respect to binding, scope, and idiom but does show case connectivity. We leave this interesting discrepancy for future research.

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The Syntactic OCP and Obliteration: With Special Reference to Indonesian men-*

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1. Introduction

It has been widely acknowledged in the literature (Saddy 1991; Cole and Hermon 1998, 2000) that, in Indonesian, the movement of an NP across a verb marked with the active voice prefix *meN*-results in obligatory omission of the prefix. Previous analyses of this distribution of the prefix include, but are not limited to, the following: a) Keenan and Comrie's (1977) NP-accessibility analysis, b) Soh's (1998) category-based relativized minimality analysis, c) Voskuil's (2000) *pro*-based analysis, d) Fortin's (2006) antipassive/demoted adjunct analysis, e) Aldridge's (2008) antipassive EPP-based analysis, f) Cole et al.'s (2008) symmetric voice-agreement analysis, and g) Sato's (2008, 2010, 2012) phase-theoretic Distributed Morphology analysis. There remain two simple questions, however, which have rarely been addressed in those previous inquires, namely, 1) what exactly the nature of this *meN*-deletion is and 2) what general principle is working behind it. This paper addresses these two questions.

I will propose that overt movement of an NP across a verb marked with the prefix *meN*-results in a doubly-filled *v*P-edge, a configuration which violates what I call the derivational Obligatory Contour (OCP) filter. Adopting recent interface-oriented approaches to such filters (Martinović 2015, 2016; Erlewine 2016), I will argue that the violation of the relevant filter is repaired at the syntax-phonology interface by obliterating the *v* node hosting the prefix from the post-syntactic representation.

This paper is structured as follows. In section 2, I will review the representative data illustrating the generalization that in Indonesian, the movement of an NP, both A′- and A-movement, across verbs otherwise prefixed with *meN*- results in its obligatory omission. In section 3, I will develop a new analysis of this generalization that attributes the obligatory omission of *meN*- to the post-syntactic process of obliteration (Arregi and Nevins 2007, 2012) of the *v* node hosting the prefix to save the violation of the derivational OCP filter at *v*P edge. In section 4, I will briefly speculate on a possible extension of my analysis to other phase edges (C, D and P) and argue for the generalized derivational ban on "doubly-filled phase edges" based on data from Wolof, Romanian and English. Section 5 is the conclusion.

2. *v*P-Mediated Successive Cyclicity in Indonesian

Let us start by reviewing the representative data in Indonesian illustrating the generalization regarding the movement-sensitive distribution of *meN*-. The generalization can be stated as in (1) (Saddy 1991, Cole and Hermon 1998, 2000); see also the other references cited at the

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beginning of section 1).

(1) The Movement-Sensitive Distribution of *meN-* In Indonesian:
* NP meN-V t_{NP}: The movement of an NP across a verb marked with *meN-* results in obligatory deletion of *meN-*.

Consider first some examples of *wh*-movement/relativization (A′-movement). In (2a), the nominal *wh*-phrase *siapa* 'who' undergoes *wh*-movement from the subject position of the embedded CP2 to the specifier of the matrix CP1. This movement path crosses the matrix verb *beritahu* 'to tell', but not the embedded verb *cintai* 'to love'. As a result, *meN-* has to be omitted from the former, but not from the latter, in conformity with the generalization in (1). (2b) involves relativization instead. The null operator OP moves across the verb *beli* 'to buy' on its way to the specifier of the relativized CP1, resulting in obligatory omission of the prefix from the verb contained within its movement path.

(2) a. [$_{CP1}$ siapa$_i$ yang Bill (***mem**-)beritahu ibu-nya
who COMP Bill AV-tell mother-his
[$_{CP2}$ yang t_i **men**-cintai Fatimah]]? (*wh*-movement)
COMP AV-love Fatimah
'Who$_i$ does Bill tell his mother that t_i loves Fatimah?'
b. Buku$_i$ [$_{CP1}$ OPi yang John (***mem**-)beli t_i itu] menarik.
book COMP John AV-buy DEM interesting
'The book$_i$ [$_{CP}$ OP$_i$ that John bought t_i] is interesting.'
(adopted from Cole and Hermon 1998: 231, 233)

Note that, as stated in (1), it is the movement of an NP that triggers the deletion of the active voice prefix from the verb contained within its path. Thus, there is no *meN-*deletion with the verb *beri* 'to give' in (3a) (with *wh*-movement) or in (3b) (with relativization) because the movements involved in these examples targets a non-nominal PP *wh*-phrase, *di mana* 'where' and *kepada siapa* 'to who'.

(3) a. [$_{PP}$ di mana]$_i$ John **mem**-beri Mary buku itu t_i?
LOC where John AV-give Mary book DEM
'Where$_i$ did John give Mary that book t_i?'
b. [$_{PP}$ kepada siapa]$_i$ Mary **mem**-beri buku itu t_i?
to who Mary AV-give book DEM
'To whom$_i$ did Mary give that book t_i?'
(adopted from Cole and Hermon 1998:232)

The generalization in (1) is further illustrated by a tight interaction of *wh*-movement possibilities with the distribution of *meN-*. Indonesian is blessed with three different strategies to form *wh*-questions – full *wh*-movement, partial *wh*-movement and *wh*-in-situ (Saddy 1991; Cole and Hermon 1998, 2000) – as shown in (4a−c), respectively.

(4) a. [$_{CP1}$ Siapa$_i$ Bill (***mem**-)beritahu ibu-nya [$_{CP2}$ yang
who Bill AV-tell mother-his COMP

Iwan (***men***-)cintai t_i]]? (full *wh*-movement)
Iwan AV-love
'Who$_i$ does Bill tell his mother that Iwan loves t_i?'

b. [$_{CP1}$ Bill ***mem***-beritahu ibu-nya [$_{CP2}$ siapa$_i$ yang Iwan
Bill AV-tell mother-his who COMP Iwan
(***men***-)cintai t_i]]? (partial *wh*-movement)
AV-love
'Who$_i$ does Bill tell his mother that Iwan loves t_i?'

c. [$_{CP1}$ Bill ***mem***-beritahu ibu-nya [$_{CP2}$ Iwan men-cintai
Bill AV-tell mother-his Iwan AV-love
siapa]]? (*wh*-in-situ)
who
'Who$_i$ does Bill tell his mother that Iwan loves t_i?'

What is important for my present purposes is that the distribution of *meN-* on the matrix and embedded verbs changes depending on which one of the three *wh*-question-forming strategies is taken. Thus, (4a) involves *wh*-movement of the nominal *wh*-phrase *siapa* 'who' from the direct object position of the embedded CP2 to the specifier of the matrix CP1. In this case, both the matrix verb *beritahu* 'to tell' and the embedded verb *cintai* 'to love' must have their active voice prefix removed. (4b), by contrast, involves wh-movement of the same *wh*-phrase to the specifier of the non-interrogative CP2 and only contains the embedded verb *cintai* 'to love' within its extraction path. As such, *meN-* must be deleted from this verb, but not from the matrix verb *beritahu* 'to tell'. Finally, (4c) involves the *wh*-in-situ configuration in which the *wh*-phrase *siapa* 'who' stays in its base-generated position, crossing neither the matrix nor the embedded verb. Accordingly, both verbs may retain the relevant prefix.

Note again that *meN*-deletion won't occur with either verb when *siapa* 'who' is replaced with a non-nominal *wh*-phrase such as *di mana* 'where', as shown in (5a–c).

(5) a. [$_{CP1}$ Di mana$_i$ Bill ***mem***-beritahu ibu-nya [$_{CP2}$ Iwan
LOC where Bill AV-tell mother-his Iwan
mem-beli emas t_i]]? (full wh-movement)
AV-buy gold
'Where$_i$ does Bill tell his mother that Iwan bought gold t_i?'

b. [$_{CP1}$Bill ***mem***-beritahu ibu-nya [$_{CP2}$ di mana$_i$ Iwan
Bill AV-tell mother-his LOC where Iwan
mem-beli emas t_i]]? (partial wh-movement)
AV-buy gold
'Where$_i$ does Bill tell his mother that Iwan bought gold t_i?'

c. [$_{CP1}$ Bill ***mem***-beritahu ibu-nya [$_{CP2}$ Iwan ***mem***-beli
Bill AV-tell mother-his Iwan AV-buy
emas di mana]]?
gold where
'Where$_i$ does Bill tell his mother that Iwan bought gold t_i?'

Turning now to A-movement and its interaction with *meN*-deletion, it is well-known in the Malay/Indonesian literature that the so-called zero passive, also known as bare passive or

passive type 2, instantiates A-movement. One example of this type of passive is shown in (6). This construction is characterized by the bare verb immediately preceded by the presence of either the 1st or 2nd pronominal subject (Dardjowidjojo 1978; Sneddon et al. 2010; Arka and Manning 1998; Cole et al. 2008 for further discussions on this construction).

(6) Zero passive/bare passive/passive type 2 (A-movement)
Ali$_i$ saya (***men**-)cubit t_i.
Ali I AV-pinch
'I pinched Ali./Ali was pinched by me.'

Evidence from control constructions indicates that the zero passive construction as in (6) involves A-movement of the direct object to the subject position in [Spec, TP]. Consider (7a−d).

(7) a. Dia datang untuk ber-cakap-cakap dengan Ali.
he come for BER-talk-RED with Ali
'He came to talk with Ali.'
b. ?* Saya mem-bawa surat itu untuk teman saya (dapat)
I AV-bring letter DEM for friend my can
(mem-)baca.
DEM-read
'I brought the letter for my friends to (be able to) read.'
c. Saya mem-bawa surat itu untuk (dapat) di-baca oleh
I AV-bring letter DEM for can PV-read by
teman saya. (morphological passive)
friend me
'I brought the letter to (be able to) be read by my friends.'
d. Saya mem-bawa surat itu untuk (dapat) kau baca. (zero passive)
I AV-bring letter DEM for can you read
'I brought the letter to (be able to) be read by you.'

(Chung 1978:46, 47)

(7a) is a baseline example to show that the subject of the purpose clause can be PRO under identity with the matrix subject *dia* 'he'. By contrast, the ungrammaticality of (7b) shows that the object of the purpose clause cannot be PRO controlled by the matrix object. Now, Indonesian has another passive construction known as morphological passive, different from zero passives, where the verb is marked with the passive voice prefix *di-* and followed by the oblique phrase marked by *oleh* 'by'. The ungrammaticality of (7c) shows that the derived subject in [Spec, TP] may be PRO controlled by the matrix object *surat itu* 'the letter'. With this in mind, (7d), an example of the zero passive construction (note the 2nd person pronominal clitic *kau* and the bare verb *baca* 'to read'), behaves on a par with (7c), in that the erstwhile object of the purpose clause can be PRO. This parallel behavior between (7c) and (7d) then indicates that the zero passive construction involves A-movement.

Having now established this point, the example in (8) shows that A-movement also triggers obligatory omission of the active voice prefix from the verb that it crossed on its way to [Spec, TP].

(8) Zero passive/bare passive/passive type 2 (A-movement)

Saya	mem-bawa	surat	itu	untuk	(dapat)	kau	(***mem**-)baca.
I	AV-bring	letter	DEM	for	can	you	AV-read

'I brought the letter (to be able to) be read by you.'

To recap, I have presented representative data from Indonesian, both from A- and A′-movement, showing that movement of an NP and only an NP across a verb otherwise marked with the active voice prefix *meN-* results in obligatory omission of the prefix. As in the introduction, there are numerous analyses of this movement-sensitive restriction offered in the literature attributing it to antipassivization, NP-accessibility, relativized minimality and voice agreement. It is not my purpose here to discuss the pros and cons of these analyses; what I would like to address here instead is the simple question why (1) holds true, a question that remains unaddressed in the individual analyses. In the next section, I advance a new answer to this question that attributes the essence of the generalization to a doubly-filled *v*P-edge filter violation and its repair at the post-syntactic component.

3. The Derivational Syntactic OCP at the *v*P-edge at the Syntax-Phonology Interface

We have seen in the previous section that the movement-sensitive distribution of *meN-* is relativized in terms of category (NP vs. non-NP). I take this observation to indicate that both the prefix and the moved NP share the categorial D-feature. Capitalizing on this property, I propose that the movement of an NP across a verb marked with *meN-* creates a doubly-filled *v*P edge, a configuration that results in the violation of the derivational syntactic OCP constraint, formalized as shown in (9).

(9) The Derivational Syntactic OCP at the *v*P Edge
Multiple elements with an identical morphosyntactic feature (e.g., D-feature) are prohibited at the *v*P edge.

I propose further, following recent interface-oriented approaches as in Martinović (2015, 2016) and Erlewine (2016), that the ill-formed representation that results from the movement of an NP across the *meN*-marked verb to the specifier of *v*P is repaired on a language-particular basis by obliterating the *v* node from the post-syntactic representation (Arregi and Nevins 2007, 2012). According to this analysis, the schematic representations of the *v*P edge after the movement of an NP to the specifier of the *v*P before and after obliteration applies should be as shown in (10) and (11), respectively.

(10) $[_{vP}$ XP[D] $[_{v'}$ *v*/*meN*-[D] ... t_{XP} ...]]
(syntactic representation → violation of the derivational syntactic OCP at *v*P edge in (9))

(11) $[_{vP}$ XP[D] $[_{v'}$ *v*/*meN*-[D] ... t_{XP} ...]]
(post-syntactic representation → repair of the OCP violation by obliteration of the *v* node)

One might ask in this connection why an external argument does not trigger *meN*-deletion under my proposed analysis. Consider (12). Here, the PP *wh*-phrase *di mana* 'where' moves to the specifier of the CP. If we assume that the external argument *kamu* 'you' starts its life in the

specifier of *v*P before it undergoes movement to the specifier of TP, then its base-position should create a violation of the derivational OCP filter, erroneously predicting that *meN-*deletion should take place in the presence of this argument at the point it is base-generated at the *v*P edge, as indicated in (13).

(12) [PP di mana] kamu mem-beli emas ini?
LOC where you AV-buy gold DEM
'Where did you buy this gold?'

(13) [*v*P External Argument [D] [*v*′ *v*/ *meN-* [D] …]]

Note that the question above arises only under the assumption of the *v*P shell theory that the external argument of a verb is base-generated in the specifier of *v*P headed by the active voice prefix. In other words, the question won't arise under the more recent tripartite verb phrase structure (see Alexiadou et al. 2006, Harley 2013, Pylkkänen 2002, among many others; see also Fujita 1993, 1996 for a much earlier antecedent to the tripartite VP theory), according to which the external argument is selected by a functional head, Voice, independently of the *v*P, as schematically represented in (14). See also Erlewine (2023) and Erlewine and Sommerlot (2023) for recent arguments, internal to Malay/Indonesian, that *meN-*marked verb phrases have the voice layer on top of the *v*P. It follows then that the active voice deletion won't occur in (12) because at no point of the syntactic derivation does the external argument create the doubly-filled *v*P-edge configuration with the moved NP, as shown in (14).

(14) [VoiceP External Argument [D] [Voice′ Voice [*v*P … [*v*′ *v*/ *meN-* [D] …]]
(no violation of the derivational syntactic OCP at vP edge)

The proposed analysis can be extended to account for Soh's (1998) observation (see also Fortin and Soh 2013) that like the active voice prefix *meN-*, other derivational prefixes such as intransitivizing *ber-* and comparative *se-* in Indonesian also obligatorily deleted when the movement of an NP crosses verbs so marked. Some representative examples illustrating Soh's observation are shown in (15) and (16).

(15) a. Apa$_i$ yang mereka (*__ber__-)harap t_i akan di-terima?
what COMP they BER-hope will PV-accept
'What$_i$ do they hope t_i will be accepted?'
b. [PP ke mana]$_i$ Ali (__ber__-)lari t_i?
to where Ali BER-run
'Where$_i$ did Ali run t_i?'

(adopted from Soh 1998:305)

(16) a. *Siapa$_i$ yang Ali se-tinggi t_i?
who COMP Ali SE-tall
'Who$_i$ is Ali as tall as t_i?'
b. Siapa$_i$ yang t_i se-tinggi Minah?
who COMP SE-tall Minah
'Who is as tall as Minah?'

c. [PP Sejak kapan]$_i$ Ali se-tinggi Minah t_i?
since when Ali SE-tall Minah
'Since when was Ali as tall as Minah?' (adopted from Soh 1998:306)

(15a) shows that the movement of an NP across the verb marked with the prefix *ber-* obligatorily leads to the deletion of the prefix. This deletion does not happen in (15b), which involves the movement of the PP *ke mana* 'where'. Similarly, the movement of an NP cannot cross the verb marked with the comparative prefix *se-*, as shown by the contrast between (16a) and (16b). The movement of the PP instead does not cause the deletion of the prefix, as indicated in (16c). The array of facts observed here follow if the movement of an NP to the *v*P edge creates the derivational OCP violation repaired by the obliteration of the v node that contains the relevant prefixes.

I conclude this section with one implication of my analysis for phasehood of unaccusative verbs. There is a long-standing debate concerning whether unaccusative *v*-heads are phases or not; see Legate (2003) for the former view and Chomsky (2000, 2001, 2004) for the latter view. Given the OCP filter in (9), if an unaccusative verb forms a *v*P phase, we predict that the movement of an NP across such a verb that is known to occur with *meN-* should result in obligatory omission of the prefix, just like the movement of the direct object NP across a transitive verb should, because the sole argument of the verb should stop in the specifier of *v*P, creating the doubly-filled *v*P configuration which in turn must be repaired by obliteration. On the other hand, if such an unaccusative verb does not form a *v*P phase, we predict that the relevant movement should not result in *meN*-deletion from the verb it crosses on its way to the specifier of TP because the moved NP does not stop by in the specifier of *v*P. The grammaticality of (17b) show that the prediction of the latter view, not the former view, is borne out.

(17) a. Tarif listrik turun.
price electricity fall
'The electricity price fell.'
b. Tarif listrik **me**-nurun.
price electricity AV-fall
'The electricity price is falling.'
(adopted from Soh and Nomoto 2011:87)

Here, the movement of the internal argument of the unaccusative verb *turun* 'to fall' to the derived subject position does not prevent the verb from being marked with the prefix.

4. Towards the Generalized Doubly-Filled Phase Edge Filter

The analysis advanced in section 3 for *meN*-deletion in Indonesian is an extention of Martinović's (2015, 2016) OCP-based theory of *wh*-questions in Wolof, an Atlantic language of the Niger-Congo family. In this language, the φ-feaure, which appears in the form of CM (a nominal class marker), may occur in the C head or its *wh*-specifier, but not in both positions, as shown in (18a, b), in a way remiscent of the English Doubly-Filled Comp Filter (Chomsky and Lasnik 1977), as illustrated in (19a, b).

(18) a. [CP k-an [C′ l-a Mussa gis]]?
CM-Q *l*- C_{WH} Mussa see

'Who did Moussa see?'

b. [$_{CP}$ Ø [$_{C'}$ Y-u Mussa gis]]?
CM.PL- C_{WH} Mussa see
'What ($_{PL}$) did Moussa see?'

(Martinović 2016:235)

(19) a. * The man [$_{CP}$ who$_i$ [$_{C'}$ that you were seeing t_i last year]] just came to see me.
b. The man [$_{CP}$ who$_i$ [$_{C'}$ Ø you were seeing t_i last year]] just came to see me.

Martinović (2016:236) proposes that the complementary distribution shown in (18a, b) arises through the morphological OCP principle active in Wolof, shown in (20).

(20) Morphological OCP Principle (OCP$_\varphi$) in Wolof: * [$_{CP}$ Y [$_{\varphi}$] [$_{C'}$ C [$_{\varphi}$] …]]
(Martinović 2016: 236)

Given the evidence documented above for syntactic OCP effects at both CP and *v*P edges, it seems natural that other candidate phases – D and P – should also exhibit a similar constraint with the prospect that there might be a generalized version of the Doubly-Filled Phase Edge Filter. Below, I point to some data from Romanian and English to suggest that this expectation is borne out, though a fuller examination of these and other data relevant to this exploration must be left for another occasion for reasons of space.

In Romanian, the definite marker can be hosted either by a noun or by an adjective, but not by both at the same time. In such a case, only the adjective is entitled to bear the relevant marker. These observations are illustrated in (21a−c).

(21) a. * frumoas-a fat-a
deautiful-$_{DEF}$ girl-$_{DEF}$
'the beautiful girl'
b. furumoas-a fată
beautiful-$_{DEF}$ girl
'the beautiful girl'
c. * furumoasă fat-a
beautiful girl-$_{DEF}$
'the beautiful girl'

(Ungureanu 2006:236)

Cornilescu (1995) proposes the Doubly-Filled Determiner Filter to the effect that only one of the definite markers in DP can be lexicalzied in Romanian (see also Abney 1987 and Giusti 1995, 1997, 2002 for a similar proposal). Assuming that the prenominal AP moves to the specifier of the DP to receive the definite marking, it is argued that (21a) is ungrammatical because the prenominal adjective creates the DP where both its head and specifier are marked with the definite marker. The violation is saved by the preference rule that the definite affix in the specifier position must be lexicalized.

Suggestive evidence for the OCP constraint at the PP phase edge comes from Collins's (2007) observation that expressions such as *there, where,* and *somewhere* cannot co-occur with the overt preposition *to* or *at*, as indicated by (22a−c).

(22) a. We went (*to) there.
b. Who went (*to) where.
c. We went (*to) everywhere/nowhere/somewhere.
(Collins 2007:4)

Collins (2007:3) proposes that the obligatory non-pronunciation of the locative preposition is due to the Doubly-Filled PP Filter. More specifically, Collins follows van Riemsdijk's (1978:41, 87) observation that R-pronouns in Dutch, such as *daar* 'there', *waar* 'where' and *ergens* 'somewhere', move overtly to the specifier of PP in Dutch and assumes that their English equivalents like the ones in (22a−c) also move obligatorily to the same position. He argues then that the PP edge (i.e., the head or the specifier of the P) must be phonetically overt but this condition applies minimally so that either the head or the specifier, but not both, are spelled-out overtly. Given this proposal, the "R-pronouns" in English trigger obligatory deletion of the pronounced *to* because the P node is obliterated from the post-syntactic representation.

5. Conclusion

In this paper, I have presented a new analysis of the movement-sensitive deletion of the active voice prefix *meN-* in Indonesian, following recent interface-based approaches to OCP-like violations (Martinović 2015, 2016; Erlewine 2016). The basic idea is that the movement of an NP to the *v*P phase edge creates a doubly-filled phase edge violating the derivational version of the OCP constraint, which is repaired by obliterating the entire *v* node that contains the prefix. I have also briefly explored the possibility that this OCP constraint may be generalized to other phase heads such as C, P and D.

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Future/Non-Future binary tense in Mandarin and Cantonese: evidence from the future-in-the-past*

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Abstract. Based on the distribution of future in the past readings and, more generally, of time adverbs in temporally/aspectually bare sentences *vs*. sentences with a futurity marker, we defend a binary tensed analysis for Mandarin Chinese and Cantonese. Not only do Mandarin and Cantonese have a silent Non-Future tense (Sun 2014, Huang 2015, and Chen & Husband 2018, Sun & Demirdache 2022, Demirdache & Sun to appear), but they also have an overt futurity marker with absolute time reference. This proposal goes against the classic pronominal tense analysis which assumes superficially tenseless languages to have a unary Non-Future tense system and, more generally, the assumption found in the literature that tenseless languages such as Guaraní (Tonhauser 2011, Pancheva & Zubizarreta 2023), but also Cantonese (Lee, Pancheva & Zubizarreta 2022), prohibit absolute future reference times.

Keywords. Non-Future, future-in-the-past, tenseless, time adverbs, Mandarin Chinese, Cantonese

1. Future time reference without futurity marking

Future reference is at the heart of core arguments for or against tensed *vs*. tenseless analyses of languages with no overt tense marking. This is so because of a striking typological property of languages lacking grammatical tense (e.g. St'át'imcets, Matthewson 2006; Guaraní, Tonhauser 2011, Pancheva & Zubizarreta 2023; Mandarin, Sun 2014; Vietnamese Bui 2019; Cantonese, Lee, Pancheva & Zubizarreta 2022) –namely, that they show an asymmetry between present and past *vs*. future time reference. Focusing on data from Mandarin and Cantonese, we compare three analyses of this asymmetry: Lee, Pancheva & Zubizarreta's (2022) tenseless analysis, a unary Non-Future tense, and a binary Non-Future *vs*. Future tense analysis. We argue that the observed asymmetry, together with the distribution of future in the past readings, falls out simply from the third proposal according to which Chinese has both a covert non-future and an overt future tense (Demirdache & Sun to appear).

1.1 Tense preliminaries

We adopt the most widely accepted neo-Reichenbachian approach to tense and aspect, developed in Klein (1994), based on Reichenbach (1947), where three times are involved in the temporal interpretation of a sentence: the eventuality time (ET), the time at which the described eventuality holds or unfolds; the topic time (TopT), the time about which the speaker makes an assertion; and the evaluation time (EvalT), the time relative to which a clause is evaluated, which plays a critical role for evaluating the truth conditions of a sentence. By default, in an independent or matrix clause, the EvalT is the utterance time (UT), while in a subordinate clause, it can also correspond to the ET of the matrix clause, or to the subjective *now* of the attitude holder when embedded in an attitude context. The ordering between the EvalT and the ET is indirectly established on the basis of the temporal information encoded in tense and aspect: tense orders the EvalT relative to the TopT, and aspect in turn orders the latter relative to the ET.

1.2 Future *vs*. non-future time reference asymmetry #1: bare sentences

An asymmetry in future *vs*. non-future time reference has been reported in many languages with no overt tense marking. This asymmetry is illustrated below. While bare root clauses allow past or present readings, future readings are generally banned in the absence of futurity marking, and this even in the presence of a future time adverb, as shown in (1) for St'át'imcet, (2) for Paraguayan Guaraní and (3) for Mandarin. Take (2a). It shows that a bare predicate such as 'bathe' can combine with a past or a present time adverb, yielding a past or a present reading. (2b), in contrast, shows that the very same bare predicate does not allow a future reading even with an overt future time adverb such as *ko'ẽro* 'tomorrow'. A futurity marker is required, such as *ta* in (1c), to make the sentence acceptable. Similarily in St'át'imcet and Mandarin, overt future marking is required for future interpretation, as shown with the paradigms in (1) to (3). The same observation has been reported in other superficially tenseless languages such as West Greenlandic 'Kalaallisut' (Shaer 2003, Fortescue 1984), Gitxsan (Jóhannsdóttir & Matthewson 2007), Washo (Bochnak 2016), Tlingit (Cable 2017) and Vietnamese (Bui 2018) a.o.

(1) *St'át'imcet* (Matthewson 2006)
- a. sáy'sez'-lhkan
  play-1SG.SUBJ
  'I played.' / 'I am playing.'
- b. *sáy'sez'-lhkan natcw.
  play-1SG.SUBJ one.day.away
  'I will play tomorrow.'
- c. sáy'sez'-lhkan **kelh**.
  play-1SG.SUBJ **MOD**
  'I will play.'

(2) *Paraguayan Guaraní* (Tonhauser 2011)
- a. Kuehe /Ko'ãga a-jahu.
  yesterday/now A1SG-bathe
  'Yesterday I bathed/was bathing
  or 'I am bathing right now.'
- b. #Ko'ẽro a-jahú.
  tomorrow A1SG-bathe
  Intended: 'Tomorrow I am going to bathe.'
- c. Ko'ẽro a-jahú-**ta**.
  tomorrow A1SG-bathe-**PROSP**
  'Tomorrow I am going to bathe.'

(3) *Mandarin* (Sun 2014)
- a. Zuótiān/Jīntiān Lùlu hěn jǔsàng.
  yesterday/today Lùlu very frustrated
  'Yesterday Lùlu was very frustrated.'
  or 'Today, Lùlu is very frustrated.'
- b. *****Míngtiān Lǐsì hěn jǐnzhāng.
  tomorrow Lǐsì very nervous
  Intended: 'Tomorrow, Lùlu will be very frustrated.'

c. Míngtiān Lùlu **huì** hěn jǔsàng.
tomorrow Lulu **MOD** very frustrated
'Tomorrow, Lùlu will be very frustrated.'

In sum, tenseless languages exhibit a very clear temporal asymmetry: while *past* time adverbs such as 'yesterday' can shift the time reference of bare root clauses to *past* times, *future* time adverbs such as 'tomorrow' fail to shift the time reference of bare root clauses to *future* times.

2. Tenseless *vs*. tensed analyzes of the future/non-future asymmetry

Tonhauser (2011) develops a tenseless analysis of temporal reference in Paraguayan Guaraní. On the basis of temporal contrasts such as (2), Tonhauser (2011: 285) concludes that Paraguayan Guaraní is "a language where temporal reference is contextually restricted to non-future times…", and puts forth a discourse restriction reformulated by Pancheva & Zubizaretta (2023) as in (4), guaranteeing that topic times in matrix clauses must denote non-future times.

(4) Absolute future reference times [=TopTs] are not contextually available.
Tonhauser 2011 (from Pancheva & Zubizaretta 2023: 13)

2.1 Evaluation time shift

Pancheva & Zubizaretta (2023, henceforth P&Z) put forth an original tenseless alternative analysis of Paraguayan Guaraní, which they generalize to Cantonese in Lee, Pancheva & Zubizaretta 2022, henceforth, LP&Z). Their proposal is rooted in a parallel drawn between the constraints holding of the temporal reference of bare root clauses in tenseless languages and those holding, in languages like English, of the narrative present illustrated in (5):

(5) Fifty eight years ago to this day, on January 22, 1944, just as the Americans *are* about to invade Europe, the Germans *attack* Vercors.
Schlenker (2004)

P&Z' proposal is to generalize the analysis of the narrative present to tenselessness in Paraguayan Guaraní: a non-present past reading arises –be it in (5) or in the Guaraní sentence (2a)– when the speaker's perspective shifts to the past. This is achieved via a mechanism that shifts the EvalT backwards from the actual speech time to a salient past time.

Their assumption is that in languages like English, EvalT shift is limited to narrative contexts, while in languages like Guaraní or Cantonese, EvalT shift can apply freely outside of narrative contexts. Crucially, however, this is the case only for backward EvalT shift into the past. Forward EvalT shift into the future is restricted to narrative contexts across all languages, be it English, Guaraní or Chinese, as stated in (6). This constraint derives the discourse restriction in (4) on tenseless languages like Guaraní or Chinese:

(6) 'Future reference is precluded because a future t_n [evaluation time] may not be posited for a free-standing clause.'
Pancheva & Zubizaretta (2023:10)

As P&Z stress, their analysis is truly tenseless in that it presumes neither a syntactic TP projection, nor lexical tense. In particular, there is only one temporal coordinate represented in

the syntax as a temporal pronoun, but this pronoun is not the TopT hosted under T° as is the case on the classic pronominal analysis of tense (see §2.2 below), but rather the EvalT, generated in [Spec, CP] as shown in (9). The analysis makes use of two contexts: speech context (*s*) and narrative context (*n*). The pronoun standing for the EvalT can thus either denote the speech time t_s ((7a)), or be shifted backwards to denote a salient past time: the narrative time t_n ((7b)).

(7) a. $[\![pro]\!]^{g,s,n} = t_s$

b. $[\![pro]\!]^{g,s,n} = t_n$ (narrative present mode)

(Pancheva & Zubizaretta, 2023: 9)

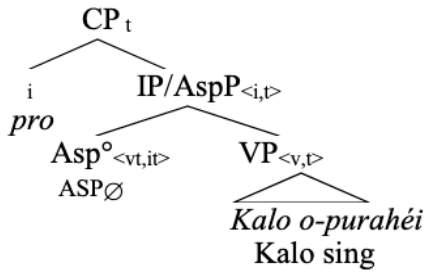
(9) illustrates the syntactic structure of the Guaraní bare sentence in (8), and (10) gives its semantic derivation.

(8) *Paraguayan Guaraní*

Kalo o-purahéi {(kuehe) / (ko'ãga) / (#ko'ẽrõ)}.
Kalo 3-sing yesterday / now / tomorrow

a. ✓ 'Kalo sang (yesterday).'
b. ✓ 'Kalo is singing (now).'
c. *'Kalo will sing tomorrow.'

(9) *Tenseless EvalT shift*



(10) a. $[\![ASP_{\varnothing}]\!] = \lambda P_{<v,t>}\lambda t\ \exists e[P(e) \wedge \tau(e)\ \text{AT}\ t]$ (t AT t' iff $t \subseteq t' \vee t' \subset t$)

b. $[\![pro]\!]^{s,n} = t_s$ or t_n, $t_n < t_s$

c. $[\![AspP/IP]\!]^{s,n} = \lambda t\ \exists e[sing(e)(kalo) \wedge \tau(e)\ \text{AT}\ t]$

d. $[\![CP]\!]^{s,n} = 1$ iff $\exists e[sing(e)(kalo) \wedge \tau(e)\ \text{AT}\ t_s\ (\wedge t_s \subseteq t_s)]$ or

$\exists e[sing(e)(kalo) \wedge \tau(e)\ \text{AT}\ t_n\ (\wedge t_n \subseteq$ the day before the day of $t_s)]$

As shown in (9), bare sentences are analyzed as projections of Asp° (AspPs). Asp° takes two arguments: a VP denoting a property of events and a time, corresponding to the pronominal EvalT. The denotation of the phonologically null Asp° in (10a) constrains the running time of the event ($\tau(e)$) denoted by the VP to overlap the EvalT *t*, thus yielding either a perfective viewpoint ((8a), if ($\tau(e) \subset t$)), or a progressive viewpoint ((8b), if ($t \subset (\tau(e))$. On this proposal,

aspect thus relates the ET directly to the EvalT: there is neither syntactic tense (no T(P) projection), nor semantic tense (no TopT variable).

The lexical entry for the EvalT *pro*, given in (10b), stipulates that *pro* either coincides with the speech time t_s, yielding a present reading, or precedes t_s, triggering a past-shifted reading. The stipulation ($t_n < t_s$) thus ensures that t_n can only be shifted to the past, thus excluding the future shifted reading in (8c).

2.2 The covert Non-Future tense hypothesis

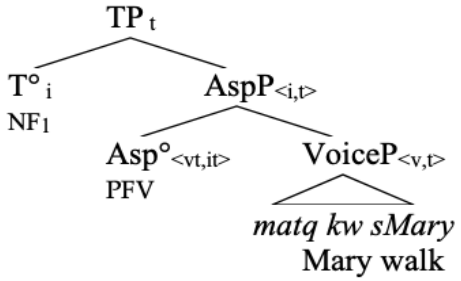
Let's now compare the EvalT shift analysis in (9)-(10) with Matthewson's (2006) seminal pronominal tense analysis of St'át'imcets, which has been extended to a variety of languages with no overt tense marking, including a.o Mandarin (Sun 2014, Huang 2015, and Chen & Husband 2018), Gitxsan (Jóhannsdóttir & Matthewson 2007) and Vietnamese (Bui 2018).

To account for the asymmetry between future and non-future time reference in St'át'imcets root clauses (illustrated in (1) above), Matthewson posits a covert Non-Future tense that restricts the time reference of bare sentences in St'át'imcets to past and present times – that is, to times preceding or coinciding with the EvalT (TopT ≤ EvlT).

On this proposal, the St'át'imcets sentence in (11) has the syntactic representation in (12), where the tense head hosts a null temporal pronoun corresponding to the TopT, with the lexical entry in (13).

(11) *St'át'imcets*
matq kw s-Mary
walk DET NOM-Mary
'Mary walked / Mary is walking.'

(12) *Covert Non-Future tense*



(13) $[\![NF_1]\!]^{g,c} = g(1)$; defined only if $g(1) \leq t_c$.

(14) a. $[\![TP]\!]^{g,c} = \lambda w.\exists e[\text{walk}(e)(w) \ \&\ \text{agent}(\textit{Mary})(e)(w) \ \&\ \tau(e) \subseteq g(1)]$ (where $g(1) \leq t_c$).
b. There is an event *e* of Mary walking, whose running time is included in the contextually salient non-future time $g(1)$.

The lexical entry for Non-Future tense in (13) constrains the choice of possible referents for the TopT variable (that is, $g(1)$ in (13)): the latter is restricted to being a non-future time, it cannot denote a time falling after t_c (the EvalT). Asp° in (12) is headed by a covert perfective (PFV) morpheme, which requires the running time of Mary's walking ($\tau(e)$) to be included

within the TopT (that is, *g*(1)). The resulting denotation for the Non-Future tense sentence in (11) is given in (14).

Summarizing. Both the EvalT shift and the covert Non-Future tense analyses have in common, firstly, that they project a single temporal coordinate in the syntax, and secondly, that this temporal pronoun is restricted to denoting either the UT or a contextually salient past time. But while on the covert Non-Future tense hypothesis, this coordinate is the TopT generated under T°, on the EvalT shift hypothesis, this coordinate is the EvalT generated higher up, in the CP domain.

We now turn to empirical arguments put forth by P&Z for Guaraní, and extended by L&PZ to Cantonese, to distinguish these two hypotheses. We restrict ourselves, however, here to discussing only one of the two core arguments put forth by these authors against tensed analyzes of superficially tenseless languages: the distribution of future in the past readings.[1] We present data from Mandarin and Cantonese which suggest a different take altogether on how to explain the future *vs*. non-future asymmetry in the time reference of root clauses, at least for Chinese.

3. Future-in-the-past: a challenge for Non-Future tense?

Consider the Cantonese sentence in (15), which shows that the temporal adverb *camjat* 'yesterday' is incompatible with the modal future marker *wui* in Cantonese. This is unexpected on either a non-future or a past tense analysis of Cantonese. To see why, suppose that tense in (15) ranges over past times. The adverb *camjat* will then restrict the TopT to falling within the day before the day of utterance, and the modal *wui* in turn will place the singing ET in the future of this past TopT. As sketched in (17), the resulting ordering is that of a relative future since the EV is ordered in the future of the past TopT, but remains unordered relative to UT. (15) should thus mean 'Yesterday at some point, Aaming was going to sing', but this reading is not available. Instead, (15) is ill-formed. L&PZ take the unavailability of the intended future in the past reading to show that Cantonese has no covert tense, be it non-future or past. The same observation carries over to Mandarin: combining a past time adverb with the futurity marker *hui* also leads to ill-formedness, as shown in (16). The Mandarin counterpart to (15), given in (16), is also bad.

(15) *Cantonese*

# Aaming	**camjat**	wui	coenggo
Aaming	**yesterday**	will	sing

Intended: 'Aaming was going to sing yesterday.'

(Lee, P&Z 2022:16)

(16) *Mandarin*

# Lǐsì	**zuótiān**	huì	chànggē
Lǐsì	**yesterday**	will	sing

Intended: 'Lǐsì was going to sing yesterday.'

(17) Non-Future tense: ---TopT----UT--->
Modal *wui*/*huì* (yields a relative Future): ---TopT---(ET)--UT--(ET)--->

[1] The other important argument involves the availability of temporal backshifting across sequences of clauses, see Sun & Demirdache (2023) for extended discussion.

Importantly, although future-in-the-past readings are ruled out in independent clauses, they become available in embedded contexts in both Cantonese and Mandarin. Take (18) for instance. Both (18a) and (18b) are well-formed on a future-in-the-past reading, reporting that Laulau predicted a past state of being 'cold' holding yesterday, at a past time later than the past time of saying. Indeed, as the contrast between (19) and (20) further shows, the restriction on future-in-the-past readings in narrative contexts in Cantonese is confined to the initial clause of a narrative. The only difference between the well-formed (19) and the ill-formed (20) is the position in the narrative sequencing of the clause containing the combination [future modal + past-time adverb]: second position in (19) *vs*. discourse initial in (20).

(18) *Cantonese*

a. Soengjatzau LauLau gong gwo camjat **wui** hou dung
last.week LauLau say PFT yesterday will very cold
'Last week, Laulau said that it **would** be very cold yesterday.'

Mandarin

b. Shàngzhōu, Lùlu shuō zuótiān **huì** hěn lěng.
last.week Lùlu say yesterday will very cold
'Last week, Lùlu said that it **would** be very cold yesterday.'

(19) Ngo camjat indou jat-po daisyu, Batgwo po syu **zaulai** **jiu** lam[2]
I yesterday see one-CL big.tree but CL tree soon need fall
'I saw a big tree yesterday, but it **was going to** fall.'

(Lee, P&Z 2022:16)

(20) a. # po syu camjat zaulai jiu lam
CL tree yesterday soon need fall
Intended: 'The tree was going to fall yesterday.'

(Lee, P&Z 2022:16)

L&PZ impute these contrasts to the constraint on EvalT shift given in (21) (cf. Anand & Toosarvandani 2018, Pancheva & Zubizarreta 2023). (21) stipulates that the EvalT of either an independent clause σ or an initial clause σ_1 can never be shifted to a time earlier than the ET of the clause under consideration (σ/σ_1).

(21) *Constraint on EvalT shift*[SEP]
(in a free-standing clause σ or the initial clause σ_1 in a narrative $\sigma_1\sigma_2$)
EvalT shift in σ/σ_1 may not precede the ET in σ/σ_1: $t_n \not\prec$ ET.

(Lee, P&Z 2022:15)

Since either a non-future or a past (e.g. Sybesma 2007, He 2020 for Chinese) analysis allows future in the past time reference, while the EvalT shift analysis excludes this possibility, P&Z conclude that future in the past is a diagnostic for deciding between these competing analyses for a given superficially tenseless language: its availability (discourse initially) would

[2] Note that the modal in (17) is *zaulai jiu* 'soon need', instead of *wui*. If it is the narrative contexts that licences a future-in-the-past readings, the modal *wui* should also be felicitous in place of 'zaulai jiu'.

favor a tensed (be it past or non-future tense) analysis, while its unavailability would favor a tenseless analysis.

We will offer in §4 below an alternative account for why *wui/hu* is compatible with a past time adverbial, though crucially only in embedded or non-initial narrative contexts. Consider first the paradigms in (22) and (23). Notice that even if the past time adverb *camjat* 'yesterday' in (22a) (repeated from (15) above) is replaced by the present time adverb *jigaa* 'now' as in (22b), the resulting sentence remains degraded. (22b) cannot mean 'Aaming is going to sing now'.(22c) in contrast, with a future time adverb, is perfectly felicitous. The paradigm in (23) makes the same point: sentences with *wui loyu* 'will rain' modified by a past (23a) or a present (23b) adverb are equally bad. The incompatibility of a present time adverb with *wui* in (22b) and (23b) does not follow on the reasoning of LP&Z, since there is no backward EvalT shift in this case: the EvalT pronoun merely denote the speech time, and the EvalT shift constraint in (21) that rules out (22a) and (23a) is thus inapplicable. (22b) and (23b) should then be well-formed, contrary to fact. The only time adverbs that can co-occur with *wui* are those denoting future time intervals, as the case in (22c) and (23c).

(22) a. #Aaming camjat wui coenggo
Aaming yesterday will sing
Intended: 'Aaming was going to sing tomorrow.'
b. ?? Aaming jigaa wui coenggo
Aaming now will sing
Intended: 'Aaming is going to sing now.'
c. Aaming tingjat wui coenggo
Aaming tomorrow will sing
'Aaming will sing tomorrow.'

(Adapted from LP&Z 2022)

(23) a. #Camjat wui oyu
yesterday will rain
Intended: 'Yesterday it was going to rain.'
b. #Jigaa wui loyu
now will rain
Intended: 'Now it will rain.'
c. Tingjat wui loyu
tomorrow will rain
Intended: 'Tomorrow it will rain.'

The same paradigm is found in Mandarin, where we see that *huì* 'will' can combine with the future time adverb *míngtiān* 'tomorrow", yielding a future reading (24c), but cannot combine with either a present or a past time adverb: (24a-b) are ill-formed, just like their counterparts in Cantonese.[3]

[3] We have chosen the verb *xiàyǔ* 'rain' to illustrate Mandarin in (24), because *huì* in Mandarin is ambiguous: it can have either a modal future meaning, or the lexical meaning 'be good at'. Consequently, while *huì chànggē* 'HUÌ sing' in Mandarin can be interpreted as 'be good at singing', *huì* in *huì xiàyǔ* 'HUÌ rain' can only yield a well-formed sentence on its modal future reading.

(24) a. # Cǐshícǐkè/Xiànzài **huì** xiàyǔ
this.moment/now will rain
Intended: 'Now, it is going to rain.'
b. # Zuótiān **huì** xiàyǔ
yesterday will rain
Intended: 'Yesterday it was going to rain.'
c. Míngtiān **huì** xiàyǔ
tomorrow will rain
'It will rain tomorrow.'

The constraint on EvalT shift in (21) fails to capture the contrast reported above for both Cantonese and Mandarin. We need a uniform explanation of the ill-formedness of *wui*/*huì* with past/present adverbs *vs*. the well-formedness with a future adverb. In what follows, we offer an alternative account for the distribution of future-in-the-past readings in both Cantonese and Mandarin (cf. Demirdache & Sun, to appear).

4. Proposal

Table 1 recapitulates the two generalizations underlying the observed asymmetries in the expression of time reference in root clauses in Mandarin and Cantonese.

Root clauses	**Past/Present time Adv.**	**Future time Adv.**	
		Schedulable	Unschedulable
bare	✓	✓	✗
wui/*huì*	✗	✓	✓

Table 1 Asymmetries in the expression of time reference

Sentences with *huì*/*wui* are compatible with future time adverbs but not past or present time adverbs, as established in §3. In contrast, sentences in their bare form can be modified by either past or present adverbs, but not future time adverbs (§1.2) –with one notable exception: unless the predicate denotes a schedulable event, as argued in detail by Sun (2014), and illustrated in (25).[4]

(25) a. The plane lands at 5 AM. → Plannable
b. Xiǎoxīn jīnwǎn dào. → Plannable
Xiaoxin tonight arrive
'Xiaoxin will arrive tonight.'
c. Xiǎoxīn yǐhòu *(huì) wàngjì Mǎlì. → Not plannable
Xiaoxin later will forget Mary
'Xiaoxin will forget Mary.'

[4] As extensively argued by Sun (2014), the generalization is that bare sentences in Mandarin without an overt Futurity marker (*huì*) can describe future oriented eventualities, but only if they can be construed as futurates — that is, as future eventualities that are planned at UT.

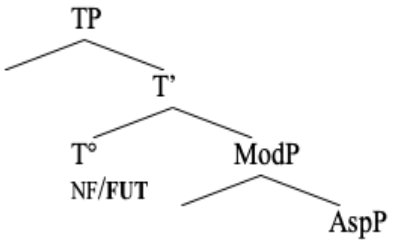
4.1 Absolute future time reference

Recall that it was the incompatibility of bare sentences with future time reference that led Matthewson (2006) and Sun (2014) to posit a Non-Future tense for St'át'imcet and Mandarin in the first place (§2.2): the hypothesis that there is a covert Non-Future tense restricting the TopT to times that precede/coincide with the EvalT automatically derives this incompatibility. Likewise, the hypothesis that *wui/hu* encodes as part of its meaning a semantic future restricting the TopT to times that follow the EvalT (EvalT < TopT) automatically derives the incompatibility of *wui*/*huì* with past/present time adverbs in matrix clauses.

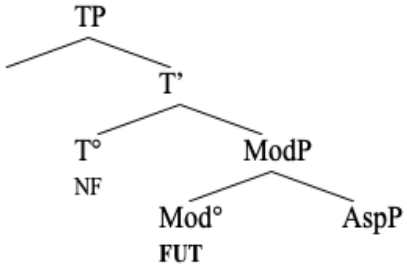
Putting together the conclusion that *wui/huì* encodes a semantic future with the Non-Future tense hypothesis that Sun (2014) proposed for Mandarin, we conclude that Mandarin, and by hypothesis, Cantonese, have a binary tense system. That is, both Mandarin and Cantonese have a covert Non-Future tense and at least an overt morpheme (*wui*/*huì*) which encodes absolute future (see also Li 1990, Lin 2006, Huang 2015).

We compare below our proposal with Matthewson's (2006) classic Non-Future tense analysis. Crucially, on our proposal ((26a)), both Future and Non-Future are tenses generated under T° and constraining the temporal ordering of the EvalT and TopT relative to e.o. In contrast, on Matthewson's Non-Future tense hypothesis ((26b)), there is only one tense that can be generated under T°, namely, NF. The EvalT is thus always constrained to either follow or overlap the TopT. Futurity is then given by the modal operator FUT, generated below T°, under Mod°. FUT forward shifts the ET in the future relative to the present/past TopT. As argued by P&Z, this analysis yields a relative future tense interpretation, thus incorrectly predicting future-in-the-past readings, unavailable in fact for root clauses, be it in Guaraní, St'át'imcet, or Cantonese (cf. L&PZ 2022). In contrast, our binary tense proposal correctly rules out future-in-the-past readings: sentences containing *wui/huì* are ill-formed when modified by a past or present time adverb because the latter denote intervals that do not fall entirely after the EvalT and, as such, do not fit the domain of future tense.

(26) a. Binary NF/FUT tense



b. Unary NF tense



(cf. Matthewson 2006:691)

(27) a. NF: TopT ≤ EvalT
FUT: EvalT < TopT
→Future-in-the-past **ruled out**

b. NF: TopT ≤ EvalT
FUT: TopT < ET
→ Future-in-the-past **possible**

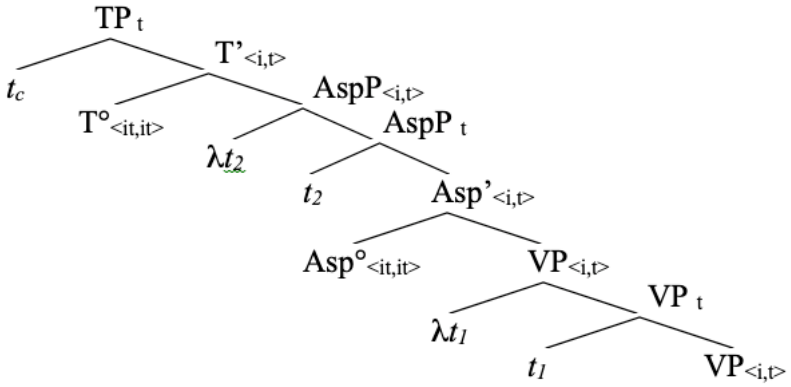
It should be noted that binary Non-Future *vs.* Future tense systems are overtly attested in languages such as Karitiana, where both tenses are overtly realized (Storto 2010, 2013, Ferreira & Müller 2019). (28a) with the overt non-future marker '*t*' yields either past or present readings, while (28b) with the overt future marker '*j*' yields future readings.

(28) a. Taso Ø-na-aka-**t** i-kat-Ø[t SEP]
man 3-DECL-COP-**NF** PART-sleep-ABS.AGR.
'The man is sleeping/slept.'
b. Taso Ø-na-aka-**j** i-kat-Ø[t SEP]
man 3-DECL-COP-**FUT** PART-sleep-ABS.AGR.
'The man will sleep.' (Storto 2010)

4.2 Relational tense

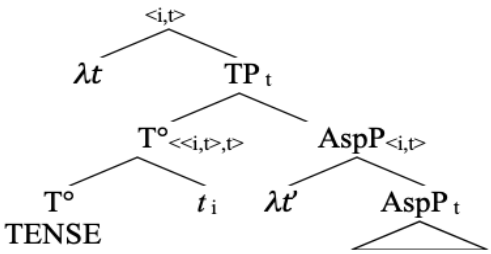
Following Demirdache & Sun (to appear), we adopt a relational approach to tense (cf. von Stechow 1995, Stowell 1995, Ogihara 1996, Demirdache & Uribe-Etxebarria 1997 a.o.), and in particular, the syntactic model developed in Demirdache & Uribe-Etxebarria (1997, 2014 and references therein, henceforth D&UE), which is built on two core assumptions. Firstly, building on Klein (1994), the relational approach developed for tense is extended to aspect: aspect, just like tense serves to relate (order) two times and, moreover, the times related by aspect (TopT, ET), just like those related by tense (TopT, EvalT), are syntactically represented. Secondly, just like regular individual denoting arguments, time arguments are projected in argument positions –that is, in the specifier positions of the relevant heads: T°, Asp°, and V° (assuming a phrase structure with multiple specifiers). Thus, as shown in (29) from Demirdache & Sun (to appear), T° in (29) does not itself denote the TopT as is the case on the classic pronominal tense hypothesis. Rather, T° takes AspP, a predicate of times to yield a new predicate of times. Asp° does exactly the same: it takes the VP and gives a predicate of times. This yields the representation in (29) where the three temporal coordinates involved in calculating time reference are syntactically projected: the highest time argument (t_c), projected in [Spec, TP], corresponds to the EvalT, the time argument in [Spec, AspP] (t_2) corresponds to the TopT, and the lowest time argument (t_1), projected in the (highest) specifier of VP, corresponds to the ET.

(29) Relational Tense and Aspect

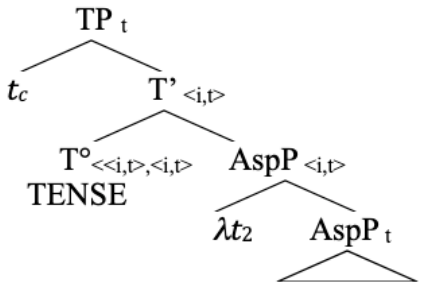


Importantly, this proposal differs not only from the classic pronominal approach where the **TopT is a head generated under T°** (cf. (12) above), but also from other relational approaches, as represented by the syntactic structure in (30a), slightly adapted from von Stechow & Beck (2015), where time arguments are **heads adjoined to T°**. On our approach, as shown in (30b), time arguments are not base-generated under or adjoined to temporal heads (T° or Asp°), but rather in standard argument positions. Just like any regular argument, time arguments are XPs, generated in the specifier positions of the relevant heads.

(30) a. Time-denoting arguments generated as heads adjoined to T°
(von Stechow & Beck, 2015, Ogihara 1996, Ogihara & Kusumoto 2020)



b. Time-denoting arguments generated in argument positions (Spec, TP/AspP)
(Demirdache & Sun To appear)



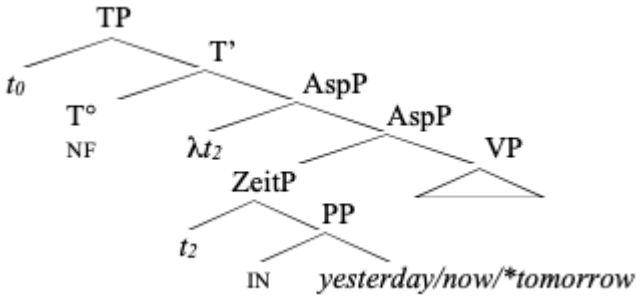
As we shall see directly below, the assumption that time arguments are time denoting XPs occupying standard argument positions –that is, ZeitPs in Stowell's (1996) terminology– allow us to analyze time adverbs as temporal modifiers of the TopT.

4.3 Binary Non-Future/Future tense

Let us now see how the above proposals account for the distribution of time adverbs in Mandarin/Cantonese sentences with *vs*. without *huì/wui*.

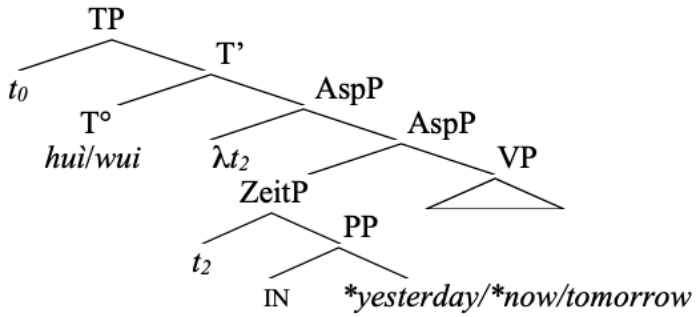
In independent or matrix clauses, the default EvalT is the UT (t_0 in (31)). When the main predicate of the clause is bare –that is, there is no *huì/wui* or other future-oriented marker in the sentence– TP in (31) is by hypothesis headed by a covert non-future T° ordering the TopT (t_2) either in the past or the present relative to UT (t_0). Assuming that the TopT is a *Zeit*P generated in Spec AspP, we analyze time adverbs as PP temporal modifiers of the TopT and, as such, base-generated adjoined to the TopT, as shown in (31). The PP time adverbs *yesterday/now* further restrict the reference of the non-future TopT to fall either within the day before the day of speech, or within the speech time interval. Modification of the non-future TopT by *tomorrow*, however, is illicit since the non-future TopT cannot fall within a future time –namely, within the day following the day of speech.

(31) Matrix Non-Future tense: *[bare predicate + future adverb]



In contrast, when *huì/wui* occurs in an independent/matrix clause, it is generated under T°, where it serves to order the TopT (t_2 in (32)) in the future relative to UT ($t_0 < t_2$). The reference of this future TopT, generated as a ZeitP in Spec AspP, can further be restricted to fall within the interval denoted by a future time denoting DP/*Zeit*P such as *tomorrow* or *next day*, but not a past or present time adverb such as *yesterday* or *now*. The cooccurrence of the futurity marker *huì/wui* with a past or present time adverb is thus automatically ruled out in an independent clause, and no future-in-the-past reading can be generated.

(32) Matrix FUT: *[*hui/wui* past/present adverb]



4.4 Binary tense in embedded contexts

Let us now turn to Mandarin and Cantonese embedded clauses containing *huì/wui*, which crucially allow future-in-the-past readings, as illustrated in (33), repeated from (16) above.

Recall that the relational approach to tense and aspect in (29) makes syntactically visible the three temporal coordinates involved in calculating the time reference of a clause –unlike the pronominal approach which only projects the TopT ((12)), or relational approaches which do not represent the ET argument ((30)). Projecting the ET in the syntax allows us to straightforwardly account for the availability of future-in-the-past readings in complement clauses on the standard assumption that the EvalT in subordinate clauses can shift into the past when it is c-commanded –and, as such, syntactically and semantically bound– by the matrix past ET (Enç 1987, Stowell 1993, Ogihara 1996).

(33) *Cantonese*

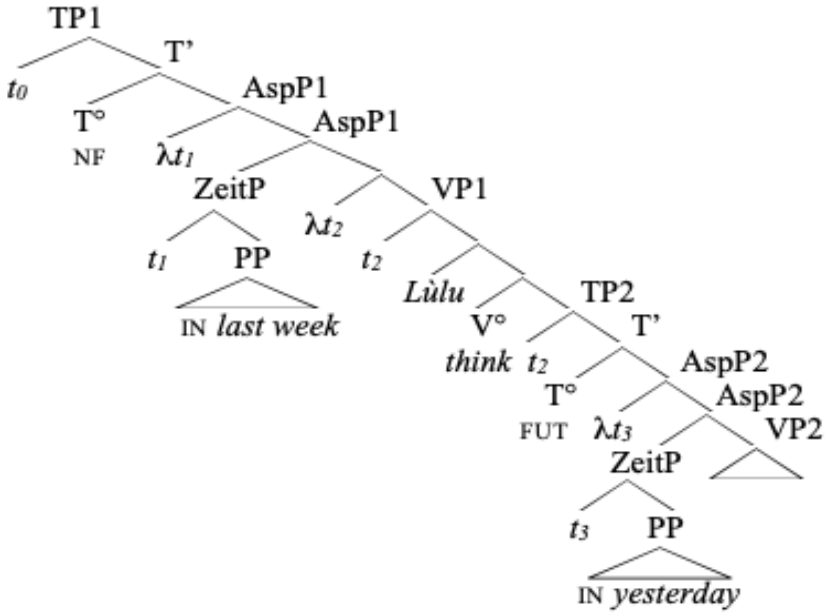
a. Soengjatzau LauLau gong gwo camjat **wui** hou dung
last.week LauLau say PFT yesterday will very cold
'Last week, Laulau said that it **would** be very cold yesterday.'

Mandarin

b. Shàngzhōu, Lùlu shuō zuótiān **huì** hěn lěng.
last.week Lùlu say yesterday will very cold
'Last week, Lùlu said that it **would** be very cold yesterday.'

The syntactic structure associated with (33) is given in (34). The time serving as the EvalT of the subordinate TP (TP2), is base-generated in Spec TP2, from where it is c-commanded and bound by the matrix past ET (t_2). The reference of the subordinate TopT (t_3), base-generated in Spec AspP, is restricted by the temporal adverb *yesterday* to fall within the day before the day of speech. The semantic future *huì/wui* in the subordinate clause moreover places this **past subordinate TopT** (t_3) in the **future** of the **past subordinate EvalT** ($t_2 < t_3$), thus yielding a relative future interpretation, where t_3 is ordered in the future relative to t_2, but remains unordered relative to t_0. Since the derivation allows for the temporal orders in (35), a future-in-the-past reading is correctly predicted to be possible.

(34)



(35) a. ET1= EvalT2 (t_2) < TopT2 (t_3) < UT → Future-in-the-past reading
b. ET1= EvalT2 (t_2) < UT (t_0) < TopT2 (t_3)

5. Conclusion

We have argued for a two-way Non-Future/Future tense contrast in Mandarin and Cantonese. Non-Future tense is phonologically null, and restricts the TopT to times preceding or overlapping the EvalT. Mandarin and Cantonese have (at least) a morpheme *huì/wui* encoding a semantic future –that is, restricting the TopT to times following the EvalT. This proposal, together with a relational approach to tense and aspect where, not only the TopT, but also the EvalT and the ET, are syntactically projected in standard argument positions as XPs that can be restrictively modified by PP time modifiers (that is, time adverbs) explains why future-in-the-past construals are prohibited in matrix, but not subordinate, contexts. The prohibition

against future-in-the-past readings is suspended when the EvalT can shift into the past via binding by a c-commanding past matrix ET, as is typically the case in embedded contexts.

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A Set-Merge Account on Relative Clause Adjunction*

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1 Introduction: Open Questions and Approaches

In the latest model of minimalist syntax, Merge can apply freely (Free Merge) as a means of structure building operations (hereafter referred to as SBOs). Meanwhile, syntactic derivation proceeds in a determinate manner (Chomsky 2019 et seq), ensuring that unwanted outputs are ruled out by third-factor toolkits (e.g., efficiency) as well as language specific constraints (e.g., Θ-Theory). Minimal Yield (MY) is a specific form of such toolkits, designed to guarantee efficiency in the outcomes of Merge: the number (*n*) of accessible terms in Workspace (WS) increases by one.

(1) a. External Merge (EM) (P, Q, WS[=P, Q]) → WS′ = [{P, Q}, ~~P~~, ~~Q~~] (*n* = 2→3)
b. Internal Merge (IM) (P, Q, WS[={P, Q}]) → WS′ = [{Q_2, {P, ~~Q_1~~}}] (*n* = 3→4)

The strikethrough inscriptions are no longer minimal to computation Σ compared with other structurally identical inscriptions, making them inaccessible for further SBOs. This approach aims to incorporate syntactic inaccessibility into the reasoning of third-factor efficiency, entailed as a consequence of applying Set-Merge. It appears advantageous in that it does not require any special devices independent from Merge, such as Pair-Merge and Transfer. This is particularly true from the perspective of Chomsky's (2021, *Gengo Kenkyu*) model, in which SEM/PHON can access narrow syntax throughout derivation, termed Dynamic Access in the sense of Shim (2022).

However, I find it still necessary to debate the following questions to fully resolve the issue.

(2) *Open Questions Regarding MY*
(i) MY's status as a universal restriction on SBOs
(ii) Identifying the notion of (in)accessibility endorsed by Merge

Concerning the first question, it is undeniable in the tenet of current minimalist syntax that Merge must be the simplest. However, the interpretive properties attested in the outputs of Merge are far from homogeneous. Needless to say, the canonical asymmetries such as A/A′, semantic-/categorial selection, and complement/adjunct have necessitated the subdivision of forms of Merge into categories such as EM or IM, and Set or Pair. Thus, it is still uncertain whether MY can be upheld as originally defined when we examine such discrepancies closely. On the other hand, regarding the second question, it is a particularly intriguing question whether the account of inaccessibility by MY-ruled Merge can be generalized to other cases deemed strictly inaccessible by Σ. One such controversial case is the inability to extract from adjuncts. If proven possible, this integration would be highly anticipated under the aforementioned Chomsky's framework because it could lead to further minimalization of the grammar.

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With these questions and goals in mind, we will focus on restrictive relative clauses (RCs) as a paradigmatic example that demonstrates stark inaccessibility from Σ. Without limiting the potentials of MY, I will address the following issues.

(3) a. Establishing a Set-Merge account for RC adjunctions under the Simplest Merge framework
b. Specifying the origin of inaccessibility (a.k.a., island effect) in RCs in terms of MY-ruled Merge
c. Constructing a framework for accommodating Relative Deletion while avoiding improper violations
d. Developing a provisional view on Condition C violation in extraposed RCs

We proceed as follows: Section 2 will examine an adopted analytical device for explaining the accommodation of the inaccessibility of adjuncts, introducing the concept of Immediate-Local Merge (IML) by Omune (2018, 2019). Armed with IML, we will slightly elaborate on MY, noting that a single application of an SBO may not increase the number of accessible terms, particularly in cases of adjunction. Section 3 provides the main discussion on how RC adjunction is reconciled in the proposed account. First, in Section 3.1, we will review the basic facts about RC adjunction that need to be accommodated. Then, Section 3.2 explicates the mechanism of a Set-Merge account of RC adjunction, where RC adjunction occurs as a natural consequence of R-head extraction from the RC by IML. Section 3.3 is dedicated to the solidification of the proposal, contrasting with Lakhota-type RCs. Section 3.4 will examine an intriguing outcome brought by the proposal, arguing that the proposed account can reconcile Relative Deletion in terms of regular phase cycles while allowing R-head extraction to evade violations of improper movement. In Section 3.4 we will also address a disputed topic on Condition C violation, limiting our focus to a case of extraposed RCs. We attempt to elaborate on Fox and Nissenbaum's (1999) account with special reference to alleviating a contentious aspect of Late Merge that has been repeatedly criticized in the literature. Finally, Section 4 concludes this paper.

2 ILM and Theoretical Hypotheses

A vast amount of effort has been devoted to adjunct(ion) and its inaccessibility in the long history of generative literature. Among various proposals, an account in terms of Pair-Merge by Chomsky (2004) has been a guiding proposal, which separates adjuncts from the propositional plane in Narrow Syntax and restores them before being sent to the Interfaces (SIMPL). In this way, adopting Pair-Merge is, in fact, a two-fold account, prompting various attempts to reduce its computational burden. Under the current Simplest Merge framework, an account that resorts to the separation of derivational planes would require further examination for conformity with MY. It is unclear whether Pair-Merge(P, Q) also respects MY. Suppose that P is a propositional element and Q is an adjunct. The outcome of Pair-Merge is often noted as <P, Q> in Kuratowski's manner, suggesting that Q becomes inaccessible after undergoing Pair-Merge with P. As illustrated below in (4), the number (*n*) of accessible terms has not changed before and after Pair-Merge unless any reasonings to identify P and <P, Q> holds.

(4) (i) WS = [P, Q] (n = 2(P, Q))
↓
(ii) WS′ = [<P, ~~Q~~>] (n = 2(P, <P, ~~Q~~>), strikethrough on Q means inaccessible from Σ.)

Furthermore, the restore operation SIMPL appears somewhat skeptical in terms of MY, given its counter-cyclic computational nature poses a risk of increasing *n* of accessible terms, despite not being an instance of Merge.

(5) (i) WS = [{<P, ~~Q~~>}] (*n* = 2(P, <P, ~~Q~~>))
↓ SIMPL(~~Q~~)
(ii) WS = [{P, Q}] (*n* = 3(P, Q, {P, Q}))

Recognizing (4) and (5) as conceptual challenges, I have positioned my research to derive adjunct(ion) in terms of Set-Merge, ruled by the third-factor efficiency, just as many predecessors have attempted. The analytical tool that I employ throughout this research is ILM by Omune (2018, 2019), as illustrated below where Q is again an adjunct of P.

(6) *Omune's IML for Adjunction*
a. WS = [{P, Q}]
↓ ILM(P, {P, Q})
b. WS′ = [{P_2, {~~P_1~~, ~~Q~~}}]

ILM is an instance of regular Set-Merge that targets P and locally merges it with the set in which P originally is occupied, thereby generating its own occurrences P_1 and P_2. The crucial point is that not only the lower occurrence P_2 but also its term Q becomes invisible to Σ in terms of Minimal Search (MS), since basic set-theoretical reasonings identify {P, {P, Q}} as Kuratowski's (1921) ordered pair <P, Q>.[1] Thus, adjunct islands can be explained as a natural consequence of ILM. For example, ILM applied to *v*P results in the inaccessibility of PP adjuncts, as demonstrated in (7).

(7) a. * Who did Mary cry [after John kissed ___]?
b. WS = [{who, {CP, ... {vP_1, {~~vP_2~~, {~~after John kissed who~~}}}}}]
(Omune 2019: 18, slightly modified)

On the other hand, several challenges remain when integrating ILM as a means of Merge-based SBOs. Consider, for example, (8).

(8) a. Is ILM also restricted by MY and other third-factor principles?
b. How does ILM manage Duality of Semantics in terms of Merge?

Concerning (8a), it is important to note that Omune's proposal was introduced before the conceptualization of MY by Chomsky; therefore, discussions on reconciling third-factor toolkits were not conducted. As long as ILM is an instance of Set-Merge, the most probable answer is that it also adheres to MY. Capitalizing on the concept of occurrences, Σ's preference for P_2 over P_1 can be explained by asserting that MS locates discontinuous elements in c-commanding configurations, thereby naturally resulting in the inaccessibility of P_1 without risking an over-increasing in *n*. However, applying the same rationale to Q is challenging since it is not a discontinuous inscription of P. Moreover, appealing to the fact that its term is the target of ILM, not EM/IM, is no longer effective, as the derivation cannot trace the history of Merge due to its strict Markovian nature. On the other hand, (8b) presents a challenge to address the canonical duality of Merge: EM for propositions and IM for discourse/information structures. However, adjunction obviously differs from these cases in that it is not governed by Θ-Theory and exhibits an infinite yet contextually constrained nature, in contrast to

[1] Readers are kindly referred to Omune (2018) for a brief review of Zermelo-Fraenkel Set Theory with the Axiom of Choice. A parallel property can be observed between ordered sets (i) and unordered set (ii).
(i) <a, b> = <c, d> ↔ a=c∧b=d
(ii) {{a}, {a, b}} = {{c}, {c, d}}↔ a=c∧b=d

EM/IM-structured SOs. With these questions in mind, I propose (9) and (10) for theoretical hypotheses.

(9) By extending the notion of the third-factor principle of Stability (Chomsky 2021) and Preservation (Chomsky et al. 2023), the inaccessibility of adjunct Q can be maintained throughout the derivation.

(10) *Minimal Yield (an elaborated version)*
SBOs must not increase the number (*n*) of accessible terms in WS *by two or more at a time*.
(i) When *n* increases by one, the merge-mates are structured in a propositional/θ-theoretical or informational/discoursal relation.
(ii) When *n* does not alter, the merge-mates are structured in an adjunction relation.

Concerning (9), Stability/Preservation is one of the third-factor conditions imposed on Σ. Chomsky originally argues that Σ is able to recognize identities of inscriptions during the transitions of Markovian derivational processes (WS′→WS″→WS‴...) because of this condition. Suppose this condition also applies to the case at issue: once adjunct Q is deemed inaccessible because its status as the term of the lower occurrence of P is preserved, it can no longer be accessible for further SBOs by Σ.[2] I believe (9) is particularly necessary in the 'Dynamic Access' view, where NS can be accessed anytime from the interfaces. If Transfer is no longer viable, some third-factor condition must take its place to prohibit the extraction from adjuncts.

On the other hand, I propose that MY can be elaborated into the form of (10). If ILM is added to a viable means for SBOs, it is used for θ-insensitive cases such as adjunction. However, as demonstrated in (6), ILM predicts distinct outcomes from EM and IM in terms of accessibility in WS: *n* remains invariant before and after ILM, *n* = 3 (P, Q, and {P, Q} in (6a); P_2, {~~P_1~~, ~~Q~~}, and {P_2,{~~P_1~~, ~~Q~~}} in (6b)). Thanks to this, we can capture the complement-adjunct antisymmetry from transition of *n* of accessibility.

3 Discussion

3.1 Points at Issue on RC Adjunction

As mentioned above, the primary goal of this section is to provide a theoretical motivation for RC adjunction in terms of a newly proposed SBO specific to adjunction, namely ILM. Needless to say, this case study relies on the fact that restrictive RCs align with most of the diagnostic features of adjuncts identified in the literature (e.g., Bode's 2019). See (11).

(11) *Diagnoses for Adjuncts (contrasted with those of arguments in braces)*
a. Not selected by adjacent terms (⇔ selected by adjacent terms)
b. Unbounded, multiple, and recursive occurrence (⇔ limited in number depending on predicates)
c. Occupation in various positions (⇔ occupation in fixed position)
d. Inability to be a target of A-movement (⇔ ability to be a target of A-movement)

[2] It remains an open question as to which information should or should not be targeted by Stability/Preservation. If (10) can be upheld, one possibility emerges: Stability/Preservation applies at least to the information specific to FOAMCOPY(FC). FC identifies structurally identical inscriptions as copies, meaning that FC-specific information can be preserved despite Markovian derivation. As discussed extensively in Section 3.4, two occurrences of an identical element, P_1 and P_2, are not considered as copies at the moment when ILM is applied, since P_1 occupies an A/A′ neutral position. Consequently, FC is postponed until the merge of a phase head. This implies that the <P, Q> interpretation from {P_1, {P_2, Q}} occurs only when FC is applied, suggesting that the inaccessibility of Q is also FC-specific information. Therefore, it may also be targeted by Stability/Preservation.

First, it is evident that restrictive RCs satisfy (11a) because there is no obligatory selection between R-heads and RCs.

(12) a. John read the [$_{NP}$ book].
b. John read the [$_{NP}$ book] [$_{CP}$ that he bought yesterday]].

Second, the sensitivity of RCs to (11b) can be seen in their ability to host RC stacking, where multiple RCs can be structured without an aid of conjunctions.

(13) a. the book which I bought which Ann had recommended
b. the book that I bought that Ann had recommended (McCawley 1998: 428)

Third, while it can be argued that (11c) is generally limited, restrictive RCs allow for extraposition, which will be addressed in detail in Section 3.5.

(14) a. We will discuss the [claim] *tomorrow* [that John made yesterday].
b. We will see the [boy] *tomorrow* [with whose mother I spoke]. (Alexiadou et al. 2000: 18−19)

Fourth, it is clear that in languages such as English, RCs themselves cannot be targets of A-movement, thus meeting (11d).

(15) a. * [That John recommended last month] seems [the book ___] to be boring.
b. * The professor proves [that John wrote for Ph.D] to [the thesis ___]contains a lot of errors.

On the other hand, in addition to those diagnoses, it would be beneficial if an alternative approach could address RC-specific issues as summarized by Henderson (2007: 209, slightly modified) in (16).

(16) a. R-heads must be merged cyclically.
b. R-heads originates within the RCs that modify them.
c. RCs must be merged counter-cyclically.

Observe how (16a-c) function. R-heads serve a dual role as arguments of both RC-internal and external predicates. Under the traditional matching analysis, an R-head NP in the matrix clause is expected to merge cyclically with a matrix predicate (as in 16a). Meanwhile, another identical NP (or operator) is structured as an argument of an RC-internal predicate and undergoes IM to SpecCP (as in 16b). Then, the entire CP merges with the matrix R-head NP in an adjunction manner, but this process inevitably violates Extension Condition as per Chomsky (1995) (as in 16c). Recognizing the necessity of some countercyclic SBO, Henderson integrates traditional matching and raising approaches into a unified model in (17). Capitalizing on the name of device adopted there, I call it an eclectic approach.[3]

[3] See also Tonoike (2019) for a similar R-head raising proposal that aims to integrate traditional approaches. It shares a similarity with Henderson's in that both adopt Sideward Movement for R-head raising. However, Tonoike develops his own account to evade the countercyclic nature of RC adjunction.

(17) *Eclectic Approach*

(i) WS = [{R-head, CP}, D ...]

↓ *Merge(D, R-head, WS) by Sideward Movement of Hornstein (2001) and Nunes (2004)*

(ii) WS′= [{D, R-head$_2$}, {R-head$_1$, CP}]

↓ *Merge(R-head$_2$, {R-head$_1$, CP}, WS′) by Late Merge of Lebeaux (1988)*

(iii) WS″ = [{D, {R-head$_2$, {R-head$_3$, CP$_2$}}, {R-head$_1$, CP}]

This approach is an attractive attempt to eclectically capture the advantages of each method. The RC-internal reconstruction effect can be explained as a result of successive-cyclic movement over the clauses, in terms of sideward merge. On the other hand, the adjunction nature of RC is derived by adopting late merge. However, (17) faces a significant theoretical challenge in reconciling MY, a rule of third-factor efficiency imposed on Σ. Setting aside the constituents omitted in (17i-iii), *n* of accessible terms from (i) to (iii) changes from 4 to 6 to 10, which is clearly inconsistent with MY.

3.2 Proposal: RC Adjunction as a Consequence of ILM of R-head

Based on the discussion so far, I propose a refined version of the eclectic approach to restrictive relativization with ILM adopted, as illustrated in (18).

(18) *A Refined Eclectic Approach by ILM*

(e.g., 'every book that Mary bought,' hereafter irrelevant details omitted from illustration)

a. WS = [{that, Mary, INFL, *v*-bought, book}, every ...]

↓ *Merge(book, {that ...}, every, WS)*

b. WS′ = [{book$_2$, {that ... book$_1$}}, every ...] (*n* = **4**: *book$_2$, {that ... book$_1$}, every, {book$_2$, {that ...}}*)

↓ *Merge(book, {book$_2$, {that ...}}, WS′) by ILM*

c. WS″= [{book$_3$, {~~book$_2$~~, ~~{that ... book$_1$}~~}}, every ...] (*n* = **4**: *book$_3$, every, {~~book$_2$~~, ~~{that ...}~~}, {book$_3$, {~~book$_2$~~, ~~{that ... book$_1$}~~}}*)

(18) inherits conceptual advantages of (17) and overcomes the problem of over-generation of accessible terms. As illustrated from (17ii) to (17iii), Sideward Movement involves two independent subarrays in WS, and the target merges into a slot provided by an SO in the other subarray, which inevitably leads to a failure of the c-commanding configuration. On the other hand, (18) reconciles the problem of MY violation because an ILMed R-head (*book$_3$*) in (18c) c-commands its lower occurrence (*book$_2$*). As a result, the lower occurrence and its term RC, marked with strikethroughs, are inaccessible from MS, guaranteeing the stability of *n* from WS′ to WS″ (4 to 4). Furthermore, the island nature of restrictive RCs is deducible from the ILM of the R-head, which renders not only the lower occurrence of the R-head (*book$_2$*) but also the RC (*{that ... book$_1$}*) inaccessible for MS, so Σ cannot extract anything from the RC.

3.3 In Defense of Deriving the Relative Island Effect from ILM: A Cross-linguistic View[4]

Some may find it stipulative why an RC, as the term of the lower occurrence of the R-head, becomes inaccessible as a result of ILM. However, in addition to the set-theoretical reasonings outlined above, this proposal can be supported from a cross-linguistic perspective. Here, we examine RCs in Lakhota, a Siouan language of the Sioux tribes. The basic word order of Lakhota is SOV, and it is a *wh*-in-situ language. As extensively discussed in the literature by Williamson (1987), Bonneau (1992), and Watanabe (2004), among others, Lakhota is known for its internally headed RCs, where R-heads

[4] Larger proportion of this section comes from Takahashi (under review).

remain inside the embedded clauses. Notably, Lakhota RCs are island-insensitive. Consider (19), where the RC, headed by the boldface, R-head is further contained within another RC.

(19) Wichota **wowapi** wą Ø-yawa+pi cha ob woʔuglaka+pi ki he L.A. Times Ø-e
many-people paper a read+Pl Ind with we-speak+Pl the that L.A. Times be
'The newspaper that we talk to many people who read (it) is the L.A. Times.'
(Williamson 1987: 177, slightly modified)

Capitalizing on the constant occurrence of an external determiner (e.g., *ki* 'the' in (19)) and the absence of quantificational particles in the language, Bonneau (1992) argues that Lakhota RCs utilize unselective binding between the R-head and the external determiner, thereby explaining the absence of the island effect. Consider (20), represented in the manner of Watanabe (2004: 90).

(20) $[_{DP}\ [_{CP}\ [_{IP}\ \ldots$ NP (D) ...] C] D]

Now, let us consider how these facts interact with our proposed approach. Recall that if our alternative is on the right track, island effects that adjuncts exhibit can be attributed to the ILM of the modified SO. Conversely, the island insensitivity is associated with the absence of ILM. Observe how this implication works for the case at issue. We follow the assumption that Lakhota RCs involve the unselective binding relation where the R-head remains in-situ and is bound by the external determiner. Therefore, there is no conceptual necessity to move the R-head to SpecCP of the embedded CP for the sake of an operator-variable construction. This absence of movement is a primary reason why Lakhota RCs are regarded as quantificational (e.g., Basilico 1996, Boyle 2016). Recall here again that ILM takes place in the configuration like (6b), thus referred to 'immediate-local.' Hence, any R-head to be ILMed must be minimal enough for Σ to access it. However, Lakhota RCs do not fit the case. See (21).

(21) Quantificational RCs (e.g., Lakhota) do not adopt the ILM option, resulting in these RCs being insensitive to island effects.

If SpecCP remains vacant until the completion of the relative CP, no further ILM is anticipated, and instead, the external determiner facilitates unselective binding. Consequently, the island insensitivity is automatically deducible.[5]

3.4 Explaining Relative Deletion and Avoiding Improper Violation

Now, let us consider the theoretical contributions that our alternative offers. Under the traditional matching approach, a somewhat unique form of copy deletion is inevitable between a clause-external R-head and its clause-internal co-referential nominal or operator. This phenomenon is often referred to as Relative Deletion in the literature. Although its exceptional nature is set aside, attempting to explain Relative Deletion in terms of Chomsky's (2021) version of FORMCOPY (FC) introduces another

[5] (21) might bring further intriguing predictions for other island-insensitive languages, such as Chinese. For example, Chinese is known not to have an internally headed variant of RCs, which seemingly functions as a counterargument to the ILM approach. However, this fact does not conflict with our alternative if we assume Chinese also does not adopt the ILM option. This is simply because, as Watanabe (2004) argues, Chinese lacks a fully-fledged determiner system that licenses a non-local relation with an R-head. I would like to thank Yoichi Miyamoto for drawing my attention to the necessity of cross-linguistic investigation.

challenge: reconciling Improper Movement. See examples in (22-23) demonstrating how this can be addressed using the standard eclectic approach in (17).

(22) $\{_{\alpha P}\ \alpha_{[\theta]}\ \{_{NP}$ R-head$_3$ [=A-position], $\{_{CP}$ R-head$_2$ [=A′-position], $\{_{C'}$ C ... R-head$_1$ [=A-position]$\}\}\}$

(23) a. FC<R-head$_2$, R-head$_1$> at CP Phase: ^{OK}<A′, A>
b. FC<R-head$_3$, R-head$_2$> at αP or higher Phase: * <A, A′>

(22) illustrates a derivational moment when the R-head extraction from SpecCP to the argument slot of the θ-assigning predicate α has just occurred. According to the original definition by Hornstein (2001) and Nunes (2004), the sideward-moved R-head is supposed to enter an argument slot no earlier than merger of predicate SO (α in (22)) into WS. However, this assumption seems somewhat skeptical, considering not only the violation of MY as argued in Section 3.1 but also the inevitable identification of R-head$_3$ as being in an A-position. Following the general minimalist guideline, suppose that phasal application of FC identifies structurally identical inscriptions as copies. As illustrated in (23a), the FC of R-head$_1$ and R-head$_2$ safely occurs within the embedded CP phase, but that FC between R-head$_2$ and R-head$_3$ in (23b) becomes problematic from the viewpoint of Improper Movement. The general *wh*-property observed in RC constructions suggests that the specifier of the relative CP, namely a phase edge, is filled by IM of the R-head, thus R-head$_2$ occupies an A′-position. Regarding this, Chomsky (2023, *Miracle Creed and SMT*) proposes Box Theory, reformulating univocality into the concept that once IMed to a phase edge ("put into a box"), any SOs cannot be associated with further EM-generated objects. Therefore, the FC in (23b) would be considered improper, as Borsley (1997) points out for Kayne's (1994) raising approach.

Now, let us consider how our alternative reconciles this issue. As extensively argued so far, a crucial departure of our alternative from earlier proposals is that the R-head extraction by ILM is executed independently from the merger of an external determiner, which reserves a vacant slot for the R-head to be merged. It should be noted again that the 'early' merger of the external determiner into WS inevitably conflicts with MY, as demonstrated in (17). However, once we acknowledge ILM as another viable SBO option, this concern proves unfounded. Consider (24), where 'every book that Mary bought' is assumed to be an example.

(24) a. WS = [{book$_2$, {that ... book$_1$}}, every ...]
A′ A′
↓ *ILM (book, {book2, {that ...}}, WS)*
b. WS′ = [{book$_3$, {~~book$_2$~~, {~~that ... book$_1$~~}}}, every ...]
N A′ A′

Here I adopt the view that A/A′ identification of structural positions is contextually dependent, not predetermined independently from its surrounding environment. In (24a), we can confidently state that *book*$_2$ occupies A′-position due to the canonical reasonings that the IM of *book*$_2$ to SpecCP interacts with the [WH] feature that C possesses. Conversely, no clues are available for A/A′ identification of the position where *book*$_3$ is situated at this moment. Therefore, let us posit that *book*$_3$ is a temporarily A/A′ neutral position, marked with "N" in (24b). This perspective introduces a novel account of potential improper violation as observed in (22). As shown in (24b), the ILM of the R-head can be considered as A/A′ unspecified movement, not fallen into an instance of improper movement.

On the other hand, another positive consequence brought by this approach is the accommodation of the computationally exotic nature of Relative Deletion in the sense of Saulerland (2002): RC-internal

inscriptions of R-head are globally recognized as copies and then deleted through phasal applications of FC. Consider (26a), where the typical A′-movement to SpecCP has occurred, completing the CP phase. Σ then identifies *book*$_2$ and *book*$_1$, and FC is applied to them. Subsequently, ILM takes place, resulting in WS′ in (26b), followed by the EM of an external determiner *every* as illustrated in (25). Given the parallel nature of verbal and nominal projections, suppose that D is also a phase head. Then, FC is applied to *book*$_3$ and *book*$_2$ after the completion of the DP phase as shown in (26b), thus finalizing all the inscriptions of the R-head in a successive cyclic manner. Therefore, it follows that there is no unique form of copy deletion often perceived as Relative Deletion; instead, we observe a regular pattern of copy externalization in (25).

(25) WS″= [{every, {book$_3$, {~~book$_2$~~, ~~{that ... book$_1$}~~}}, ...]

(26) a. FC<R-head$_2$, R-head$_1$> at CP Phase: <A′, A>
b. FC<R-head$_3$, R-head$_2$> at DP Phase: <N, A′>

3.5 A Provisional View for Accommodating Condition C Violation in Extraposed RCs

The final consequence brought by our proposal in this article is the ability to provide a provisional yet theoretically coherent view on accommodating Condition C violation, triggered by the so-called complement/adjunct antisymmetry.[6] This article limits our focus to a case involving extraposed RCs. Consider (27) from Fox and Nissenbaum (F&N) (1999).

(27) I gave him$_i$ an argument ($^{??}$/* that supports John$_i$'s theory) yesterday
(^{OK} that supports John$_i$'s theory).

(F&N 1999: 139)

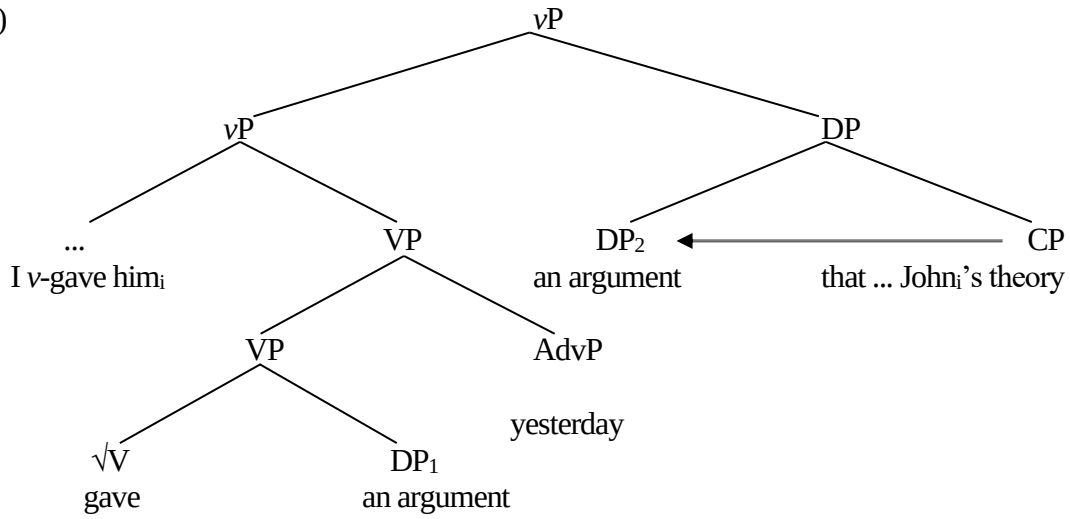
To derive the contrast in accessibility, it is widely assumed in the literature that RCs are late-merged (e.g., Chomsky 1995, Takahashi and Hulsey 2009, among others) to the R-head. Thus, the R-expression *John* is not bound by the matrix antecedent *him*, enabling the extraposed case. (28) is also adopted from F&N, where covert quantifier raising (QR) applies to DP$_2$, with which the relative CP is late-merged.

[6] One of the anonymous reviewers point out what our alternative predicts for familiar paradigms in (i-ii) regarding interpretive contrast arising from the reconstruction of the *that*-clauses. The interpretive judgment added is attributed to Chomsky and Lasnik (1993).

(i) which claim [that John was asleep] was he willing to discuss (* *John=he*)
(ii) which claim [that John made] was he willing to discuss (*John=he*)

As later reviewed in Lasnik (2003), however, he retracts the judgment of (i), which is why I limit our focus to the extraposition case with stark interpretive contrast attested.

(28)



However, as explicitly demonstrated by Kitahara (2021), Late Merge also carries the risk of violating MY since it increases *n* of accessible terms by more than one, as illustrated in (29).

(29) a. WS = [{a, b}, {c, d}] (n = 6: a, b, c, d, {a, b}, {c, d})
↓ *Merge(b, {c, d}, WS)*
b. WS′ = [{a, b_1}, {b_2, {c, d}}] (n = 8: a, b_1, b_2, c, d, {a, b_1}, {c, d}, {b_2, {c, d}})
(Kitahara 2021: 136, slightly modified)

No c-commanding configurations are available between the sets *{a, b_1}* and *{b_2, {c, d}}*, so each inscription of *b* is predicted to be accessible, thereby violating MY. If we largely adhere to (28), then a question arises about how Late Merge of RC can be executed without violating the elaborated version of MY outlined in (10). In what follows, I address this question.

Before fully elaborating on an alternative account, let us review some basic facts. Consider (30).

(30) a. Restrictive RCs are adjuncts.
b. Extraposition is a costless operation (Fukui 1993).
c. The scope of source NPs must be as high as the attachment site of extraposed adjuncts (F&N 1999).

Firstly, we have no longer much to say about (30a), which has been a premise of the discussion so far. Secondly, (30b) indicates that extraposition is free from specific grammatical demands such as Case, θ, and φ-features. This might tempt us to classify extraposition as an instance of A′-movement, given the strict A/A′ dichotomy. However, evidence does not necessarily confirm the prediction. Consider (31).

(31) * Who$_j$ did you show [___]$_i$ to Bill yesterday [a picture of t_j]$_i$? (Takonai and Adachi 2005: 41)

According to Takonai and Adachi, if the extraposed site of *a picture of t* were A′-position, then further A′-movement from the extraposed site would be possible, just as in regular successive cyclic cases, but this is not the case. This fact suggests the possibility that another means of SBOs might be available for the case. Thirdly, let us review how (30c) is empirically supported, examining the contrast in scope readings attested from the following paradigms provided by F&N.

(32) a. I looked very intensely for anything that would help me with my thesis.
(*look for* > *any*)
b. I looked for anything very intensely that will/would help me with my thesis.
(**look for* > *any*) (F&N 1999: 5)

(32a) does not involve extraposition of the RC *that would help me with my thesis*, allowing the wide scope reading of the matrix predicate *look(ed) for* over the quantified R-head *any(thing)*. Conversely, this scope reading is unavailable in the extraposed RC case of (32b). With these facts in mind, let us consider an alternative minimalist approach. As an additional theoretical hypothesis, we adopt (33).

(33) *Abe's (2018) Proposal for the Timing of Late Merge of Adjuncts*
Adjuncts must be merged no later than completion of a given phase.

Abe argues that, given the assumption that adjuncts can be late-merged, (33) is still necessary to rule out such ill-formed sentences as (34), where the adjunct RC is marked with square brackets.

(34) *He$_1$ was willing to discuss the claim [that John$_1$ made]. (Abe 2018: 30, square brackets mine)

In Abe's theory of anaphora, he crucially relies on Sideward Movement in order to retain the binding relation between the anaphor and its antecedent. Thus, if the adjunct RC were accessible earlier than the completion of the *v*P phase, *pro* could undergo Sideward Movement from matrix Spec*v*P to the position where *John$_1$* occupies, yielding a conflicting result on the grammatical status of (34). In light of this concern, Abe proposes (33). By postponing the merge of an adjunct to as late as possible, the illicit IM of *pro* to the adjunct can be blocked.

Now, we are ready to consider a minimalist view for (27). The fact in (30b) suggests that as long as it is free from grammatical demands, extraposition might be an SBO that transcends the A/A′ dichotomy. Considering (30a) in conjunction, we are presented with a plausible possibility: extraposing RCs also involves ILM, consistent with the approach which this paper advocated. To refine F&N's model in a recent minimalist manner, I propose (35).

(35) Extraposition of adjuncts is a composite operation involving the Late Merge of adjuncts and the ILM of R-head.

Now, let us see how (27) is derived under (35). (36) represents a derivational stage of (27). WS contains a propositional spine *v*P$_1$. Suppose the adverbial *yesterday* is a *v*P adjunct. The merge of *v*P$_1$ and *yesterday* is followed by ILM of *v*P$_1$, then generating *v*P$_2$. Meanwhile, adopting (33) allows us to construct the RC adjunct independently from the propositional spine. Thus, RC is derived in the manner proposed in Section 3.1.

(36) WS = [{{$_{vP2}$ I, *v*-gave$_2$, him$_i$, *v*-gave$_1$, an, argument$_3$}, {~~*v*P$_1$~~, ~~yesterday~~}},
{$_{RC}$ argument$_2$, {that, argument$_1$, *v*-supports, John$_i$'s theory}}]

What follows in WS is the EM of another inscription *argument$_4$* from LEX with *v*P$_2$, which echoes F&N's concept of covert QR of the source NP, thereby generating WS′ in (37).[7]

[7] I find it necessity to argue why IM from accessible terms in WS is preferred over EM from LEX in this case, especially when considering the widely accepted notion that IM costs less than EM.

(37) WS′ = [{$_{vP3}${{$_{vP2}$ I, *v*-gave$_2$, him$_i$, *v*-gave$_1$, an, argument$_3$}, {~~*v*P$_1$~~, ~~yesterday~~}}, argument$_4$},
{$_{RC}$ argument$_2$, {that, argument$_1$, *v*-supports, John$_i$'s theory}}]

Finally, following (33), the Late Merge of the RC, which has remained independent so far in WS′, to *argument$_4$* occurs no later than the completion of *v*P phase, generating (38). As a result, *argument$_4$* is positioned as high as the relative CP, thereby satisfying (30c).

(38) WS″= [{$_{vP3}${{$_{vP2}$ I, *v*-gave$_2$, him$_i$, *v*-gave$_1$, an, argument$_3$}, {~~*v*P$_1$~~, ~~yesterday~~}},
{argument$_4$, {$_{RC}$ argument$_2$, {that, argument$_1$, *v*-supports, John$_i$'s theory}}}}]

As proposed in (35), the Late Merge of the RC should be followed by the ILM of *argument$_2$* since the RC is an adjunct, a requirement for validating ILM. The prediction is supported for the sake of efficiency. In fact, the dotted area has been already formed as a {a, {a, b}} configuration. Given the strict Markovian nature of derivation, the computation Σ cannot trace the history of Merge throughout the derivation. Therefore, it is natural to assume that translating the {a, {a, b}} configuration into Kuratowski's definition of a pair-set <a, b> does not require referencing the record of Merge throughout the derivation. Only the outcomes suffice for retrieving proper semantic interpretation. After the completion of *v*P phase, FC applies to *argument$_{2,3,4}$* in terms of the M(arkovian)-Gap option, rendering them into copies of the same R-head. Note that the target of externalization should not be *argument$_4$* but *argument$_3$*, which might seem irregular. However, this can be supported since *argument$_3$* is not assigned any Case or θ-role. Especially, as noted by Boeckx, Nunes, Hornstein (2007), there is a view that Case features are largely associated with externalization of copies.

Finally, let us address the remaining issue regarding how to avoid MY violation that Late Merge of an RC potentially introduces. (39) provides a simplified illustration of the derivational steps in (37-38), where *α* represents inscriptions of the R-head, and *β* represents those of the relative CP.

(39) a. WS′ = [{γ, α$_1$}, {α$_2$, β}] (*n* = **6**: γ, α$_1$, α$_2$, β, {γ, α$_1$}, {α$_2$, β})
↓ Merge(α$_1$, {α$_2$, β}, WS′) ↓±0 in accordance with (11ii)
b. WS″= [{γ, α$_1$}, {α$_3$, {~~α$_2$~~, ~~β~~}}] (*n* = **6**: γ, α$_1$, α$_3$, {γ, α$_1$},{~~α$_2$~~, ~~β~~}, {α$_3$, {~~α$_2$~~, ~~β~~}})

In (39a-b), the set *{γ, α$_1$}* corresponds to the propositional spine, which includes an inscription of the R-head α$_1$ as a matrix argument. Conversely, the set *{α$_2$, β}* corresponds to the relative CP, whose specifier is filled with another inscription of the R-head α$_2$. Then, Late Merge(*α$_1$, {α$_2$, β}*, and *WS′*) applies, yielding a new set *{α$_3$, {α$_2$, β}}*in WS″. I propose that Late Merge of *{α$_2$, β}* indirectly derives the effect of R-head ILM, thanks to the strict Markovian nature. Consequently, *β* as well as *α$_2$* becomes inaccessible in accordance with (6), thus not being counted as accessible terms. As predicted by (10ii), accessibility does not change from (39a) to (39b), thereby avoiding a MY violation.

4. Conclusion and Future Prospects

In this article, we have advocated a position in which the inaccessibility of adjunction is endorsed by Set-Merge restricted by the third-factor MY. Technically, we have adopted Omune's ILM as an analytical tool, which generates two occurrences of a single SO within the set {a, {a, b}}. The outcome corresponds to Kuratowski's definition of a pair-set <a, b>, rendering not only the lower occurrence of *a* but also its adjacent term *b* inaccessible in terms of the third-factor efficiency. As a direct consequence of ILM, I argue for the necessity to refine MY, stating that adjunction does not increase the number of accessible terms in WS. Another consequence is that ILM can be utilizes as a means of SBOs in A/A′

neutral positions, thereby filling out a potential gap in the Merge theory of Duality of Semantics. RC adjunction is a typical case where the A/A′ dichotomy does not obviously apply. It has been argued that if we adopt ILM for RC adjunction, various issues, such as improper violation and relative deletion, can be resolved.

However, a number of questions remain. Especially, a more convincing argument is highly anticipated to address the somewhat stipulative nature of the inaccessibility of the term *b*. One of the promising guidelines might be available from Kitahara and Seely (2024, in this volume), who argue that non θ-marked SOs cannot be targets of further Merge. It is evident that there is no θ-relation between the R-head and the RC, thereby solidifying the inaccessibility of the RC in terms of θ-grid.[8] I leave it for a future research topic.

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[8] I would like to thank Hisatsugu Kitahara for drawing my attention to this possibility.

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Modal Mismatches under Clausal Argument Ellipsis*

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1. Introduction

This paper first observes that Argument Ellipsis targeting CPs (clausal Argument Ellipsis, CAE) is possible even when the elided CP and its antecedent appear to contain different modal particles; i.e., CAE allows modal mismatches (cf. Landau 2023 for Hebrew). It is then proposed the ellipsis site can in fact be "smaller" than usually assumed; in particular, CAE allows a *v*P (instead of a full CP) to be elided, taking another *v*P as its antecedent. Hence, the mismatch is analyzed to be only apparent. Finally, it is argued that the proposed analysis can solve another mismatch concerning so-called "antecedent-contained" CAE (ACCAE; Takita 2018, Takahashi 2024).

This paper is organized as follows. In Section 2, it is observed that CAE allows modal mismatches. Section 3 proposes the analysis of the observations in question, and Section 4 extends the analysis to the mismatch in ACCAE. Section 5 is a conclusion.

2. Observations

It has been argued that AE can target CP arguments, mainly based on the fact that missing CP arguments allow sloppy interpretations (Saito 2007, Tanaka 2008, Takita 2010, a.o.) A stronger piece of evidence for CAE comes from the availability of extraction out of missing CP arguments (Takahashi 2012, 2020, Sakamoto 2017, 2020, a.o.), as exemplified by (1) (adapted from Takita (2018:6)).

(1) a. [$_{CP}$ Op$_1$ Hanako-ga [$_{CP}$ Taroo-ga t_1 detekita to] syoogensita no]-wa
H.-Nom T.-Nom came.out C testified C-Top
kono biru-kara$_1$ da
this building-from Cop
'It was from this building$_1$ [that Hanako testified [that Taroo came out t_1]]'.

b. [$_{CP}$ Op$_2$ Yumi-ga ~~[$_{CP}$ Taroo-ga t_2 detekita to]~~ syoogensita no]-wa
Y.-Nom T.-Nom came.out C testified C-Top
ano biru-kara$_2$ da
that building-from Cop
'It was from that building$_2$ [that Yumi testified ~~[that Taroo came out t_2]~~]'.

The examples in (1) have the form of a cleft sentence, where extraction takes place out of the embedded clause within the presupposition CP subject. Taking (1a) as the antecedent, (1b) can contain the missing CP (indicated by struck-through), which is supposed to contain the trace of the movement. The grammaticality of (1b) suggests that extraction is legitimate, which in turn supports the idea that CAE

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does elide a constituent that has underlying syntactic structures. In what follows, I show that CAE is possible even when there seems to be a mismatch between the ellipsis site and its antecedent.

For this purpose, this paper deals with the four modal particles given in boldface in (2): the optative particle *-tai*, the intentive particle *-(y)oo*, the imperative particle *-e/ro*, the promissive particle *-(r)u* (see Matsuda 2021). All of them appear in between the verb stem and the complementizer *to* 'that'.

(2) a. Miku-ga [$_{CP}$ hakubutukan-e iki-**tai** to] *nozonda* [Opt (optative)]
M.-Nom museum-to go-Opt C hoped
'Miku hoped [to go to the museum].'
b. Miku-ga [$_{CP}$ hakubutukan-e ik-**oo** to] *kimeta* [Int (intentive)]
M.-Nom museum-to go-Int C decided
'Miku decided [to go to the museum].'
c. Miku-ga [$_{CP}$ hakubutukan-e ik-**e** to] *meizirareta* [Imp (imperative)]
M.-Nom museum-to go-Imp C was.ordered
'Miku was ordered [to go to the museum].'
d. Miku-ga [$_{CP}$ hakubutukan-e ik-**u** to] *yakusokusita* [Prm (promissive)]
M.-Nom museum-to go-Prm C promised
'Miku promised [to go to the museum].'

One of the important properties of these particles is that the embedding verbs (given in italic) and the particles in their complement CP must match with each other. Hence, as shown in (3), these particles are not compatible with the other types of embedding verb (except for the Prm-*decide* combination in (3d); but note at the same time the Int-*promise* combination is not possible as in (3b)).

(3) a. *Miku-ga [$_{CP}$ hakubutukan-e iki-**tai** to] *kimeta*/*meizirareta*/*yakusokusita*
M.-Nom museum-to go-Opt C decided/was.ordered/promised
'Miku decided/was ordered/promised [to go to the museum].'
b. *Miku-ga [$_{CP}$ hakubutukan-e ik-**oo** to] *nozonda*/*meizirareta*/*yakusokusita*
M.-Nom museum-to go-Int C hoped/was.ordered/promised
'Miku hoped/was ordered/promised [to go to the museum].'
c. *Miku-ga [$_{CP}$ hakubutukan-e ik-**e** to] *nozonda*/*kimeta*/*yakusokusita*
M.-Nom museum-to go-Imp C hoped/decided/promised
'Miku hoped/decided/promised [to go to the museum].'
d. Miku-ga [$_{CP}$ hakubutukan-e ik-**u** to] **nozonda*/*kimeta*/**meizirareta*
M.-Nom museum-to go-Prm C hoped/decided/was.ordered
'Miku hoped/decided/was ordered [to go to the museum].'

This incompatibility becomes crucial when we look at the core data later in this section.

Before providing the crucial data, let us note that the embedded clause containing these particles is a control complement. Let us start the discussion with the morpheme *-tai*, which normally behaves as an adjective corresponding to *want* in English. For instance, it has the regular tense inflection when it appears in the matrix clause, as shown in (4a). Once (4a) is embedded under verbs like *nozonda* 'hoped' together with the complementizer *to* 'that' as in (4b), however, only the *-tai* form is allowed. In fact, verbs with either the simple present or past tense form are impossible, as shown in (4c).

(4) a. Miku-ga hakubutukan-e iki-tai/takatta
M.-Nom museum-to go-want/wanted

'Miku wants/wanted to go to the museum.'

b. Miku-ga [$_{CP}$ PRO hakubutukan-e iki-**tai**/*takatta to] *nozonda*
M.-Nom museum-to go-Opt/wanted C hoped
'Miku hoped [to go to the museum].'

c. *Miku-ga [$_{CP}$ PRO hakubutukan-e ik-u/ta to] *nozonda*
M.-Nom museum-to go-Pres/Past C hoped
'Miku hoped [to go to the museum].'

Taken together with the fact that the embedded null subject must be coreferential with the next higher subject, the lack of tense-alternation suggests that the embedded CP is a control complement (cf. Uchibori 2000, Fujii 2006, a.o.).[1]

Clausal complements with the other modal particles also show the obligatory coreferential property and the lack of tense-alternation as shown in (5).

(5) a. Miku-ga [$_{CP}$ PRO hakubutukan-e ik-**oo**/u/*ta to] *kimeta*
M.-Nom museum-to go-Int/Pres/Past C decided
'Miku decided [to go to the museum].'

b. Miku-ga [$_{CP}$ PRO hakubutukan-e ik-**e**/*u/*ta to] *meizirareta*
M.-Nom museum-to go-Imp/Pres/Past C was.ordered
'Miku was ordered [to go to the museum].'

c. Miku-ga [$_{CP}$ PRO hakubutukan-e ik-**u**/*ta to] *yakusokusita*
M.-Nom museum-to go-Prm/Past C promised
'Miku promised [to go to the museum].'

Note that the promissive particle *-(r)u* is homophonous to the simple present tense form, but the lack of alternation with the past tense form as in (5c) confirms the point in question.

The core observations of this paper are given in (6)-(9). In (6a), the presupposition CP contains the verb *nozonda* 'hoped', which takes another CP containing *-tai* as its complement. Taking (6a) as the antecedent, (6b) is grammatical no matter what type of the embedding verb follows the missing CP (indicated as Δ). The fact that extraction is involved just like (1b) ensures that the missing CP arises through CAE. Once the missing CP is recovered with the one identical to the antecedent as in (6c), however, the pattern of grammaticality found in (3a) is observed.

(6) a. [Op$_1$ Miku-ga [$_{CP}$ PRO t_1 iki-**tai** to] *nozonda* no]-wa hakubutukan-e$_1$ da
M.-Nom go-Opt C hoped C-Top museum-to Cop
'It is to the museum$_1$ [that Miku hoped [to go t_1]].'

b. [Op$_2$ Tenma-ga Δ *nozonda*/*kimeta*/*meizirareta*/*yakusokusita* no]-wa doobutuen-e$_2$ da
T.-Nom hoped/decided/was.ordered/promised C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised Δ].'

c. [Op$_2$ Tenma-ga [$_{CP}$ PRO t_2 iki-**tai** to] *nozonda*/**kimeta*/**meizirareta*/**yakusokusita*
T.-Nom go-Opt C hoped/decided/was.ordered/promised
no]-wa doobutuen-e$_2$ da
C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised [to go t_2]].'

[1] Throughout this paper it is assumed that PRO occupies the subject position of control complements (including the ones in (4b-c)), but I remain agnostic about the analytical nature of control phenomena.

Given the pattern in (6c), the missing CP in (6b) seems to be forced to contain an appropriate modal particle compatible with the respective embedding verb. For instance, (6b) with *kimeta* 'decided' should take the CP complement containing *-(y)oo*, which does not match the antecedent. Then, the grammaticality of (6b) indicates that CAE can ignores such a mismatch, resulting in modal-mismatches.

The examples in (7)-(9) show that the same pattern is observed for the examples involving the particles *-(y)oo*, *-e*/*ro*, and *-(r)u*. Notice that (7b), (8b) and (9b) are exactly same as (6b). If the CP identical to the one in the antecedent are supplied to the ellipsis site as in (7c), (8c) and (9c), the incompatibility pattern found in (3) is observed.

(7) a. [Op_1 Miku-ga [$_{CP}$ PRO t_1 ik-**oo** to] *kimeta* no]-wa hakubutukan-e_1 da
M.-Nom go-Int C decided C-Top museum-to Cop
'It is to the museum$_1$ [that Miku decided [to go t_1]].'

b. [Op_2 Tenma-ga Δ *nozonda*/*kimeta*/*meizirareta*/*yakusokusita* no]-wa doobutuen-e_2 da
T.-Nom hoped/decided/was.ordered/promised C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised Δ].'

c. [Op_2 Tenma-ga [$_{CP}$ PRO t_2 ik-**oo** to] **nozonda*/*kimeta*/**meizirareta*/**yakusokusita*
T.-Nom go-Int C hoped/decided/was.ordered/promised
no]-wa doobutuen-e_2 da
C-Top zoo-to Cop
'It is to the zoo2 [that Tenma hoped/decided/was ordered/promised [to go t_2]].'

(8) a. [Op_1 Miku-ga [$_{CP}$ PRO t_1 ik-**e** to] *meizirareta* no]-wa hakubutukan-e_1 da
M.-Nom go-Imp C was.ordered C-Top museum-to Cop
'It is to the museum$_1$ [that Miku was ordered [to go t_1]].'

b. [Op_2 Tenma-ga Δ *nozonda*/*kimeta*/*meizirareta*/*yakusokusita* no]-wa doobutuen-e_2 da
T.-Nom hoped/decided/was.ordered/promised C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised Δ].'

c. [Op_2 Tenma-ga [$_{CP}$ PRO t_2 ik-**e** to] **nozonda*/**kimeta*/*meizirareta*/**yakusokusita*
T.-Nom go-Imp C hoped/decided/was.ordered/promised
no]-wa doobutuen-e_2 da
C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised [to go t_2]].'

(9) a. [Op_1 Miku-ga [$_{CP}$ PRO t_1 ik-**u** to] *yakusokusita* no]-wa hakubutukan-e_1 da
M.-Nom go-Prm C promised C-Top museum-to Cop
'It is to the museum$_1$ [that Miku promised [to go t_1]].'

b. [Op_2 Tenma-ga Δ *nozonda*/*kimeta*/*meizirareta*/*yakusokusita* no]-wa doobutuen-e_2 da
T.-Nom hoped/decided/was.ordered/promised C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised Δ].'

c. [Op_2 Temna-ga [$_{CP}$ PRO t_2 ik-**u** to] **nozonda*/*kimeta*/**meizirareta*/*yakusokusita*
T.-Nom go-Prm C hoped/decided/was.ordered/promised
no]-wa doobutuen-e_2 da
C-Top zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised [to go t_2]].'

As for (9c), the Prm-*decide* combination is possible just like (3d), but the fact that the overt embedded

CP is not compatible with the other two embedding verbs is sufficient to show the point.

This section has provided the crucial observation that CAE is possible even when the elided clause is forced to contain a modal particle that is not compatible with the embedding verb. The next section offers an analysis of this observation.

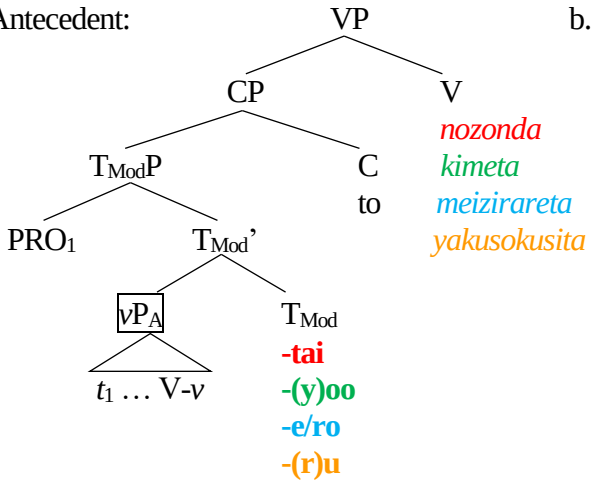
3. Proposals and Analysis

The general proposals of this paper are given in (10) (see also Takita 2022, 2023a,b).

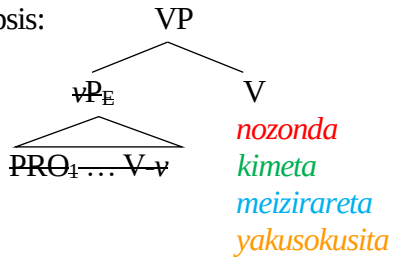
(10) a. Ellipsis sites can be "smaller" than their overt counterparts.
b. Problems arising from such smaller constituents can be "repaired" by ellipsis.

To account for the observations made in Section 2, I propose to implement these ideas as shown in (11). (11a) is a partial structure of the antecedent sentences in (6)-(9). This structure is a rather normal one in the sense that the embedding clause has the usual CP-TP-*v*P structure.[2] What is novel and important is the structure given in (11b), which I argue that the ellipsis clauses of the relevant examples can have especially when the modal mismatches is involved.

(11) a. Antecedent:



b. Ellipsis:



In (11b), a *v*P to be elided (notated as vP_E), instead of a full CP, serves as the "clausal" complement of the embedding verbs given in italic, embodying the proposal in (10a). Given this structure, it should be possible to elided the vP_E via AE with a syntactically identical antecedent, namely vP_A in (11a) (given in a box).

Applied to the examples in (6), they are analyzed as having the structures in (12). (12a) is the one for the antecedent (6a), which has the full-fledged embedded clause. On the other hand, in (12b), the *v*P to be elided serves as the direct complement of the embedding verbs within the presupposition clause. This vP_E is subject to AE under identity with the vP_A in (12a), yielding the surface string of (6b).

[2] I assume that the modal particles are the head of a certain kind of infinitival T (notated as $T_{Mod(al)}$) but this assumption is not crucial for the purpose of this paper. It simply reflects the fact that these particles, which appear in between a verbal stem and the complementizer *to* 'that', are in complementary distribution with the regular tense inflection (i.e. *-(r)u/ta*) and making the embedded clause a control complement (see (4)-(5)).

(12) a. [Op$_1$ Miku-ga [$_{CP}$ [$_{TModP}$ PRO [$_{vPA}$ t_{PRO} t_1 iki]**-tai**] to] *nozonda* no]-wa hakubutukan-e$_1$ da
M.-Nom go-Opt C hoped C-Top museum-to Cop
'It is to the museum$_1$ [that Miku hoped [PRO to [$_{vPA}$ t_{PRO} go t_1]]].'

b. [Op$_2$ Tenma-ga ~~[$_{vPE}$ PRO t_2 ik]~~ *nozonda/kimeta/meizirareta/yakusokusita* no]-wa
T.-Nom go hoped/decided/was.ordered/promised C-Top
doobutuen-e$_2$ da
zoo-to Cop
'It is to the zoo$_2$ [that Tenma hoped/decided/was ordered/promised ~~[$_{vPE}$ PRO go t_2]~~].'

Since the ellipsis site in (12b) contains no modal particle to begin with, there is no mismatch, contrary to the surface appearance. Of course, if the embedding verb in (6b)/(12b) is *nozonda* 'hoped', which is identical to the one in the antecedent, what is elided can be the full CP containing the modal particle. The point is that a "smaller" complement to be elided is available, which makes the apparent modal mismatches possible.

The structures in (13) illustrate those of the antecedent clauses in (7a), (8a) and (9a).

(13) a. [Op$_1$ Miku-ga [$_{CP}$ [$_{TModP}$ PRO [$_{vPA}$ t_{PRO} t_1 ik]**-oo**] to] *kimeta* no]-wa …
M.-Nom go-Int C decided C-Top
'… [Op$_1$ that Miku decided [PRO to [$_{vPA}$ t_{PRO} go t_1]]].'

b. [Op$_1$ Miku-ga [$_{CP}$ [$_{TModP}$ PRO [$_{vPA}$ t_{PRO} t_1 ik]**-e**] to] *meizirareta* no]-wa …
M.-Nom go-Imp C was.ordered C-Top
'… [Op$_1$ that Miku was ordered [PRO to [$_{vPA}$ t_{PRO} go t_1]]].'

c. [Op$_1$ Miku-ga [$_{CP}$ [$_{TModP}$ PRO [$_{vPA}$ t_{PRO} t_1 ik]**-u** to] *yakusokusita* no]-wa …
M.-Nom go-Prm C promised C-Top
'… [Op$_1$ that Miku promised [PRO to [$_{vPA}$ t_{PRO} go t_1]]].'

No mismatch would happen when these antecedents are followed by (12b), because all of them contain the *v*P identical to the elided one in (12b).

Let us now turn to some questions the readers may naturally have for the proposed analysis. The first one has to do with the possibility of a bare *v*P (namely a *v*P without a C-T combination) serving as a complement of the relevant embedding verbs. In fact, if no ellipsis has applied to (12b), the example is ungrammatical, as shown in (14).

(14) *Tenma-ga [$_{vP}$ PRO doobutuen-e ik(i)] *nozonda/kimeta/meizirareta/yakusokusita*
T.-Nom zoo-to go hoped/decided/was.ordered/promised
'(lit.) Tenma hoped/decided/was ordered/promised [$_{vP}$ PRO go to the zoo].'

Here the proposal in (10b) comes in. I propose that this unusual structural relation between a bare *v*P and the embedding verbs is possible if ellipsis applies, because the problems it may cause are essentially morphophonological/PF-related.

There are several potential problems that bare *v*Ps may cause, and I take up three problems here. The first one concerns with Case on the subject. If a bare *v*P appears without C-T, nominative Case on the subject fails to be licensed.[3] If Case is a PF-requirement (as in the traditional Case Filter), however,

[3] This problem may be irrelevant for cases like (14), where the subject is PRO. See however Section 4 for cases where presumably overt subjects are involved.

ellipsis should be able to resolve it.[4] Hence, it ceases to be a problem once ellipsis applies to the bare *v*P. The second one has to do with the agglutinative nature of the verbal stems; for instance, the verbal stem *ik-* 'go' in (14) cannot stand alone due to its bound morpheme nature (even with epenthetic vowels such as *-i*). The problem however can also be repaired (or more precisely avoided) by eliding the problematic verbal stems. The final one to be discussed has to do with labeling in the sense of Chomsky (2013, 2015). According to Chomsky (2013, 2015), minimal search is ambiguous for a syntactic object of the form {XP, YP}, for instance a (transitive) *v*P, where XP is an external argument and YP corresponds to the rest of the *v*P. As a result, the *v*P as it stands fails to be labeled, inducing problems at the interfaces. Once the external argument raises to the TP-domain, however, the labeling problem is resolved. This in turn implies that the labeling problem may remain for a bare *v*P lacking C-T. On the other hand, if the labeling problem caused by unlabeled syntactic objects is essentially a PF/linearization-problem as argued by Takita (2020a), rendering it unpronounced by ellipsis should be able to resolve it. To be more specific, Takita (2020a) argues that the absence of the label on the syntactic object of the form {XP, YP} renders the relative ordering of the XP and the YP unspecified, leading to an unpronounceable result. Applied to the case at hand, no problem remains after ellipsis of *v*P consisting of the external argument (= XP) and the rest of the *v*P (= YP), since it removes these unpronounceable materials altogether.

In fact, overt bare *v*P can serve as a complement of various heads, as shown in (15). (15a) is a case of causative structures where a bare *v*P serves as the direct complement of the causative verb *-(s)ase* (see Murasugi & Hashimoto 2004, a.o.), and (b) illustrates the case of so-called *kata*-nominals, where the noun *-kata* 'way' directly takes a bare *v*P as its complement (see Kishimoto 2006, Takita 2020b, a.o.)

(15) a. [$_{v\text{-}\mathrm{saseP}}$ Miku-ga [$_{v\mathrm{P}}$ Tenma-ni Ichi-o home]-sase$_{v}$](-ta)
M.-Nom T.-Dat I.-Acc praise-cause-Past
'Miku made Tenma praise Ichi.'
b. [$_{\mathrm{NP}}$ [$_{v\mathrm{P}}$ Ichi-no okasi-no tabe]-kata$_{\mathrm{N}}$]
I.-Gen sweets-Gen eat-way
'Ichi's way of eating sweets'

What is important for our purpose is that a bare *v*P complement is possible when all the three problems mentioned above are somehow avoided, and the proposal is that ellipsis provides just another way of achieving it.[5]

The second question has to do with the relation between the modal particle and the embedding verbs. Recall that the absence of the modal particles in the ellipsis site is the key ingredient of the proposed analysis. If the relation in question is a kind of selection, be it syntactic and/or semantic, where the embedding verb selects a specific modal particle as schematically shown in (16a), how can it be satisfied in the proposed structure in (16b), where no modal particle is included to begin with?

[4] See, for instance, Lasnik (2008) for an independent case where a Case Filter violation can be repaired by ellipsis. I thank Nozomi Moritake (p.c.) for bringing this point to my attention.

[5] In (15), the external arguments of the *v*Ps are Case-marked, and I assume that these Case-markers allow the labeling problem to be resolved, following Saito's (2016) idea of anti-labeling devices (see also Takita 2020a for a related discussion). Note also that the problems on the verbal stems are saved by *-(s)ase* 'cause' and *-kata* 'way'.

(16) a. Subj [$_{CP}$ [$_{TModP}$ PRO [$_{vP}$ t_{PRO} … V-*v*] T_{Mod}] C] $V_{hope/decide/be.ordered/promise}$

b. Subj [$_{vP}$ PRO … V-*v*] $V_{hope/decide/be.ordered/promise}$???

However, notice that the relation in question in (16a) is not a direct head-head relation to begin with, since the complementizer intervenes between the verb and the particle. In addition to this point, all the embedding verbs in question are compatible with the control complement headed by the nominal complementizer *koto* 'fact', as shown in (17).[6]

(17) Ichi-ga [$_{CP}$ PRO soko-e iku koto]-o *nozonda/kimeta/meizirareta/yakusokusita*
I.-Nom there-to go fact-Acc hoped/decided/was.ordered/promised
'Ichi hoped/decided/was ordered/promised [to go to the museum].'

I take this fact as indicating that there is no strict one-to-one relation between the embedding verbs and the modal particles. Hence, I assume that the source of the ungrammatical combinations in (3) is not a violation of selection but semantic incompatibility, and that the presence of the embedding verbs is enough to recover the meaning that the examples in question would have without ellipsis.

The third and final potential concern for the proposed analysis, schematically repeated as (18), is the status of the vP_A. Although the vP_E is arguably serving as an argument so that it can be subject to AE, it is hard to regard the vP_A as an argument, since it is a direct complement of T. The question is, can AE be applied with non-argument antecedents?

(18) Antecedent: Subj [$_{CP}$ [$_{TModP}$ PRO [$_{vP_A}$ t_{PRO} … V-*v*] T_{Mod}] C] $V_{hope/decide/be.ordered/promise}$
Ellipsis: Subj ~~[$_{vP_E}$ t_{PRO} … V-*v*]~~ $V_{hope/decide/be.ordered/promise}$

As for this question, so-called "antecedent-contained" CAE (ACCAE; see Takita 2018, Takahashi 2024) offers a positive answer. First, let us consider (19a), which is a baseline example without ellipsis. In (19a), the reflexive pronoun *zibun* 'self' contained in the embedded CP within the adverbial clause headed by *atode* 'after' can be bound by either the local subject *kare* 'he' (which is supposed to be coreferential with the matrix subject *Tenma*) or the long-distance (but still within the adverbial clause) subject *Ichi*. Takita (2018) observes that the CP embedded within the adverbial clause can be missing taking the matrix clause as the antecedent (hence called as ACCAE) as shown in (19b), and in this case the ambiguity observed for (19a) disappears; (19b) only allows the reading where the missing reflexive is bound by the local antecedent.

(19) a. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga [$_{CP}$ kare$_1$-ga zibun$_{1/2}$-o hometa to] itta atode]
T.-Top I.-nom he-Nom self-Acc praised C said after
zibun$_1$-o hometa
self-Acc praised
'(lit.) Tenma$_1$ praised self$_1$ [$_{Adv}$ after Ichi$_2$ said [$_{CP}$ he$_1$ praised self$_{1/2}$]].'

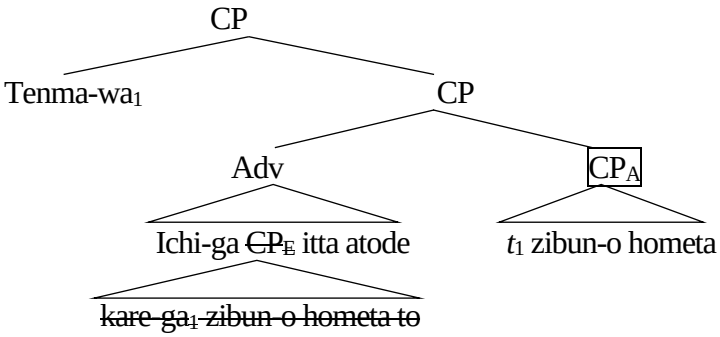
[6] The CP headed by the nominal complementizer is also a control complement, since the past tense form of the verb (e.g. *itta* 'went') is not allowed, as shown in (i). That is, this type of CP also lacks tense-alternation.

(i) *Ichi-ga [$_{CP}$ PRO soko-e itta koto]-o *nozonda/kimeta/meizirareta/yakusokusita*
I.-Nom there-to went fact-Acc hoped/decided/was.ordered/promised
'(lit.) Ichi hoped/decided/was ordered/promised [to have gone to the museum].'

b. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga Δ itta atode] zibun$_1$-o hometa
T.-Top I.-nom said after self-Acc praised
'(lit.) Tenma$_1$ praised self$_1$ [$_{Adv}$ after Ichi$_2$ said Δ]. (Δ = [$_{CP}$ he$_1$ praised self$_{1/*2}$]).'

Assuming that this reflects the parallelism constraint (cf. Fiengo & May 1994; see also Takahashi 2013 for AE) in the sense that the binding relation in the ellipsis clause must respect that of the antecedent, Takita (2018) argues that the missing CP containing the reflexive pronoun *zibun* 'self' is syntactically present but elided by CAE. To be more specific, Takita (2018) argues that an ACCAE example (19b) has a structure like(20), where the CP_E in the adverbial clause is elided under identity with (the lowest segment of) the matrix CP (i.e. CP_A).[7] Given this analysis, the fact that the reflexive pronoun in the ellipsis site must be locally bound follows as a reflex of the local binding relation in the matrix clause, namely the one between the matrix subject *Tenma* and the matrix object reflexive *zibun* 'self'.

(20)



What is crucial for the current discussion is the fact that the antecedent in (20), CP_A, is clearly a non-argument. If this is the case, taking a non-argument antecedent is not a problem for AE.

To summarize the discussion so far, this section has argued that the modal mismatches found in CAE can be analyzed as being only apparent, once it is assumed that the ellipsis site can be smaller than a full-fledged CP so that no modal particle is contained there. The next section shows that the current proposal can solve another mismatch found in CAE.

4. Extending the Analysis

The mismatch in question reveals itself if we look at ACCAE more closely. (21) represents schematic structures of the relevant parts of the analysis in (20) with a slight elaboration. The elaboration has to do with the matrix null complementizer Ø in the antecedent. Given this elaboration, it becomes obvious that this analysis must admit another mismatch, namely the one between the overt complementizer *to* 'that' in the CP_E and the matrix null complementizer Ø in the CP_A.

(21) Antecedent: [$_{CP}$ … [$_{Adv}$ …] [$_{CP_A}$ … V-*v*-T [$_C$ Ø]]]
Ellipsis: … [$_{Adv}$ … ~~[$_{CP_E}$ … V-*v*-T [$_C$ *to*]]~~ V …] …

The mismatch can be avoided, however, if the elided clausal argument can be a *v*P as in (22a) along the line with the general proposals of this paper. That is, what is elided is a *v*P, and its corresponding antecedent is the matrix *v*P, so that the troublesome complementizers are excluded from both of the ellipsis site and its antecedent. In addition to this possibility, since no mismatch is involved at the TP-

[7] Takita (2018) assumes the structure in (20) in order to solve an infinite regress problem. See Takahashi (2024) for a related discussion.

level in the case of examples like (19), the structure in (22b) is also a viable option, where a TP serves as the direct complement of the embedding verb. In this case, what is elided is the TP_E and its antecedent is TP_A, both of which are also free from complementizers.

(22) a. Antecedent: $[_{CP} \ldots [_{Adv} \ldots] [_{CP_A} [_{TP} \ldots \boxed{[_{vP_A} \ldots V\text{-}v]}\text{-T}] [_{C} \emptyset]]]$
Ellipsis: $\ldots [_{Adv} \ldots \sout{[_{vP_E} \ldots V\text{-}v]} V \ldots] \ldots$
b. Antecedent: $[_{CP} \ldots [_{Adv} \ldots] [_{CP_A} \boxed{[_{TP_A} \ldots [_{vP} \ldots V\text{-}v]\text{-T}]} [_{C} \emptyset]]]$
Ellipsis: $\ldots [_{Adv} \ldots \sout{[_{TP_E} \ldots V\text{-}v\text{-T}]} V \ldots] \ldots$

The mismatch illustrated in (21) can be trivial given that it might be possible to regard the overt complementizer *to* 'that' and the matrix null complementizer *Ø* as syntactically identical with different mophophonological realizations, because both of them introduce a declarative clause. However, it paves the way to deal with a far bigger mismatch found in ACCAE. To be more specific, the analysis depicted in (22) predicts that any mismatches at the CP-level are tolerable in ACCAE. This prediction is confirmed by the fact that even declarative-interrogative mismatches are allowed under ACCAE, which is to be presented below.

First, (23) shows that a verb like *sinziteiru* 'believe' is compatible with a declarative CP but not with an interrogative CP, while a verb like *siritagatteiru* 'want to know' exhibits the opposite pattern (the complementizers are given in boldface and the embedding verbs are italicized).

(23) a. Ichi-ga [$_{CP}$ Tenma-ga zibun-o hometa **to**/***ka**] *sinziteiru*
I.-Nom T.-Nom self-Acc praised C/Q believe
'(lit.) Ichi believes [that/*whether Tenma praised self].'
b. Ichi-ga [$_{CP}$ Tenma-ga zibun-o hometa ***to**/**ka**] *siritagatteiru*
I.-Nom T.-Nom self-Acc praised C/Q want.to.know
'(lit.) Ichi wants to know [*that/whether Tenma praised self].'

The crucial examples are given in (24)-(25). In (24a), which involves no ellipsis, the embedding verb within the reason adverbial clause is *sinziteiru* 'believe', which takes a declarative CP complement, and the whole matrix clause is interrogative, as indicated by the matrix interrogative complementizer *no*. In (24b), the declarative CP complement is missing, and it shows the parallelism effect, indicating that CAE is applied. Since the matrix clause is the interrogative clause, the grammaticality of (24b) suggests that CAE can ignore the declarative ellipsis-interrogative antecedent mismatch. (25) is the opposite pattern. In (25a), which is a baseline example without ellipsis, the embedding verb is *siritagatteiru* 'want to know' taking the *ka*-headed interrogative CP, and the whole matrix clause is declarative headed by *Ø*. Just like (24b), (25b) containing the missing CP is acceptable with the parallelism effect, suggesting that CAE can ignore the interrogative ellipsis-declarative antecedent mismatch as well.

(24) a. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga [$_{CP}$ kare$_1$-ga zibun$_{1/2}$-o hometa **to**] *sinziteiru* kara]
T.-Top I.-nom he-Nom self-Acc praised C believe because
zibun$_1$-o hometa **no**?
self-Acc praised Q
'(lit.) Did Tenma$_1$ praise self$_1$ [$_{Adv}$ because Ichi$_2$ believes [$_{CP}$ that he$_1$ praised self$_{1/2}$]]?'
b. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga Δ *sinziteiru* kara] zibun$_1$-o hometa **no**?
T.-Top I.-nom believe because self-Acc praised Q
'(lit.) Did Tenma$_1$ praise self$_1$ [$_{Adv}$ because Ichi$_2$ believes Δ]? (Δ = [$_{CP}$ he$_1$ praised self$_{1/*2}$])'

(25) a. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga [$_{CP}$ kare$_1$-ga zibun$_{1/2}$-o hometa **ka**] *siritagatteiru* kara]
T.-Top I.-nom he-Nom self-Acc praised Q want.to.know because
zibun$_1$-o hometa **Ø**
self-Acc praised C
'(lit.) Tenma$_1$ praised self$_1$ [$_{Adv}$ because Ichi$_2$ wants to know [$_{CP}$ whether he$_1$ praised self$_{1/2}$]].'

b. Tenma$_1$-wa [$_{Adv}$ Ichi$_2$-ga Δ *siritagatteiru* kara] zibun$_1$-o hometa **Ø**
T.-Top I.-nom want.to.know because self-Acc praised C
'(lit.) Tenma$_1$ praised self$_1$ [$_{Adv}$ because Ichi$_2$ wants to know Δ]. (Δ = [$_{CP}$ he$_1$ praised self$_{1/*2}$])'

The fact that ACCAE is possible even with declarative-interrogative mismatches can be straightforwardly captured under the proposed analysis, as no matter which combination of the complementizers and the embedding verbs in (26) is chosen, ellipsis of *v*P with a *v*P-antecedent is unaffected (the same holds for the TP-based analysis in terms of the structure depicted in (22b)).

(26) Antecedent: [$_{CP}$ … [$_{Adv}$ …] [$_{CP_A}$ [$_{TP}$ … [$_{vP_A}$ … V-*v*]-T] **C/Q**]]
Ellipsis: … [$_{Adv}$ … ~~[$_{vP_E}$ … V-*v*]~~ *sinziteiru*/*siritagatteiru* …] …

On the other hand, if the difference between the overt complementizer *to* 'that' and the matrix null complementizer Ø in (21) were just phonological, the data in (24)-(25) would become hard to explain.

Before closing this section, let us briefly mention a further prediction of the proposed analysis: Given that the ellipsis site can be as small as *v*P, it is predicted that the ellipsis site and its antecedent can be different with respect to tense and negation.[8] In fact, Takita (2023a,b) discusses tense mismatches are possible under sluicing in Japanese, which can be derived via CAE (see Saito 2007, Takita 2010, a.o.). As for negation, a more careful investigation seems necessary, but the grammaticality of examples like (27a) seems to suggest that such a mismatch can also be ignored.

(27) a. Miku-wa Tenma-ni [PRO obakeyasiki-e(-wa) iku-**na** to] *meizita*-ga,
M.-Nom T.-Dat ghost.house-to-Top go-NA C ordered-but
soredemo [Op$_1$ Tenma-ga Δ *kimeta* no]-wa kono obakeyasiki-e$_1$ da
nonetheless T.-Nom decided C-Top this ghost.house-to Cop
'(lit.) Miku had ordered Tenma not to go to a ghost house, but nonetheless it is this ghost house that Tenma decided Δ.'

b. [Op$_1$ Tenma-ga [PRO t_1 ik-**oo** to] *kimeta* no]-wa kono obakeyasiki-e$_1$ da
T.-Nom go-Int C decided C-Top this ghost.house-to Cop
'(lit.) It is this ghost house [that Tenma decided [to go t_1]].'

c. *[Op$_1$ Tenma-ga [PRO t_1 iku-**na** to] *kimeta* no]-wa kono obakeyasiki-e$_1$ da
T.-Nom go-NA C decided C-Top this ghost.house-to Cop
'(lit.) It is this ghost house [that Tenma decided [not to go t_1]].'

In (27a), the embedded (object) control complement of the first clause contains the negative imperative particle *-na* (simply glossed as NA). Following this clause, we have the subsequent clause containing the missing CP followed by the verb *kimeta* 'decided', and it can have an interpretation similar to (27b), where the verb *kimeta* 'decided' takes a CP complement containing the intentive particle *-(y)oo*. Crucially, the subsequent clause cannot have the interpretation given in (27c), where the embedded

[8] I am grateful to Rajesh Bhatt (p.c.), Željko Bošković (p.c.) and Miloje Despić (p.c.) for raising this issue and offering valuable comments and discussions.

control complement contains the particle *-na*, which is thus identical to the one in the antecedent. In fact, (27c) is simply ungrammatical, presumably because of the incompatibility between *-na* and *kimeta* 'decided'. Hence, the grammaticality of (27a) points to the direction that mismatches with respect to negation can be ignored under CAE, as the proposed analysis predicts.

5. Conclusion

This paper has first offered novel observations concerning possible mismatches under CAE. To be more specific, it is observed that CAE can ignore mismatches with respect to the modal particles contained in the ellipsis site. Then, it is proposed that the puzzle can be solved maintaining a syntactic identity approach by assuming a smaller ellipsis site, which is usually unavailable but made possible by ellipsis. Finally, it is also argued that the analysis can accommodate some other mismatches found in CAE.

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Productive vowel harmony in Sino-Japanese phonology*

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1. Introduction

Japanese has borrowed words from dialects of Chinese throughout its history. These old Chinese loans, or Sino-Japanese ("SJ") lexical items, exhibit phonological patterns that could be characterized in terms of vowel harmony. The final vowels of SJ roots, which historically emerged through vowel epenthesis, tend to agree with their preceding vowels in backness (e.g., *sek**i*** 席 'seat'; *sok**u*** 足 'foot'). These patterns are either analyzed as driven by synchronic grammar or considered to be simply lexicalized. This research conducts a judgment experiment to examine whether present-day Japanese speakers actively harmonize vowels in nonce SJ words. The results show that the effects of backness harmony are weak but real. Similar patterns are also observed in the adaptations of loanwords from English. Thus, vowel harmony is productive and should be incorporated into Japanese phonology.

The remainder of this paper is organized as follows. Section 2 describes the distributional patterns of vowels in SJ roots, which apparently conform to vowel harmony. Section 3 raises the question of whether these patterns are phonologically driven or lexically specified. Sections 4 and 5 report on the methods and results of a nonce-word experiment that addresses this question. Sections 6 and 7 provide discussion and conclusions.

2. Background: Root-final vowels and harmony

SJ roots are restricted in their prosodic size and segmental composition; they are either one or two moras in length and show only certain kinds of segments (for details, see Ito and Mester 2015). One of the most common SJ root structures is $(C_1)V_1C_2V_2$, where the second consonant C_2 is always the voiceless stop /t/ or /k/ and the second vowel V_2 is the high vowel /i/ or /u/, as illustrated in (1).

(1) Segmental composition of SJ roots

$$(C_1)\ V_1\ C_2 \begin{Bmatrix} t \\ k \end{Bmatrix}\ V_2 \begin{Bmatrix} i \\ u \end{Bmatrix}$$

The choice of V_2 is often predictable from the backness of the first vowel V_1 (see Martin 1952; Tateishi 1990; Ito and Mester 1996, 2015; Kurisu 2000; Labrune 2012:28-34; Burness 2016; Tanaka to appear). V_2 tends to be the front vowel *i* when V_1 is also a front vowel, such as /i/ or /e/, as shown in (2a); otherwise, it shows up as the back vowel *u*, as in (2b). Note that here and thereafter, broad transcriptions in italics are used when phonetic details are irrelevant to the discussion and/or when the phonological (underlying) status of segments is unclear (see Section 3).

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(2) V_2 can be predicted from the backness of V_1

a.	*i t **i***	一	'one'	*s i k **i***	式	'style'	*s e k **i***	席	'seat'	...
b.	*a t **u***	圧	'pressure'	*sy u k **u***	祝	'celebrate'	*s o k **u***	足	'foot'	...

The data in (2) can be easily described in terms of vowel harmony: within a single root of the form $(C_1)V_1C_2V_2$, the two vowels must agree in tongue backness. However, this generalization is not without exception. SJ roots containing vowels with disagreeing backness features are also attested (e.g., *si**tu*** 質 'quality'). Further complications have been reported with respect to the place of C_2. Roots with dorsal /k/ in C_2 show stronger harmony effects than those with /t/ (for detailed data, see Tateishi 1990; Tanaka to appear). Thus, vowel harmony does not apply across the board in SJ roots.

A non-phonological factor in the choice of V_2 is the timing of borrowing. The historical origin of V_2 is vowel epenthesis. Original CVC roots in source Chinese languages have become CVCV in Japanese (e.g., 德 *|tək| → *toku* 'virtue'). Many SJ roots with *i* as V_2 are old loans (called *Go-on* 呉音 'Wu sound') borrowed around or before the 7th century. This is presumably because the standard epenthetic vowel was [i] in older forms of Japanese (see Poser 1984; Frellesvig 2010:283). Later loans (*Kan-on* 漢音 'Han sound') usually employ *u*. These forms with *u* have largely replaced older ones with *i*. However, words of high frequency and religious terms (e.g., *niti* 日 'sun, Japan'; *iti* 一 'one'; *siki* 色 'form (of Buddhism)') have retained archaic pronunciation with [i] (see Hayashi 1980; Komatsu 1995; Haraoka 2020). This resulted in the coexistence of *i* and *u* as V_2 in SJ roots.[1]

These facts raise the question of whether the quality of V_2 in $(C_1)V_1C_2V_2$ roots is actively determined by the phonological grammar of Japanese or is simply stored in the lexicon. Explanations from both perspectives have been proposed in the literature, as will be discussed in more detail in the next section.

3. Issue: Phonological or lexicalized?

Phonologists have analyzed the CVCV SJ roots as underlyingly /CVC/ in the sense of traditional rule-based phonology. Based on this assumption, vowel epenthesis occurs as a grammatical operation that turns /CVC/ into [CVCV] on the surface. The choice of this epenthetic vowel, namely [i] or [u], is conditioned by the backness of the preceding vowel (see, e.g., Tateishi 1990; Ito and Mester 1996 for analyses along this line). Another possibility is that V_2 is already in the underlying representation, as in /CVCi/ and /CVCu/. Under this analysis, the quality of the last vowel in each root is lexically specified and not actively derived by grammar (see, e.g., Labrune 2012:31; Burness 2016). Within the framework of Optimality Theory, a hybrid of the two analyses is also possible based on the Richness of the Base assumption (see Kurisu 2000; Ito and Mester 2015); however, such an account nonetheless assumes that grammar plays a role in the selection of the last vowel.

Whether the vowel in question is phonologically derived or lexically specified bears some theoretical issues. A purely lexicalization-based account misses the point that the quality of the vowel is fairly predictable. Also, the patterns of backness agreement in SJ phonology show similarities with those of vowel harmony in other languages (see Section 6), suggesting that they may be governed by universal grammatical principles. Finally, the productivity of this

[1] This also created doublets that are written with the same character but have a difference in pronunciation and meaning (e.g., *syoku* 色 'color'; *siki* 色 'form (of Buddhism)').

phenomenon has yet to be fully tested. It has been argued that backness harmony is not productive in Japanese (Burness 2016). Indeed, the borrowing of SJ roots no longer occurs; hence, there is no clear evidence of epenthesis or harmony. However, the mere lack of evidence does not prove that present-day Japanese speakers are unaware of these patterns.

This research aims to address the issue of productivity. Specifically, I conducted an experiment to test whether Japanese speakers actively apply backness harmony to nonce SJ roots. The next section describes the experimental methods.

4. Methods

The experiment employed a forced-choice task in which participants were asked to choose between *i* and *u* as the last vowel of a CVCV SJ root.

4.1 Materials

The stimuli were compound words composed of two SJ roots. They were written in *kanji* (idiographic Chinese characters) and *katakana* (phonographic Japanese script). The first kanji of each compound was hidden by a circle (e.g., ○瞰 メッカン *mekkan* '○-overlook'). Because the word contained a geminate in the middle, this created ambiguity regarding the last vowel of the first element (e.g., *meki* or *meku* for the word above).

To explain how this ambiguity arises, a description of geminate formation in SJ compounding is in order. The last vowel of a CVCV SJ root, which may or may not be underlyingly present depending on the analysis, shows up on the surface when the root is uttered in isolation (e.g., *iti* 一 'one'). However, when this CVCV root is combined with another root with an initial CV sequence (i.e., CVCV + CV...), the last vowel can be absent from the surface (CVC~~V~~ CV...), yielding a geminate (CVC͡CV...) sometimes accompanied by regressive assimilation (e.g., *tk* → *kk*). This process is illustrated in (3) with examples of SJ root forms uttered in isolation and in the resulting compounds.

(3) Geminate formation in SJ compounds: CVCV + CV... → CVC͡CV...

a.	*iti*	+	*ten*	→ *itten*	一点	'one-point'
b.	*hatu*	+	*ka*	→ *hakka*	発火	'originate-fire (ignition)'
c.	*seki*	+	*ki*	→ *sekki*	石器	'stone-tool'

This can make the first element of a compound ambiguous. As shown in (4), a combination of different roots may yield homophonous compounds. Notice that the isolation form of the first element may have *i* or *u* in its last syllable, and that the resulting compound in each case has its own distinct meaning. Although the meaning can usually be disambiguated from the context or writing, the first element cannot be recovered from the phonetic form of the compound alone.

(4) Ambiguity regarding the last vowel of the first element[2]

a.	*iti*	+	*pin*	→ *ippin*	一品	'one-item'
b.	*itu*	+	*pin*	→ *ippin*	逸品	'excellent-item'

Returning to the stimuli in the current experiment, this kind of ambiguity can be used to address the productivity of vowel harmony in SJ roots. The compounds used as experimental

[2] In reality, the second element *pin* in (4) is pronounced as *hin* in isolation, and *p* only shows up as a result of compounding (see Ito and Mester 2015). Here, I use *p* for the sake of simplicity.

stimuli always contained a geminate in word-medial position. Participants guessed whether the first element would have *i* or *u* as the last vowel if uttered in isolation. The general prediction is that their decision will be conditioned by the backness of the preceding vowel, or in other words, by the principle of vowel harmony.

First elements were all $(C_1)V_1C_2V_2$ roots, where V_1 was /i, e, a, o, u/ and C_2 was /t, k/; V_2 was *i* or *u*, which was going to be chosen by the experiment participants themselves. I prepared two kinds of stimuli: "Real" and "Nonce" items. The Real ones were roots consisting of existent sound sequences in SJ root phonology (e.g., *kutu~kuti*). That is, they could be homophonous with real roots (e.g., *kutu* 掘 'dig'). They were used to test Japanese speakers' awareness of the harmony patterns observed in actual data. The Nonce items were completely non-existent sequences (e.g., *meku~meki*). There are segments that commonly occur in SJ phonology, but not all combinations of these segments are possible, creating distributional gaps. These gaps were used to create novel SJ-like roots.[3] The Nonce items, as opposed to the Real ones, were thus used to address the true productivity of backness harmony. I prepared 12 items for each category. Table 1 presents the full list of items.

Real				Nonce			
Kana	Roman	Kana	Roman	Kana	Roman	Kana	Roman
カツ・カチ	*katu~kati*	ハク・ハキ	*katu~kati*	ナツ・ナチ	*natu~nati*	ナク・ナキ	*naku~naki*
サツ・サチ	*satu~sati*	ヤク・ヤキ	*katu~kati*	ワツ・ワチ	*watu~wati*	ザク・ザキ	*zaku~zaki*
ヒツ・ヒチ	*hitu~hiti*	シク・シキ	*siku~siki*	ビツ・ビチ	*bitu~biti*	ビク・ビキ	*biku~biki*
リツ・リチ	*ritu~riti*	チク・チキ	*tiku~tiki*	ギツ・ギチ	*gitu~giti*	ミク・ミキ	*miku~miki*
フツ・フチ	*hutu~huti*	フク・フキ	*huku~huki*	ムツ・ムチ	*mutu~muti*	ムク・ムキ	*muku~muki*
クツ・クチ	*kutu~kuti*	シュク・シュキ	*syuku~syuki*	スツ・スチ	*sutu~suti*	ルク・ルキ	*ruku~ruki*
セツ・セチ	*setu~seti*	エク・エキ	*eku~eki*	デツ・デチ	*detu~deti*	メク・メキ	*meku~meki*
テツ・テチ	*tetu~teti*	テク・テキ	*teku~teki*	ヘツ・ヘチ	*hetu~heti*	ゼク・ゼキ	*zeku~zeki*
コツ・コチ	*kotu~koti*	ボク・ボキ	*boku~boki*	ゴツ・ゴチ	*gotu~goti*	ノク・ノキ	*noku~noki*
トツ・トチ	*totu~toti*	ソク・ソキ	*soku~soki*	ロツ・ロチ	*rotu~roti*	ヒョク・ヒョキ	*hyoku~hyoki*

Table 1: First elements

For the second elements of compounds, 12 existent but somewhat infrequent SJ roots with initial /t/ and /k/ were used. Table 2 provides the full list.

Kanji	Kana	Roman	Gloss	Kanji	Kana	Roman	Gloss
戴	タイ	*tai*	put on	訶	カ	*ka*	scold
歎	タン	*tan*	sigh	瞰	カン	*kan*	overlook
顛	テン	*ten*	peak; fall	牽	ケン	*ken*	drag
囀	テン	*ten*	chirp	瞼	ケン	*ken*	eyelid
套	トウ	*too*	cover	膏	コウ	*koo*	fat; paste
禱	トウ	*too*	pray	薨	コウ	*koo*	demise

Table 2: Second elements

The first and second elements were combined to form novel compound words. The created compounds had a geminate in the middle. Orthographically, the first element was hidden by a circle (e.g., ○瞰 メッカン *mekkan* '○-overlook'; ○囀 ナッテン *natten* '○-chirp'). In total, 120 compounds were prepared with Real first elements and another 120 with Nonce

[3] Some of these gaps may not be accidental, but are based on phonological restrictions. Addressing this is beyond the scope of this paper.

first elements.

4.2 Participants
The participants were 250 native Japanese speakers recruited through the crowdsourcing service *CrowdWorks* for 280 Japanese yen as a reward. The mean age was 40.93. The gender breakdown was as follows: 114 women, 132 men, and 6 no answers. One half of the participants (n = 125) were assigned to the Real-stimuli condition and the other half (n = 125) to the Nonce-stimuli condition.

4.3 Procedure
The study was conducted on-line on the JavaScript-based experiment platform *lab.js* (Henninger et al. 2022). The recruited participants were taken to a website hosting the experiment. They were first shown a consent form. After agreeing to participate, they were given instructions and a practice session. They then completed the main session in which they answered questions about the reading of the first element of 120 SJ compounds presented one by one in a random order. They also voluntarily provided their basic personal information such as age and gender at the end of the experiment.

Figure 1 illustrates the main task with English translations. On each trial, participants were first presented with a compound word written in kanji whose first character was hidden. The reading of the entire compound written in katakana was shown in parentheses immediately below the word. They were then asked to guess the reading of the hidden character. They were given two reading options, one with *i* and the other with *u* as the last vowel, displayed as clickable buttons, and were asked to choose the one that would sound more natural. They provided their answer by clicking on one of the buttons. (The positions of the buttons were shuffled for each trial.) This task was repeated 120 times.

Figure 1: Experimental task

5. Results
Figure 1 plots the average rates of *i*-response by V_1 type (/i, e, a, o, u/), broken down by C_2 (/k, t/) as well as stimulus type (Real and Nonce). Error bars represent 95% confidence intervals.

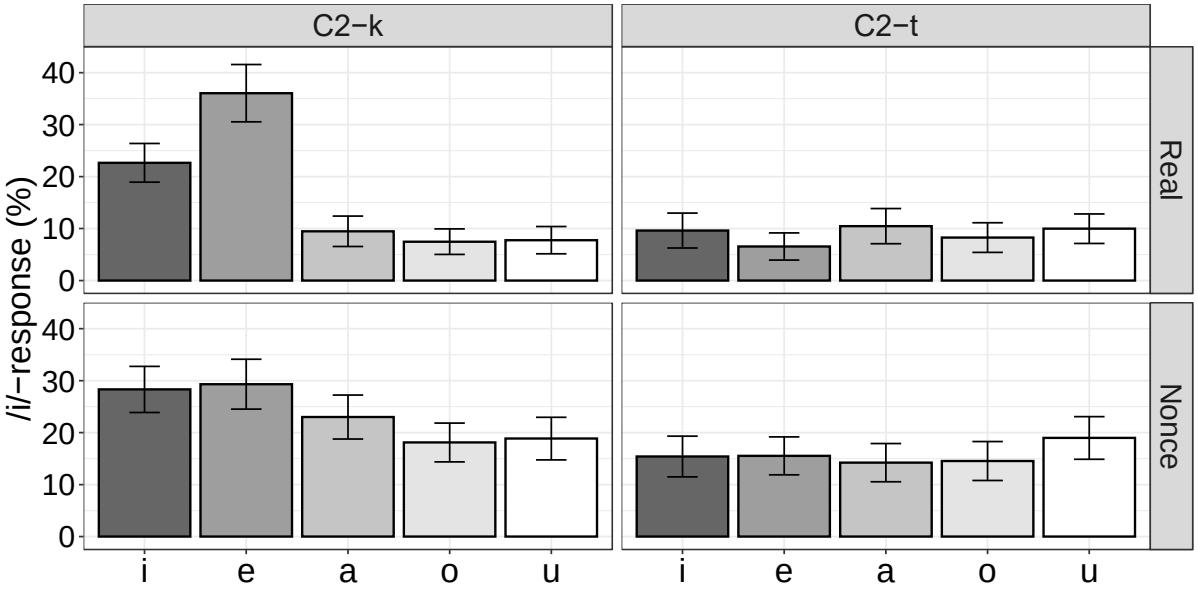

Figure 2: Average *i*-response rates by V_1 (Error bars: 95%CI)

In general, the rates are not very high. (Note that the scale of the *y*-axis was adjusted to be between 0 and 50, as all the conditions scored below 50%.) That said, vowel harmony effects can nonetheless be observed. When C_2 is /k/ in Real items (top left), the *i*-response rates of the two front-V_1 conditions are relatively high; the rate is the highest for V_1-/e/ and the second highest for V_1-/i/. By contrast, the back vowel conditions V_1-/a/, V_1-/o/, and V_1-/u/ show lower rates. No such pattern is found when C_2 is /t/ (top right).

Turning to the Nonce-stimuli results, though much weaker, they show similar harmony effects. Notice that the front vowel conditions V_1-/i/ and V_1-/e/ have somewhat higher rates than the others when C_2 is /k/ (bottom left), while the rates are similar across all the conditions when C_2 is /t/ (bottom right). Overall, Japanese speakers prefer *u* as V_2 in general, but tend to choose *i* when V_1 is a front vowel, such as /i/ and /e/, and C_2 is /k/. Importantly, this trend was also observed in non-existent SJ-like items.

Mixed-effects logistic regression models were individually fitted to the results of the Real and Nonce conditions using the *lmer* function of the *lme4* and *lmerTest* packages (Bates et al. 2015; Kuznetsova et al. 2017) on R (R Core Team 2023). For each model, the response variable was the choice of *i* as V_2 (as opposed to *u*), and the fixed predictors were V_1 (/i, e, a, o, u/), C_2 (/t, k/), and their interaction. The random structure included random intercepts for participants, E1 items and E2 items. The baseline intercept was set to the condition in which V_1 was /i/ and C_2 was /k/. Table 3 shows the predictions of the two models.

Real						Nonce					
Predictor	β	SE	*z*	*p*		Predictor	β	SE	*z*	*p*	
(Intercept)	−1.79	0.23	−7.60	<.001	***	(Intercept)	−1.45	0.22	−6.70	<.001	***
V_1-/e/	0.92	0.24	3.80	<.001	***	V_1-/e/	0.07	0.22	0.32	.751	
V_1-/a/	−1.25	0.25	−4.92	<.001	***	V_1-/a/	−0.37	0.22	−1.68	.093	.
V_1-/o/	−1.57	0.26	−6.08	<.001	***	V_1-/o/	−0.76	0.22	−3.44	<.001	***
V_1-/u/	−1.50	0.26	−5.86	<.001	***	V_1-/u/	−0.69	0.22	−3.13	.002	**
C_2-/t/	−1.23	0.27	−4.61	<.001	***	C_2-/t/	−1.00	0.23	−4.31	<.001	***
V_1-/e/:C_2-/t/	−1.40	0.36	−3.89	<.001	***	V_1-/e/:C_2-/t/	−0.06	0.31	−0.18	.860	
V_1-/a/:C_2-/t/	1.37	0.36	3.77	<.001	***	V_1-/a/:C_2-/t/	0.26	0.32	0.83	.407	
V_1-/o/:C_2-/t/	1.38	0.37	3.73	<.001	***	V_1-/o/:C_2-/t/	0.69	0.32	2.17	.030	*
V_1-/u/:C_2-/t/	1.56	0.37	4.25	<.001	***	V_1-/u/:C_2-/t/	1.00	0.31	3.19	.001	**

Table 3: Logistic regression models: *i*-response in Real and Nonce stimuli

According to the model for the Real-stimuli results, while the baseline intercept (V_1-/i/ and C_2-/k/) itself is negative (β = −1.79, *z* = −7.60), V_1-/e/ has a positive effect (β = 0.92, *z* = 3.80) and the back vowel conditions V_1-/a/, V_1-/o/, and V_1-/u/ all show negative effects (β = −1.25, *z* = −4.92; β = −1.57, *z* = −6.08; β = −1.50, *z* = −5.86). This indicates that vowel harmony is at work; although *u* is generally preferred, the probability of selecting *i* is relatively high when V_1 is a front vowel, especially in the case of mid-front /e/. C_2-/t/ shows a negative effect (β = −1.23, *z* = −4.61), and so does its interaction with V_1-/e/ (β = −1.40, *z* = −3.89); yet the interactions of C_1-/t/ with V_1-/a/, V_1-/o/ and V_1-/u/ show positive effects (β = 1.37, *z* = 3.77; β = 1.38, *z* = 3.73; β = 1.56, *z* = 4.25). Taken together, these results indicate that the effects of vowel harmony seen in C_2-/k/ items are canceled out in C_2-/t/ items.

The effects of these predictors are similar, but are reduced in the Nonce-stimuli results. The positive effect of V_1-/e/ is weak (β = 0.07, *z* = 0.32) and not statistically significant (*p* = .751). That is, the stronger harmony effect of V_1-/e/ observed for Real items was not confirmed. Turning to the back vowel conditions, V_1-/a/ has a negative effect (β = −0.37, *z* = −1.68) but this does not reach statistical significance, either (*p* = .093). Nevertheless, V_1-/o/ and V_1-/u/ show more robust negative effects (β = −0.76, *z* = −3.44; β = −0.69, *z* = −3.13). This can be attributed to the role of vowel harmony; *u* is more likely to be chosen when V_1 is a back vowel, such as /o/ and /u/ (but not /a/). As for C_2-/t/, it shows a negative effect (β = −1.00, *z* = −4.31), while its interactions with V_1-/o/ and V_1-/u/ are positive (β = 0.69, *z* = 2.17; β = 1.00, *z* = 3.19). Thus, the effects of vowel harmony are not clearly seen when C_2 is /t/.

To summarize, Japanese speakers reproduced the harmony-like patterns in the choice of the last vowel for both existent and non-existent SJ roots. The Nonce-stimuli results are less clear, but nonetheless provide evidence that vowel harmony is productive; speakers tend to choose front *i* after front /i, e/ and back *u* after back /o, u/, even if the presented SJ-like roots are composed of segmental sequences that they have never seen before (e.g., *meki*, *biki*, and *zeki*).

6. Discussion

The experimental results shown above have several implications for Japanese and general linguistics. First, given its productivity, vowel harmony should be incorporated into the phonological grammar of Japanese. Present-day Japanese is not commonly considered to have active vowel harmony. The distributional patterns of root-final vowels in SJ phonology are also often assumed to be lexicalized (see Labrune 2012; Burness 2016). However, native Japanese speakers appear to be psychologically aware of these harmony-based patterns and further reproduce them in experimental settings. This finding suggests that phonological intuitions are

involved in this phenomenon. The fact that the data exhibit variability per se should not dismiss the role of grammar. Probabilistic grammar models that can capture variable data are now widely accepted and used in the field (see, e.g., MaxEnt HG; Goldwater and Johnson 2003; Jäger 2007; Hayes and Wilson 2008).[4]

This is not the only evidence that vowel harmony is operative in Japanese phonology. Epenthetic vowels in Western loans show similar harmony-like patterns (see, e.g., Irwin 2011:108; Otaki 2012; Shoji and Shoji 2014; Bălan 2015). In loanwords from English, *u* is most commonly used to repair an illicit syllable ending in a coda consonant (e.g., English |tæksi| → Japanese *tak**u**si*ː). However, *i* is also sometimes used when the target syllable consists of a front vowel and /k/, as shown in (5).

(5) *i*-epenthesis after a front vowel and /k/ in English loanwords

a.	ˈtɛksəs	→	*tek**i**sasu*	‘Texas’
b.	ˈlɛksɪkɑn	→	*rek**i**sikon*	‘lexicon’
c.	ˈtɛkst	→	*tek**i**suto* (~ *tek**u**suto*)	‘text’
d.	ˈkeɪk	→	*keːk**i***	‘cake’
e.	ˈsteɪk	→	*suteːk**i***	‘steak’
f.	ˈmɪksɚ	→	*mik**i**saː*	‘mixer’

Note that most examples in (5) contain the non-high front vowel /e(ː)/ before the epenthesized vowel. The epenthesis of *i* after the high front vowel /i(ː)/ is in fact much rarer. Recall that in the experimental results with Real-type stimuli (see the top-left panel in Figure 1), the V_1-/e/ condition also showed a higher harmony (*i*-response) rate than V_1-/i/. Similar patterns have also been reported in other languages with active vowel harmony. In Ural-Altaic languages such as Hungarian and Old Mongolian, lower front vowels tend to be stronger harmony triggers (see Hayes et al. 2009 and references therein). Thus, the patterns in English loans and SJ roots in Japanese may be rooted in the universal principle of vowel harmony (for more discussion, see Tanaka to appear). It should also be noted, however, that this /i/-/e/ asymmetry was not observed in the Nonce-stimuli results (see Figure 1, bottom left). Further experimental investigations, possibly using loanwords of the kind shown in (5), are needed to address the height effect.

Additionally, the experimental results and loanword data point to the relevance of intervening consonants. In the experiment, vowel harmony was evident only when C_2 was /k/, and not when it was /t/ (left vs. right in Figure 1). In loanword adaptation, *i*-epenthesis may occur after a front vowel and /k/, as shown in (5), but not after a front vowel and /t/. This /k/-/t/ asymmetry may be due to articulatory reasons.[5] The dorsal stop /k/, whose main articulator is the tongue body, has a wide range of tongue positions in terms of backness. Thus, when it is preceded by a front vowel, it also becomes front ([k̟]), steadily transmitting harmony to the

[4] The fact that *i* and *u* are associated with particular lexical items requires further analysis. For example, grammar models with lexically indexed constraints (see Pater 2000, 2010) or gradient symbolic representations (see Hsu 2022) may be used to capture such lexical idiosyncrasies.

[5] The null results regarding C_2-/t/ may also be due to an orthographic effect. The Japanese writing system uses a small letter for *tu* (ッ) to represent a geminate. Since participants were presented with SJ-like words containing a geminate written with this small *tu* and were asked to choose between *ti* and *tu* in the case of C_2-/t/, they might have been biased toward selecting *u* (i.e., *tu*) regardless of the vowel conditions. This issue may be resolved by using auditory stimuli instead of orthographic ones. I thank a participant at GLOW in Asia XIV for pointing this out.

following vowel. By contrast, coronal /t/ blocks harmony, as its articulation involves a tongue tip gesture, and the backness of the tongue body itself is much more constrained.

7. Conclusion

In conclusion, this study provides experimental evidence that vowel harmony is productive in Sino-Japanese phonology. Japanese speakers tend to decide the quality of the last vowel in novel SJ-like roots conforming to backness harmony, suggesting that phonological grammar plays a role. This finding raises further issues, such as place and height effects, as well as their relevance to the universal principle of vowel harmony. I leave them for future research.

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Number as feature: evidence from Turkish -(s)I

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1. Introduction

How the number specifications (singularity or plurality) of noun phrases are realised have received different proposals in the generative framework. On one hand, number specifications can have its own projection (see Ritter 1995 for an overview). For example, Ritter (1991) argues that a separate projection between NP and DP labelled NumP must exist to account for the word order in free genitive constructions in Modern Hebrew. On the other hand, some argue that number specifications do not constitute its own projection, but behave like a feature and reside on other syntactic categories. Dobrovie-Sorin (2012) showed that many contrasts between English and Romance languages (e.g., Adj-to-N conversion) are better explained if Number is analysed as a feature on different projections.

In this paper, I attempt to show that how nouns and noun-noun compounds (NN compounds henceforth) in Turkish behave under suspended affixation (SA) provides evidence for the "Number-as-feature" proposal. Sec. 2 introduces the notion of suspended affixation and the distribution of the compound marker *-(s)I* in Turkish. Sec. 3 demonstrates how the NumP proposal does not account for some behaviours of nouns and NN compounds under SA, but the "Number-as-feature" proposal can. Sec. 4 concludes.

2. Background

2.1. Suspended Affixation

Suspended affixation (SA) is the phenomenon where certain affixes can be omitted from all conjuncts other than the final one while maintaining their semantic scope over the whole construction (Kabak 2007). Various inflectional affixes in the verbal and nominal domain can undergo SA as shown in (1) and (2):

(1) Verbal – copula, tense and personal agreement:
Zengin ve ünlü-y-dü-m.
rich and famous-COP-PST-1.SG
'I was rich and famous.' (Kabak 2007)

(2) a. Nominal – plural:
ev ve dükkan-lar
house and shop-PL
'houses and shops' (Kharytonava 2011)
b. Nominal – possessive:
kitap ve defter-im
book and notebook-POSS.1SG
'my book and (my) notebook' (Kornfilt 2012)

Although plural and possessive suffixes can be suspended when they appear on their own, when they appear together, suspending the possessive marker alone while leaving the plural suffix on the non-final conjunct is prohibited (3a). Both suffixes must be suspended together (3b). In other words, the plural marker cannot be left on the non-final conjunct when it is followed by other suffixes.

(3) a. * kedi-ler ve köpek-ler-im
cat-PL and dog-PL-POSS.1SG
b. kedi ve köpek-ler-im
cat and dog-PL-POSS.1SG
'my cats and (my) dogs'

In addition, when there is SA of the possessive as in (3), it is very difficult to get the reading where the first conjunct has a general interpretation (i.e., 'cats' rather than 'my cats') while the second conjunct has a specific referential reading. This shows that whenever there is a non-final conjunct over which a suffix – in this case, the possessive – can have scope, it must have scope over that non-final conjunct.

2.2. Distribution of *-(s)I*

In Turkish, NN compounds are formed with an obligatory marker *-(s)I*[1] immediately following the second noun (4). However, this suffix can neither be suspended when two NN compounds are coordinated (5), nor be suspended when the head noun of the two compounds are coordinated (6) . As for pluralised compounds, the plural marker always precedes the compound marker, and it must not be suspended either (7).

(4) a. bira şişe*(-si)
beer bottle-SI
'beer bottle'
b. masa kenar*(-ı)
table edge-SI
'table edge'

(5) NN compound coordination:
a. * [dans kurs ve masaj terapi] -i
dance course and massage therapy -SI
b. [dans kurs-ı] ve [masaj terapi-si]
dance course-SI and massage therapy-SI
'dance course and massage therapy'

(6) NN compound head coordination:
a. * bira [şişe ve kutu] -ı
beer bottle and box -SI
b. bira [şişe-i ve kutu-ı]
beer bottle-SI and box-SI
'beer bottle and (beer) box'

(7) a. dans kurs-lar-ı ve masaj terapi-ler-i
dance course-PL-SI and massage therapy-PL-SI

[1] The consonant *s* shows up after vowel-ending stems like (4a) but disappears after consonant-ending ones like (4b). The vowel *I* harmonises with the stem vowels as required by the general vowel harmony rule in Turkish. For consistency, the suffix *-(s)I* will always be glossed as -SI.

b. * [dans kurs-u] ve [masaj terapi] -ler-si
dance course-SI and massage therapy -PL-SI
'dance courses and massage therapies'

An interesting pattern emerges when plural and possessive markers are added onto NN compounds. Given that the plural suffix precedes the compound marker, plural suffix should be left on the non-final conjunct in a coordination construction where the possessive suffix is suspended as shown in (8), regardless of whether it is the whole NN compound or the head noun that is being coordinated. Any attempt of suspending the plural marker along with the possessive suffix results in ungrammaticality. Again, like in noun coordination, the possessive suffix must have scope over the non-final conjunct.

(8) NN compound coordination:
a. [dans kurs-lar-ı] ve [masaj terapi-ler] -iniz
dance course-PL-SI and massage therapy-PL -POSS.2PL
b. * [dans kurs-ı] ve [masaj terapi] -ler-iniz
dance course-SI and massage therapy -PL- POSS.2PL
'your dance courses and (your) massage therapies' (Kharytonava2011)

(9) Head noun coordination:
a. bira [şişe-ler-i ve kutu-lar] -ınız
beer bottle-PL-SI and box-PL -POSS.2PL
b. * bira [şişe-si ve kutu] -lar-ınız
beer bottle-SI and box -PL- POSS.2PL
Reading 1: 'your beer bottles and (your beer) boxes'
Reading 2: 'your beer bottles and (your) boxes'[2] (Kharytonava 2011)

A final question that needs addressing is whether the *-(s)I* suffix exists on the second conjunct: note that -SI is not glossed on the second conjunct in (8) and (9). Kharytonava (2011) showed that possessives and *-(s)I* are in complementary distribution in the context of direct adjacency (10) without further explaining why.

(10) a. (biz-im) Internet bağlan-tı-mız
1PL-GEN Internet connet-NMLZ-POSS.1PL

[2] When only the noun head is coordinated, whether it has scope over the second conjunct is subject to the 'name-worthiness' restriction. If the resulting compound is something commonly referred to in real life, such reading is more easily obtained. In other words, Reading 2 of (9b) is slightly more accessible than Reading 2 because 'beer box' is not very commonly used. An example where both conjuncts are equally common is shown below, and the reading with the head noun modifying both conjuncts is much easier to get.

[aşk [şarkı-lar-ı} ve şiir-ler]] -iniz
love song-PL-SI and poem-PL -POSS.2PL
'your love songs and (your love) poems'

Since both readings are accessible, I will always assume that the head noun modifies both conjuncts in this paper.

b. * (biz-im) Internet bağlan-tı-sı-mız
1PL-GEN Internet connet-NMLZ-SI-POSS.1PL
'our Internet connection'

I will show in sec. 2.3. that the absence of *-(s)I* is due to a "*-(s)I*-final" rule at PF in Turkish. But before introducing the rule, it is important to determine the nature of *-(s)I* first.

2.3. What is *-(s)I*

Another aspect of the compound marker relevant to the current discussion is the nature of *-(s)I*. Traditionally, this suffix is analysed as a third person agreement marker (Lewis 1967; Dede 1978, a.o.). But some argued that *-(s)I* is not an agreement marker (Göksel 2009; Kharytonava 2011; Kunduracı 2013, a.o.), because it does not have the same distribution as the first and second person agreement suffix (Kunduracı 2013). Öztürk and Taylan (2016:100) also showed that in NN compounds, the first NP can be a pronominal but not a third person. When the pronominal is a second person, *-(s)I* instead of second person agreement marker must be used (11).

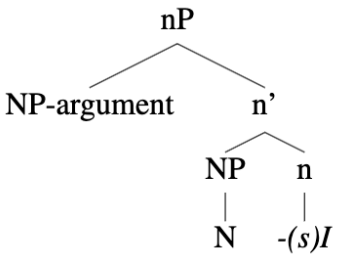
(11) a. Bu tipik bir sen şikayet-i
this typical a you complaint-SI
b. * Bu tipik bir sen şikayet-in
this typical a you complaint-POSS.2SG
'This is a typical complaint of yours.'

Therefore, in this paper, I adopt the analysis proposed by Öztürk and Taylan (2016), which argues that *-(s)I* is an indicator of the argument relationship between the first NP and the head noun in an NN compound. The argument relationship is demonstrated by the fact that the NN compound is usually a subtype of the head noun. For example, *makale başlığı* 'article title' is a certain type of title as opposed another type of title, such as *kitap başlığı* 'book title' (Öztürk and Taylan 2016:98). This analysis is analogous to the pseudo-incorporation constructions in the verbal domain, where the object without over accusative morphology denotes a subtype of the verb by restricting the extension of the internal argument (Chung and Ladusaw 2004) as shown in (12).

(12) a. Ali şişe-yi aç-tı
Ali bottle-ACC open-PST
'Ali opened the bottle.'
b. * Ali bütün gün şişe aç-tı
Ali all day bottle open-PST
'Ali opened bottles/did bottle-opening all day.' (Öztürk and Taylan 2016:99)

Syntactically, Öztürk and Taylan (2016) argued that *-(s)I* is a valency marker surfacing in the head position of a functional projection which they named nP. *-(s)I* is the Spell-out of n. The function of nP is to introduce an argument externally to a noun in its specifier position (13), analogous to *v*P in the verbal domain which introduces an external argument to the VP. This functional projection occurs above NP but below DP, which introduces referentiality and deixis (i.e., possessive suffixes on the head of DP). So, an NN compound with a possessive suffix should have the structure in (14). Finally, since *-(s)I* is a derivational suffix and derivational suffixes in Turkish cannot undergo SA (Kabak 2007), *-(s)I* cannot be suspended. In other words, the head of the projection hosting the compound marker, n, cannot be suspended.

(13)



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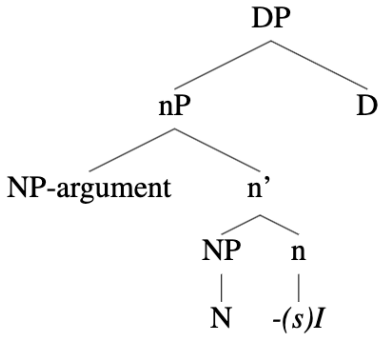


Now, with the notion of nP, it is possible to explain why the *-(s)I* suffix is deleted on the second conjunct when the D head is suspended (8-10). One possible explanation is that *-(s)I* must appear as the terminal element when it co-occurs with other noun deriving suffixes (Göksel and Haznedar 2007; Kabak 2007; Kharytonava 2011; Kunduracı 2013; Öztürk and Taylan 2016). For example, when *-(s)I* is used with the derivational agentive suffix *-cI*, *-(s)I* always follows *-cI* even if *-cI* is introduced higher (15).

(15) a. Adana kebab-ı
Adana kebab-SI
'Adana kebab'

b. Adana kebap-cı-sı
Adana kebab-CI-SI
'seller of Adana kebab'

c. * Adana kebab-ı-cı
Adana kebab-SI-CI

However, when there is an overt agreement suffix such as the possessive marker, *-(s)I* cannot surface at all (Öztürk and Taylan 2016). This is because possessive markers belong to the DP projection but *-(s)I* is the head of nP, which is lower than DP. *-(s)I* cannot follow elements on the D head, which belongs to an outer domain (16c)[3]. But leaving *-(s)I* in front of the possessive marker violates the "*-(s)I*-final" rule, given that the whole derived phrase is nominal (16d). Therefore, *-(s)I* just does not surface at all (16b).

(16) a. oyuncak kutu-su
toy box-SI
'toy box'

b. biz-im oyuncak kutu-muz
we-GEN toy box-POSS.1PL
'our toy box'

c. * biz-im oyuncak kutu-muz-u
we-GEN toy box-POSS.1PL-SI

d. * biz-im oyuncak kutu-su-muz
we-GEN toy box-SI-POSS.1PL (Öztürk and Taylan 2016:104)

In brief, SA in Turkish allows suffixes such as the possessive and the plural marker to be omitted on the non-final conjunct while still having scope over it. When coordinated nouns with both possessive and plural suffixes undergo SA, both suffixes must be suspended together. However, NN

[3] Öztürk and Taylan (2016) did not explain why *-(s)I* can follow markers that belong to projections lower than DP but cannot follow features belonging to the DP projections. I will not attempt to provide a reason either because it is not directly critical to the proposal in this paper.

compounds – marked with *-(s)I* on the second noun – must have the plural marker left on the non-final conjunct and preceding the compound marker under SA when the possessive suffix is suspended. *-(s)I* is a derivational suffix introducing an argument externally to a noun in its specifier position and is the Spell-out of the head of a functional projection nP, which appears below DP and never undergoes SA.

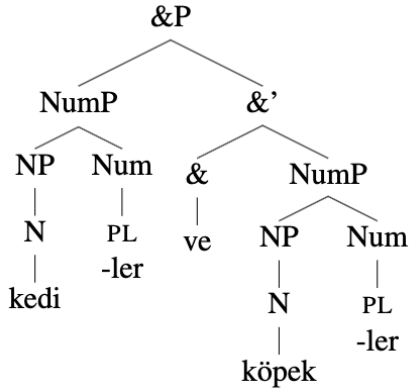
3. Problem and proposal

3.1. Problems of NumP

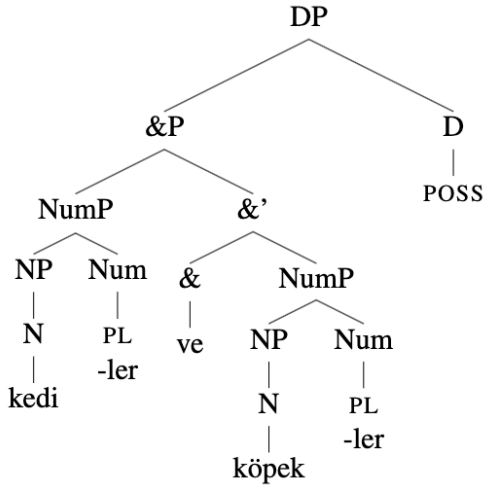
The traditional way of analysing the Number feature in Turkish is to assume a separate nominal projection NumP and plurality is the head of NumP (e.g., Kornfilt 2012). Therefore, two plural noun phrases coordinated should have the structure in (17).

However, treating plurality in Turkish as NumPs leads to two problems. First, it does not explain why two coordinated plural nouns must have their plural and possessive suffixes suspended together when both suffixes are present. If one adopts the assumption that SA is a case of right node raising[4] (Postal 1974) of the relevant head that the plural and possessive suffixes occupy respectively (Kornfilt 2012), and the possessive suffix takes up the D head, then the structure in (18) should be banned provided that (3a) is ungrammatical.

(17) *kedi-ler ve köpek-ler* 'cats and dogs'



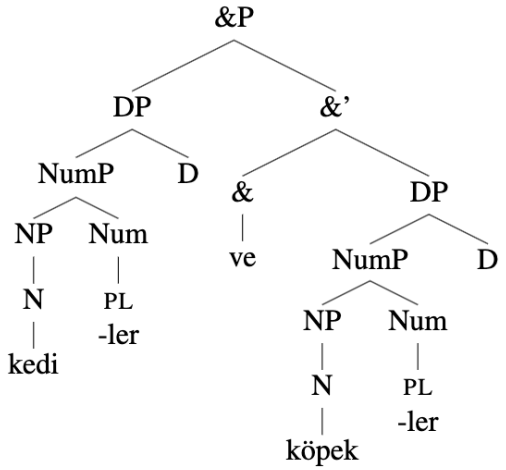
(18)* *[kedi-ler ve köpek-ler] -POSS*



To solve this problem, one could stipulate that NumPs can only be coordinated when they are the outermost nominal projection as in (17). Alternatively, one may argue that Turkish noun phrases are always DPs and pluralised nouns have empty D heads. In this way, the coordination of two nouns will always be the coordination of two DPs (19). But neither of these proposals explains why NumPs should behave differently from other nominal projections NP and DP.

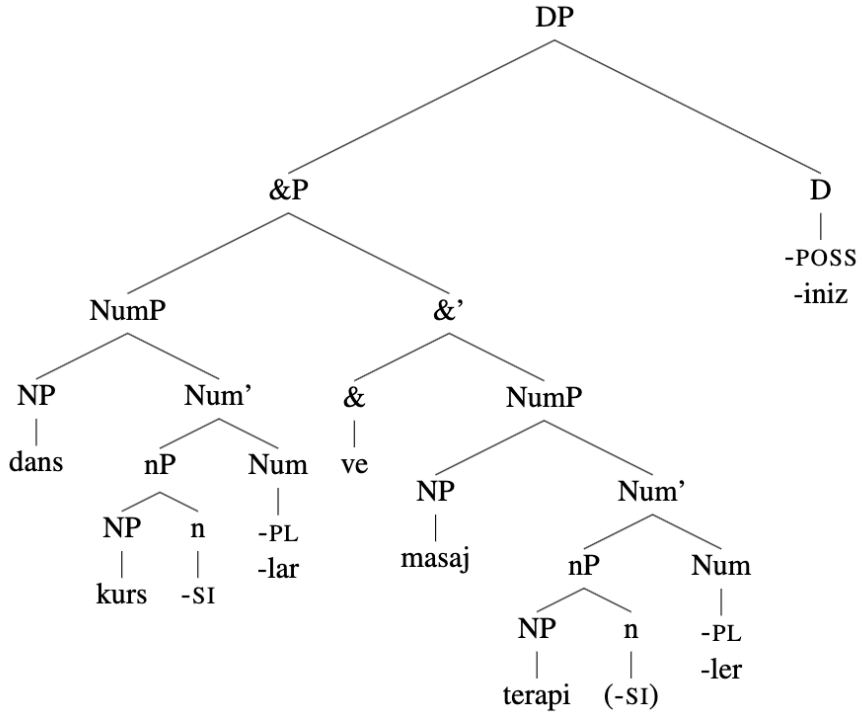
[4] This paper will adopt the small conjunct approach of right node raising (Jackendoff 1977; Gazdar et al. 1985; Hudson 1988, a.o.), since the main challenged faced by this approach, namely that the string left in each conjunct is not a constituent, is not observed in the SA phenomenon in Turkish. I will not compare all the approaches of right node raising in detail since it is not the main focus of this paper.

(19)



Second, the NumP proposal does not explain why, for compounds, the plural suffix cannot undergo SA when the D head is suspended (8-9). Again, if NumP exists above nP and below DP, (20) shows that NumPs are able to be coordinated. However, NumPs should not be allowed to be coordinated as illustrated in (18).

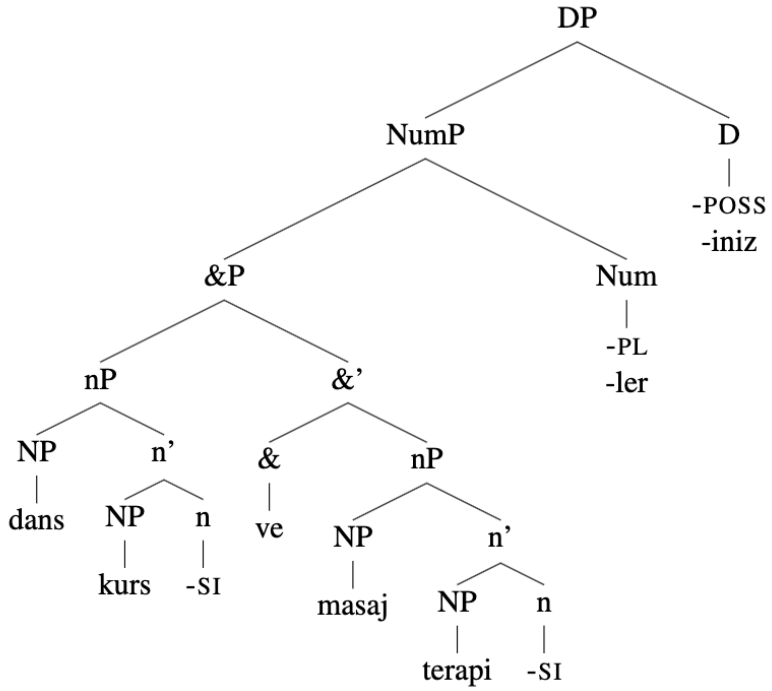
(20) *dans kurs-lar-ı ve masaj terapi-ler-iniz* 'your dance courses and (your) massage therapies'



Moreover, when possessive suffixes are added, the plural and possessive suffixes must *not* suspend together (21). One might argue that the plural marker must be "glued" together with the *-(s)I* immediately following the plural suffix. But such an argument is highly stipulative and why the plural suffix and *-(s)I* always appear together remains unexplained. Alternatively, one could propose that NumPs are projected below nPs, and structures in (21) violates the relative hierarchy between nP and NumP. Although this proposal is able to avoid the problem of coordinating NumPs, it is not convincing

from the angle of semantics to posit NumPs below nPs, because pluralised NN compounds denote multiple entities of a subtype of noun formed via NN compounding, rather than a subtype of a pluralised noun.

(21) * *[dans kurs-u ve masaj terapi]-ler-iniz*

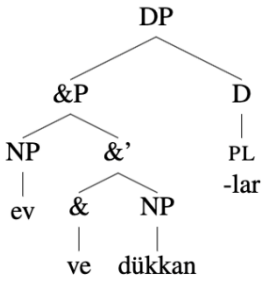


3.2. Proposal: Number as feature

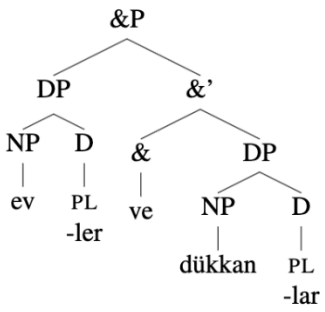
Both problems above call for a new proposal for the SA and NN compound mystery in Turkish. I propose that, instead of having a separate projection NumP, Number is a feature housed by the head of the first functional projection above NP. For simple noun phrases, the first functional projection above NP is DP. For NN compounds, the first functional projection above NP is nP. D heads can choose to suspend or not, whereas n heads are strictly prohibited from suspending as established earlier.

Therefore, for the coordination of simple nouns, when the D head is suspended, all the features associated with it should be suspended together. If there is only the plural marker on D, one can choose to suspend the plural marker (22a) or not (22b). When both the plural and the possessive suffixes are present, they must be suspended together since they are both on D, explaining why their separation in (23) is ungrammatical.

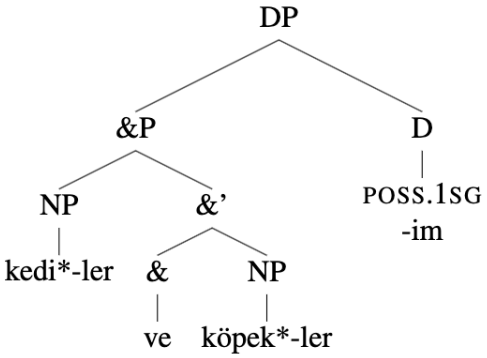
(22) a. *ev ve dükkan-lar* 'houses and shops'



b. *ev-ler ve dükkan-lar* 'houses and shops'

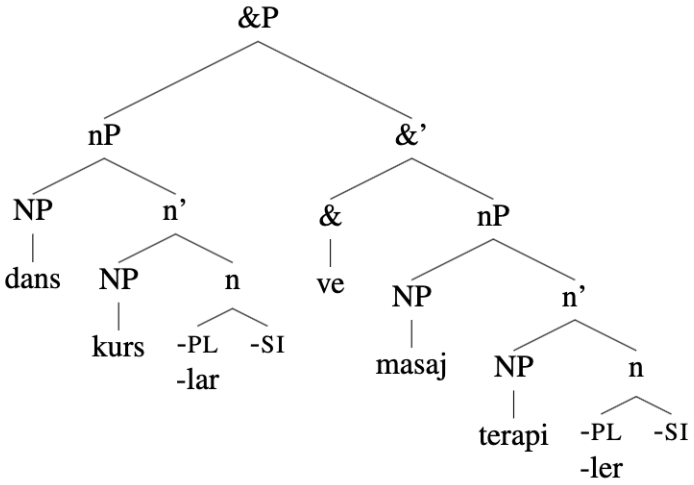


(23) * *[kedi-ler ve köpek-ler]-im* 'my cats and (my) dogs'

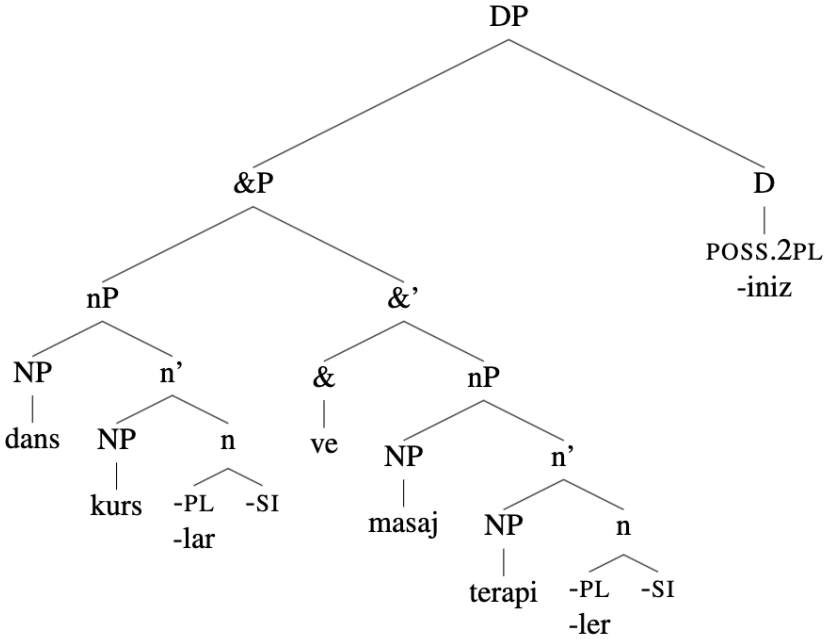


As for NN compounds, given that n cannot suspend, all the features housed by the n head cannot undergo SA, including both the plural marker and the compound marker *-(s)I*. When there is no possessive marker on D, the structure of the coordination of two pluralised NN compounds should be like (24). When there is indeed a possessive marker occupying the D head, since n cannot suspend but D can, the plural and the possessive suffixes can never suspend together (25), explaining why (8b) and (9b) are ungrammatical.

(24) *dans kurs-lar-ı ve masaj terapi-ler-i* 'dance courses and massage therapies'



(25) *[dans kurs-lar-ı ve masaj terapi-ler]-iniz* 'your dance courses and massage therapies'



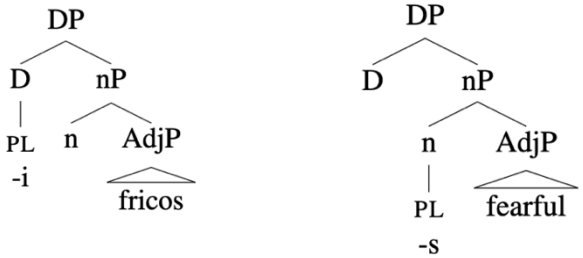
This proposal receives support from previous accounts for the distinctions between English and Romance languages (Dobrovie-Sorin 2012). Adopting the notion of "little n" head in Distributed Morphology (Halle and Marantz 1993) and the idea that all NPs are complements of "little n", Dobrovie-Sorin (2012) argued that in Romance languages like French, the Number feature attaches to the D head, but in English, Number attaches to little n. Because the overt plural morpheme *-s* in English is subcategorised for nouns, the little n to which is belongs cannot combine with any root. Hence English adjectives cannot be converted into nouns by directly combing with little n. In contrast, because the Number feature is not housed by little n in Romance languages like Romanian, combining little n with an AdjP can successfully convert the AdjP to a noun (26).

(26) a. Am mai întâlnit eu fricoși, dar nu ca ăștia. (Romanian)
have-1SG already met I fearfuls but not like these
'I have already met fearful people, but not like these ones.'

b. * I have already met fearfuls, but not like these ones. (English)

(adapted from Dobrovie-Sorin 2012:312)

(27) a. Romanian b. * English



Although the "little n" defined in Dobrovie-Sorin (2012) is different from the n head used in this paper, the idea of housing Number as a feature residing on other functional projections is the same. Under the

"Number-as-feature" proposal, the position of the plural marker in coordinated constructions of simple nouns and NN compounds can be successfully captured in a unified account as shown in the table below.

	Num feature position	D position	PL position		
			prediction	borne out?	e.g.
nouns	D	suspended	suspended	✓	(2)
		not suspended/NA	not suspended	✓	(3a)
NN compounds	n	suspended	not suspended	✓	(8)
		not suspended/NA	not suspended	✓	(7)

4. Conclusion

The plural suffix exhibits interesting interactions with the NN compound marker *-(s)I* and the possessive suffix under SA in Turkish. On one hand, unlike in simple noun coordinations where the plural and the possessive suffixes must be suspended together whenever they appear together, NN compounds never allow their plural and possessive suffixes to be suspended simultaneously. On the other hand, the plural marker always immediately precedes the compound marker *-(s)I* and these two suffixes are never separated. The traditional way of analysing Number as a separate projection is not able to correctly predict the distribution of the plural morpheme. Hence, this paper offers a new analysis of Number in Turkish, which treats Number as a feature attached to the first functional projection above NP in the nominal domain: nP for NN compounds and DP for nouns. This proposal successfully predicts the distribution of the plural morpheme, explains why the plural and compound marker are inseparable, as well as why the plural marker must be suspended with the possessive suffix for nouns but must not for NN compounds.

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On the role of Specificity, Movement, and Linear Adjacency in Long-Distance Agreement with Coordination of Objects[1]

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1. Introduction

Cross-linguistically, many instances show entities in non-local agreement relationships. Specifically, this involves the agreement between a verb and an argument from a different clause. Such cases are called 'Long-Distance Agreement' or 'Cross-Clausal Agreement'. In this paper, I will use the term 'Long-Distance Agreement'. The most common languages that have been discussed over this phenomenon are Basque, Tsez, Hindi-Urdu, and Icelandic, among others. Various accounts for Hindi-Urdu have been proposed to explain these occurrences (Mahajan 1989, 1990; Davison 1991; Butt 1995; Boeckx 2004, Bhatt 2005; Chandra 2007; Keine 2013, among others). Some of these accounts are versatile enough to be extended to other languages, while others are specific to the language under discussion.

Hindi-Urdu is one of the languages that has been intensively examined for the phenomenon in question and there have been really rich approaches to account for the characteristics of the non-local agreement pattern. Until very recently, the general consensus was that there are two possible agreement patterns, shown in (1a) and (1b). In (1a), the infinitival verb 'eat' and the matrix perfective 'want' both share the gender feature of the object in the embedded clause bread i.e., feminine. This is a typical example of Long Distance Agreement (LDA hereafter)[2].

(1) a. Raam-ne [**rotii** khaan-**ii**] chaah-**ii**
Ram-ergb read.**F** eat-INF.**F**.Sg want-PFV.**F**.Sg
'Ram wanted to eat the bread.' [*Mahajan 1990: 90*]

On the contrary, the other possibility is that neither the embedded verb nor the matrix verb agrees with the embedded object, and they appear with the default agreement morphology of third person, masculine, singular as in (1b). I would refer to this pattern as No Agreement (NOA hereafter).

b. Raam-ne [rotii khaan-aa] chaah-aa
Ram-erg bread.F eat-INF.M.Sg want-PFV.M.Sg
'Ram wanted to eat bread.' [*Mahajan 1990: 91*]

However, recent works, such as Yadav (to appear), have highlighted that a significant number of speakers permit a third pattern of agreement as well. However, this pattern had been reported to be ungrammatical in the previous accounts. In this pattern, the matrix verb agrees with the

[1] *Unless indicated otherwise in the paper, all judgments are from the author. I would like to thank Željko Boškovic, Mamoru Saito, Adrian Stegovec, Rajesh Bhatt, Jim Wood, David Adger, Tanya Bondarenko, Roberta D'Alessandro, Ahmad Jabbar, Anushree Mishra.

[2] I adopt Yadav (2024) in saying specificity entails LDA (agreement in general), thus my examples of LDA (and SUA) will have a definite article whenever there's agreement. Although I borrow (1a) and (1b) from Mahajan (1990), I have modified the translation such that it highlights specificity of the object.

embedded object, but unexpectedly, the embedded verb still appears with the default agreement morphology, Yadav calls it Step-Up Agreement (SUA hereafter), given in 2.[3]

(2) Raam-ne [**rotii** khaan-aa] chaah-**ii**
Ram-erg bread.**F** eat-INF.M.Sg want-PFV.**F**.Sg
'Ram wanted to eat the bread.'

There is another logical possibility although that is ungrammatical wherein the agreement is only within the embedded clause i.e., the embedded object and the embedded verb agree while the matrix verb is reflected with the default phi-features value.[4] This is shown in 3.

(3) *Raam-ne [**rotii** khaan-**ii**] chaah-aa
Ram-erg bread.**F** eat-INF.**F**.Sg want-PFV.M.Sg
'Ram wanted to eat bread.'

With the new observation regarding grammaticality of SUA, and the previous belief that LDA and NOA are in free variation relationship, there arises a question: If the previous belief is true, whether the SUA pattern is another addition to the option for free variation or does it need some special treatment to surface? Additionally, whether the LDA and NOA patterns are always an option if we put these constructions in some other environments like coordination of the embedded objects; and, if SUA can sustain as an eligible candidate in these test environments that we are using for LDA and NOA. In the paper, I will show LDA is indeed the pattern that supersedes both NOA and SUA in the test environments mentioned above. And therefore, I will extend Yadav's take that LDA, NOA, and SUA are always in a complementary distribution and only specific embedded objects would trigger agreement (either LDA or SUA) and NOA is when the object is non-specific. For the ungrammaticality of SUA and LDA when there are conjoined objects, the former faces challenges at PF while latter encounters difficulties in syntax. The structure of the paper is as follows: Section 2 gives a gist of how previous accounts have looked at the phenomenon of LDA and its seemingly optionality with NOA. This section will also tell that none of the previous works can account for SUA. Section 3 demonstrates the mechanism I adopt for LDA. Section 4 lays out the unified version of accounts of agreement with coordinated objects and how the final valuation of pho-features is delayed until PF. Section 5 shows that with coordination of the embedded objects, only the LDA pattern succeeds and similarly as in declaratives, the linearly nearest conjunct determines the agreement on the verb. Alternatively, SUA and NOA patterns are robustly ungrammatical. Section 6 illustrates the reason for why only LDA is grammatical and issues in the derivation of SUA and NOA. Section 7 is the conclusion.

2. Previous approaches to LDA in Hindi-Urdu

This section gives a glimpse of the most referred accounts for LDA in the language in question. These approaches can be segmented on the basis of how distant the agreeing elements are, a

[3] Yadav (to appear) provides an appendix showing that the speakers for whom SUA was grammatical were not from a particular region, rather they were distributed in Hindi speaking regions of Northern India.
[4] Butt (1995) reports this as a grammatical possibility. However, in the survey conducted for this project, there was no speaker who reported such an agreement as a grammatical pattern. For this paper, I will continue to believe that maybe the grammaticality in Butt is perhaps some dialectal variation.

gauging factor used by Bhatt and Keine (2017) as well. For a detailed discussion (and the criticism) on each one, see Yadav (to appear) and Bhatt and Keine (2017).

2.1 Movement to the Matrix Clause

One of the most straightforward takes has been to turn the seemingly Cross-Clausal relationship into a clause-mate one. The way it was executed was to make the embedded object move into the matrix clause, though not necessarily making it a Spec-Head relationship with the matrix probe. If the specific details are ignored, the analysis adopted by Mahajan (1989, 1990) and Chandra (2007) are fundamentally similar in their underlying principles. They both associate the trigger for this movement of the embedded object to the higher clause because it cannot be case-assigned in the embedded clause. When an embedded object gets the case-assigned from the matrix verb it results in LDA. On the contrary, in NOA pattern the case-assignment can be achieved without any movement.

2.2 No Movement

Undoubtedly, the most adopted and the most referred approach is the one led by Boeckx (2004) and Bhatt (2005). In this version, the agreement controller i.e., the embedded object is not needed to leave its base position and rather the mechanism allows the matrix probe to extend its search space to an extent that it can access the embedded object. This widening of the search space is achieved by resorting to the notion of 'restructuring'. If there is no restructuring, there is no widening of the search space for the matrix probe, thus it can't access the embedded object. Bhatt makes the agreement of the embedded verb parasitic on the matrix verb thus if the matrix probe agrees with the embedded object, so does the embedded verb and vice-versa.

2.3 Movement to the Edge

The most recent approach was the one where the agreement controller (embedded object) must mandatorily move out of its base position. In LDA, the embedded object must undergo a short A-movement to the edge of the embedded clause for Keine (2013). The analysis I adopt is the one proposed by Yadav where it is the specificity that causes the embedded to leave its base position. The prime reason why Yadav's analysis is more lucrative independently of the concerns explored in this paper is, first, it provides a syntactic-semantic rationale of movement of the embedded object and since this presence/absence of this movement determines the agreement pattern, it is the account that provides empirical explanation of the optionality between the LDA and NOA pattern. All other accounts pinned the optionality with some other optional operation, i.e., optional case-assignment (in embedded clause) or optional restructuring or optionality in the kind of movement (A vs $\overline{A}$). Additional advantage of Yadav's version is that it can also accommodate SUA without resorting to new assumptions or speculations. The details of the analysis will be spelled out in section.

3. Derivation of NOA, LDA, and SUA

In this section, I will present the analysis I am adopting that is proposed by Yadav (to appear). Yadav's account borrows from Bhatt (2005) that the infinitival verbs are 'defective' in the sense that they cannot act as an independent probe for their unvalued phi-feature (for more discussion, see Bhatt 2005, and Bhatta and Kiene 2017, and Kiene 2019.) The derivation is spelled in terms of with what features the embedded object enters the derivation:

a) Embedded Object [-Specific, valued phi-features]

The embedded object which lacks the [SPECIFIC] feature has no motivation to move out of its base position. The derivation proceeds and reaches the embedded *v* projection which I argue to be a phase, the notion in Chomsky (2000, 2001). As mentioned above, embedded *v* being a defective probe cannot search for the eligible phi-values. According to the Phase Impenetrability Condition (PIC), only the edge of a phase, i.e., the phase head itself and its specifier(s), are visible to operations outside the phase. The derivation continues and the matrix verb merges with the structure. Like the feature set of the infinitival v, matrix probe also has unvalued phi-features but unlike the embedded infinitival verb it is not defected and can probe for the suitable goal. However, since the embedded object is not accessible it cannot find any suitable NP that can value its phi-features appropriately but it finds the embedded *v* as it is on the edge.[5] Adopting Frampton and Gutmann's (2000) notion of Feature Sharing, matrix *v* and embedded *v* coalesce and become one unified probe. However, since no eligible NP is accessible, they both end up with the default phi-features. This results in NOA like in (1b).

b) Embedded Object [Specific, valued phi-features]

If the object enters the derivation having an interpretable [+Specific] feature, Yadav proposes that this [+Specific] feature needs to be licensed by a higher functional head, namely the *v* and failure of this licensing would crash the derivation. Thus, an embedded object must move to the specifier position of the embedded v and gets its specific feature licensed. Therefore, in this case both the embedded object and the embedded *v* are on the edge, making them accessible for the operations that take place later in the derivation. When the derivation reaches the matrix v, it probes down for the eligible candidate for its unvalued phi-features. Assuming that Chomsky (2013) was right in claiming that a head and its specifier are equidistant, the matrix probe finds the raised embedded object and embedded *v* at the same time. Resorting to Feature Sharing again, the matching phi-features (unvalued) of the matrix *v* and embedded *v* coalesce and this unified probe now gets valued from the valued phi-values of the embedded object, this gives us LDA.

The other possibility is that because all the matrix verbs that show LDA are restructuring predicates (refer to Boeckx 2004 and Bhatt 2005 for more discussion). I also borrow Boeckx's and Bhatt's claim that restructuring in Hindi-Urdu is of the kind where restructuring causes pruning of the structure of some functional projections; this version of restructuring is drawn from Wurmbrand (2001). Once these projections are removed, the lower clause gets transparent for syntactic operations that were otherwise not possible. I claim the functional projection that's missing after restructuring is embedded *v*. As already highlighted, the embedded object in SUA enters the derivation having an interpretable [+Specific] feature too. However, the potential licensor as was in LDA, the embedded *v* is missing because of restructuring. Thus the embedded object has to move even higher and reach at the specifier position of the matrix *v*. What changes in the derivation with the missing embedded *v* is that not only the embedded object gets close to the matrix *v* but also now there is only this *v* that needs an NP to get value for its unvalued phi-features. While probing, the matrix *v* finds the

[5] I am using NP to refer to arguments and not DP. Please refer to Bošković (2019) for relevant discussion.

embedded object at its own specifier position and thus gets the same phi-values as of the embedded object. This results in SUA.[6]

4. Coordination in Simple Clauses

This section would serve as the foundation of the phenomenon on which the three patterns would be tested and examined. The prime focus of this section is to see if at all, how two embedded objects can influence the grammaticality of the three patterns.

4.1 Basics of Agreement and (Object) Coordination in Hindi-Urdu

Coordination in Hindi-Urdu is intriguing on its own. The way agreement computes the features of the coordinated subjects is different from the coordinated objects. As the focus of the discussion in this paper does not overlap with the subjects in particular, this paper would restrict itself to coordinated objects only.

Hindi-Urdu, like Moroccan Arabic (Bennomoun et al 2009), Slovenian (Marusic et al 2015), Serbo-Croatian (Bošković 2009) among others is one of those languages where the linear proximity has a significant role to play in determining the agreement morphology. In (4a), 'saaree' is the closest conjunct to the verb 'buy', therefore , the feminine-singular of 'saaree' is also reflected on the verb 'buy'. On the contrary, if this proximity is not respected in terms of agreement, it results in ungrammaticality, as shown in (4b).

(4) a. maiN-ne [ek chaataa aur ek **saaRii**] khariid-**ii**
I-ERG an umbrella.ABS.M.Sg and a saaree.ABS.**F.Sg** buy.PFV.**F.Sg**
'I bought an umbrella and a saaree.' *[Kachru 1980: 147]*

b. *maiN-ne [ek **chaataa** aur ek saaRii] khariid-**aa**
I-ERG an umbrella.ABS.**M.Sg** and a saaree.ABS.F.Sg buy.PFV.**M.Sg**
'I bought an umbrella and a saaree.'

Hindi-Urdu being a language that has relatively free word order, the coordinated objects can also follow the verb. In such a sequence, the verb 'buy' now shares the gender feature of the nearest conjunct 'umbrella', see (5a).

(5) a. maiN-ne khariid-**aa** [ek **chaataa** aur ek saaRii]
I-ERG buy.PFV.**M.Sg** an umbrella.ABS.**M.Sg** and a saaree.ABS.F.Sg
'I bought an umbrella and a saaree.'

And as predicted based on (4b), if the gender features on the verb are associated with the conjunct that's not the closest, it would be ungrammatical. This is exactly what we observe, see (5b).

b. *maiN-ne khariid-**ii** [ek chaataa aur ek **saaRii**]
I-ERG buy.PFV.**F.Sg** an umbrella.ABS.M.Sg and a saaree.ABS.**F.Sg**
'I bought an umbrella and a saaree.'

[6] Since only subsection of Hindi speakers like SUA, an alternative to the missing *v* could be saying that the times they utter SUA they treat the defective v incapable to license the [+SPECIFIC] feature and thus for the valid licensing the embedded object must move past the embedded *v* and land at specifier of the matrix position.

The agreement between the coordinated objects is sensitive to the nearest conjunct only. We see similar effects with number agreement as well. The verb will have the same number of the closest conjunct, and there cannot be any discrepancies. [7]

(6) a. Ram-ne kai thailiyaaN aur **ek baksaa** (aaj) **uthaayaa.**
Ram-ERG many bags.F.PL and a box.**M.Sg** today lift.PFV.**M.Sg**
'Ram lifted many bags and a box.' *[Bhatt and Walkow 2013: 958]*

b. *Ram-ne kai **thailiyaaN** aur ek baksaa (aaj) **uthaayiiN.**
Ram-ERG many bags.**F.PL** and a box.M.Sg today lift.PFV.**F.PL**
'Ram lifted many bags and a box.'

In (7a) and (7b), similar manipulation like (5a) and (5b) has been done and the word order now becomes such that the verb precedes the conjunction.

(7) a. Ram-ne **uthaayiiN** kai **thailiyaaN** aur ek baksaa (aaj)**.**
Ram-ERG lift.PFV.**F.Pl** many **bags.F.Pl** and a box.M.Sg today
'Ram lifted many bags and a box.'

b. *Ram-ne kai **thailiyaaN** aur ek baksaa (aaj) **uthaayiiN.**
Ram-ERG many bags.**F.PL** and a box.M.Sg today lift.PFV.**F.PL**
'Ram lifted many bags and a box.'

4.2 Post-Syntactic Component in Agreement with Conjoined Objects

As shown in the previous section, it is the linear proximity of the verb with the conjuncts that is most crucial in ascertaining the final phi-features on the verb. Most recent works, Nevins (2018), Bhat and Walkow (2013), Benmamoun, et. al (2009) have given analyses that accounts for this fact. In this section, I provide a simplified version of the analysis from Bhatt and Walkow (2013), there are some minute differences in other works based on what their focus was. For example, in Benmamoun, et. al (2009) their key focus was on the structure of Conjunction Phrase.

For Bhatt and Walkow, the process of AGREE (Chomsky 2000, 2001) is computed in two steps, the first is MATCHING that executes in syntax and second is post-syntactic which is *valuation.* During the derivation, the phi-features of the two DPs due the notion of 'feature percolation', appear on the Conjunction Phrase 'ConjP'. The phi-feature on ConjP now has two phi-features set, each associated to either of the conjuncts. Since the probe needs its unvalued phi-features to be valued, it looks for an eligible candidate in its c-command domain and finds ConjP and undergoes 'MATCHING'. This MATCHING establishes a relation between the probe and ConjP in the syntax and it is this relation that is referred to for the final valuation of the phi-features on the node of the probe in the PF.

[7] For Benmamoun et al (2009) object coordination can also undergo 'resolution' making it 'additive' in terms of number. However, the author of the paper does not share the judgement. Bhatt and Walkow also highlight that object coordination is never resolved.

5. Coordination in CCA, SUA, and NOA

The data from section 1 and 3.1 makes some predictions about what could possibly happen when the two things under consideration, namely, a skeleton of LDA with two embedded objects in the embedded clause.

a) *Prediction from Long-Movement and No Movement Approach:*
LDA and NOA patterns can possibly occur with coordination as well.

b) *Prediction from Movement to Edge Approach:*
LDA (and SUA for Yadav) will only occur if the embedded object that would participate in the agreement has moved higher from the base position. If it does not, it would result in NOA.

c) *Prediction from Object Coordination:*
Either of the two conjoined objects of the embedded clause can determine the phi-values on the verb contingent upon which conjunction is closer to verbs

5.1 LDA with conjoined objects

If the sentence follows the unmarked word order of SOV, with two embedded objects, we see that it is the conjunct on the right that controls the agreement. see (8a) and (8b). Linearly, it's 'ice-cream' that's nearest to the embedded verb and the matrix verb in both (8a) and (8b).

(8) a. John-ne pizza aur **ice-cream khaanii chaahii**
John-ERG pizza.M and ice-cream.**F** eat.INF.**F** want.PFV.**F**
'John wanted to eat the pizza and the ice cream.'

b. Mary-ne pizza aur **ice-cream banaanii siikhii**
Mary-ERG pizza.M and ice-cream.**F** cook.INF.**F** learnPFV.**F**
'Mary learned to cook the pizza and the ice cream.'

Hindi-Urdu shows technically First Conjunct Agreement if the verb precedes the coordinated objects in simple clauses, as seen in (5a), (6a) and (7a). This is the case in a typical skeleton that can produce LDA as well. This is shown in examples (9a) and (9b).

(9) a. John-ne **khaanaa chaahaa pizza** aur ice-cream
John-ERG eat.INF.**M** want.PFV.**M** pizza.**M** and ice-cream.F
'John wanted to eat the pizza and the ice cream.'

b. Mary-ne **banaanaa siikhaa pizza** aur ice-cream
Mary-ERG cook.INF.**M** learnPFV.**M** pizza.**M** and ice-cream.F
'Mary learned to cook the pizza and the ice cream.'

This is the case with all the predicates that allow CCA, another such predicate is permissive 'let'[bhatt LDA], see (10a and 10b)

(10) a. Mary-ne Bill-ko truck aur **car** chalaane-ko **dii**
Mary-ERG Bill-ACC truck.M and car.**F** drive.INF.OBL let.PFV.**F**

Lit: 'Mary forgot the skill of driving the truck and the car.

Similarly, like (9a) and (9b), when the verbs precede the embedded objects, they do not agree with the expected first conjunct, see (10b).

b. *Mary-ne Bill-ko chalaane-ko **dijaa** **truck** aur car
Mary-ERG Bill-ACC drive.INF.**M** let.PFV.**M** truck.**M** and car.F
'Mary learned to cook the pizza and the ice cream.'

The data from (8a) to (10b) shows that even in LDA, it is the linear proximity that is vital in the agreement process.

5.2 NOA with conjoined objects

The reason for NOA is the absence of the [+SPECIFIC] feature on the embedded object. Based on this knowledge, it would be a straightforward assumption that whenever the two conjuncts are [-SPECIFIC], we will only see NOA as the eligible agreement pattern. However, we see that it is not the case, NOA is robustly ungrammatical. See (11a) and (11b)

(11) a. *Mary-ne kurtaa aur chaadar khariidnaa chaahaa
Mary-ERG Indian shirt.M and bedsheet.F buy.INF.M want.PFV.M
'Mary wanted to buy an Indian-style upper and a bedsheet.'

b. *Ananya-ne paraantha aur rotii feknaa chaahaa
Ananya-ERG fried-bread.M and flatbread.F throw.INF.M want.PFV.M
'Ananya wanted to throw a fried bread and a flatbread.'

Notably, there are two cases that could appear as they allow both LDAA and NOA patterns. Both the cases are very congruent in the essence. First case is the one where the conjoined objects are food items, and they together make it a meal-pair essentially, something like bread-butter. In (12a), the first conjunct is *sambhar* ('lentil soup') which is masculine and the second conjunct is *idlii* ('steamed rice cake(s)') that is feminine. As shown in section 3.1, it is only the Last Conjunct Agreement (LCA) that's the acceptable agreement pattern in the structure under question unless the unmarked word order is manipulated. However, as mentioned above if the two conjuncts make a pair that is culturally considered as a meal, it shows an agreement that could be taken as if it is an example of NOA. In (12a) we see that LCA is perfectly acceptable as a grammatically correct utterance. However, (12b) which might look like NOA is actually a pattern where the agreement is between the meal-pair which is masculine. The reason it is different is because Hindi allows for two food items that are segments of a meal to be interpreted as a single meal as well[8]; and in Hindi some meals are masculine in nature.[9]

[8] How exactly the formalisation of the conjuncts being interpreted as a single meal will remain open.

[9] All pairs in Hindi-Urdu with mismatched features are considered as one single entity with masculine gender. Some examples are listed below:

a) parantha + sabzii = Masculine Meal
Pan fried bread.M curry.F

b) pao + bhaaji = Masculine Meal
Bun.M dry curry.F

(12) a. Krish-ne sambhar aur idlii banaanii siikhii
Krish-ERG lentil soup.M and rice cake.F cook.INF.F learn.PFV.F
'Krish learned to cook the sambhar and the idlii.'

b. Krish-ne sambhar aur idlii banaanaa siikhaa
Krish-ERG lentil soup.M and rice cake.F cook.INF.M learn.PFV.M
'Krish learned to cook the meal of sambhar and idlii.'

The second case involves entities that are assumed to have a particular sequence, and if the first conjunct (masculine) is the one that takes the precedence in the sequence, the agreement we see can be misunderstood as the one with NOA. Some speakers also report that in such constructions, they take the first conjunct to be more prominent than the second one. More legitimate evidence that the first conjunct is 'prominent' is that there is a little pause after it and sometimes it is phonologically stressed as well. One such construction could be if there is a first conjunct (masculine) that belongs to the 'main course' while the second conjunct (feminine) is a desert. An example of such a scenario could be exactly what were in 8 and 9, 'pizza' and 'ice-cream'.

(13) a. John-ne pizza, aur ice-cream khaanaa chaahaa
John-ERG pizza.M and ice-cream.F eat.INF.F want.PFV.F
LIT: 'It is the PIZZA and ice cream that John wanted to eat.'

5.3 SUA with conjoined objects

The difference between the mechanism that results in either LDA or SUA is the pruned structure of SUA making it smaller than the one is LDA because restructuring causes the removal of embedded vP layer, thus making the embedded object to move even higher up to the matrix clause for the licensing of the [+SPECIFIC] feature. So as long as the conjoined embedded objects can move into the matrix clause and end up at the matrix SPEC vP position, one can expect the SUA pattern with coordinated objects too. However, we see that SUA like NOA is ungrammatical, this can be seen in the data presented in (14a) and (14b).

(14) a.*Bill-ne aam aur liichii uthaana chaahii
Bill-ERG mango.M and lychee.F pick.INF.F want.PFV.F
'Bill wanted to pick mango and lychee .'

b. *Arun-ne geet aur kavitaeN likhnaa siikhiiN
Arun-ERG song.M and poem.F write.INF.F learn.PFV.PLF
'Arun learned to write songs and poems .'

Even when the two conjuncts are feminine, the ungrammaticality in SUA continues, as can be seen in 15.

(15) *Sam-ne chay aur kɔfii banaanaa siikhii
Sam-ERG tea.F and coffee.F prepare.INF.M learn.PFV.F
'Sam learned to make tea and coffee.'

Thus, also SUA is bad with two conjoined embedded objects.

6. Solution

The data presented in section 3 showed that in cases of coordination of embedded objects, there is only one grammatical agreement pattern which is the LDA, and both the other options are robustly ungrammatical. This section shows how LDA is achieved with conjoined objects and what causes the ungrammaticality for SUA and NOA in the similar setting.

6.1 PFs sensitivity for linearity

As shown in section 4.2, previous works have stated that agreement in object coordination is sensitive to linearity of the verb and the conjuncts, putting it simply, there are two candidates for agreement controller and only one agreement target. It is the linear order that breaks the tie between the conjuncts. The conjunct which is linearly closer to the verb eventually determines the phi-morphology on the verb. Similarly, even in a template of LDA, gender features on the embedded and matrix verbs are determined by the closest conjunct. The two exceptions are cases shown in (11b) which shows masculine agreement despite the last conjunct being feminine and sentences like (12) where the first conjunct is focused making it prominent. Keeping the two exceptions aside, the mechanism for closest conjunct driving the agreement in a pattern with LDA needs no unique provisions.

When two specific embedded objects are conjoined, as it would be in the system of Bhatt and Walkow, the features of both the conjuncts percolate to the phrasal level of the conjunction, namely, 'ConjP'. In this paper, the percolated phi features will be addressed as '&phi'. Similarly as it would have been with a single embedded object, arguments with interpretable [+SPECIFIC] feature needs to be licensed by nearest *v*. If the embedded *v* is present in the structure, the conjoined embedded objects move to the specifier of it. As mentioned in section 4 infinitival verbs are defective and it is this defectiveness of the infinitival that does not allow it to probe on its own, but it still needs a value for its unvalued phi-feature set. Further in the derivation, when the finite matrix *v* with unvalued phi-features enters the derivation, it probes down in search of phi-values. As per PIC, it is only the edge that's accessible to further operations. Similar to the mechanism of LDA illustrated in section 4, the matrix probe finds both the raised ConjP (with percolated features of the conjuncts) and the embedded v (having unvalued phi-features). Adopting the notion of Feature-sharing in the sense of Frampton and Gutmann (2000) there is coalescence of the unvalued phi-features of matrix and embedded v. This single probe also establishes a syntactic relation with the ConjP having &phi. However, because &phi has two phi-feature set, valuation of the phi-feature on the probe cannot be done because there are two values to choose from. The tie-breaker between the two phi-values is the linear adjacency. The syntactic relation limits the search space that will be accessed to evaluate the phi-features on the probe at PF. The linear proximity is determined by the mechanism given below. The PF already knows the restricted search space to look for in order to 'copy' the phi-feature value. The gender value is determined in the following fashion:

(13) The value of the phi-features on the node of the probe would be of the conjunct whose phi-features are in the &phi and there is no other XP that has a valued phi-features and it is closer to the node that will be valued.

Once the value is determined using (13), it is realized on the embedded verb and the matrix one. This results in A with the closest conjunction.

6.2 SUA with object coordination.

As shown in section 4**,** the motivation for SUA is the unavailability of lower vP that could license the [+SPECIFIC] feature of the embedded object. This unavailability leads to the longer movement of the embedded object to the specifier of the matrix v as the functional projection that can license specificity is little v. The unavailability of SUA with conjoined objects can be tied to either failure of licensing of the [SPECIFIC] feature making the derivation to crash or failure of pruning of the structure, thus forcing CCA. In CCA, [SPECIFIC] feature of the conjoined embedded objects is being licensed via embedded v. Since embedded v is missing in the structure of SUA, this licensing has to be taken care of by the matrix v. In no way, one can assume that this licensing is not possible by the matrix v if there are conjoined objects. Another speculation could be that because the two conjoined arguments are heavier than a single one, they cannot move as high to the specifier of matrix v. The other approach was to investigate if something restricts the pruning of the structure in the template of SUA with a coordination of embedded objects. There is no legitimate reason to believe that restructuring predicates are sensitive to coordination such that in presence of coordination, restructuring fails. Therefore, nothing in the syntax can account for the ungrammaticality of SUA with coordination.

However, linear adjacency at PF has an answer to why SUA is bad with conjoined objects. The impossibility of SUA derives from the fact that there is an intervener (the embedded infinitival verb with default agreement morphology) between the matrix Probe and the conjunct, as per 13. For speakers who can produce SUA have an embedded *v* layer missing, and since even in such patterns both the conjoined objects are [+SPECIFIC]. For the reasons of licensing, the two objects land into the matrix clause at the specifier position of the matrix *v* making it way closer than the embedded infinitive. Therefore when the matrix probe enters the derivation, it first finds ConjP with &phi and there is no need to Probe further. Therefore there is no Feature-Sharing between the matrix *v* and embedded *v*. Thus the embedded probe matches with ConjP but for the same reasons as in LDA, because there are two phi-features in &phi, they just form a syntactic relation but the valuation is delayed to PF. At PF, the terminal node of the matrix probe tries to use the syntactic relation however the embedded verb with default phi-features acts as an intervener and thus as per (13) the derivation crashes.

6.3 NOA with object coordination.

Unavailability of NOA with conjoined embedded objects is even far more surprising. The mechanism of NOA with one embedded object is the most straightforward one. The matrix probe does not find any goal for the purpose of valuation because the embedded object has no motivation to move out of its base-generated position. Since the embedded vP is phase and as per PIC, everything below the edge of the phase remains inaccessible and therefore the matrix probe does not find any eligible valued phi-feature resulting in default phi features on matrix verb and embedded verb. Thus if two non-specific objects can be conjoined, it should result in NOA, however, 11a and 11b tells us that it is not allowed. In case of NOA, PF adjacency has no role to play because in the current system the Probe should have had established a syntactic relationship with the ConjP in the syntax and only then this relationship is explored for valuing the phi-features. As discussed, in the case of NOA (with one embedded object and with conjoined embedded objects as well) matrix Probe never finds the conjoined object and

embedded verb being infinitival cannot probe on its own. Thus, the derivation must run into a problem before the PF. I claim the problem is that infinitival verbs in Hindi-Urdu cannot have more than one non-specific object as its complement. Thus, the derivation of NOA crashes as soon as the embedded infinitival verb merges with the two non-specific conjoined objects.

7. Conclusion

In this paper, I presented novel evidence that shows previous approaches were wrong in saying that LDA and NOA are always in a free variation relationship. Whenever there are two conjoined objects, it is only the Long-Distance Agreement that survives and the other two patterns, SUA and NOA become ungrammatical. I also showed that Yadav was correct in showing that LDA and SUA involve [SPECIFIC] embedded objects and it needs to move either to the edge of the embedded clause (resulting in LDA) or even higher into the matrix clause that triggers SUA. Alternatively, in NOA, the embedded object is not specific and must stay in the base-generated position. I showed that agreement in LDA is defined in a similar manner as in coordination of objects in simple declarative sentences. Adopting Bhatt and Walkow, I say that through percolation, the phi features of both the conjuncts end up as &phi on the ConjP. While this &phi is sufficient for the probe to match with ConjP because of its superfluous nature the probe cannot be valued. At PF, the terminal node of the Probe leverages the relationship made with ConjP in syntax and gets the same phi-values of the conjunct that is next to the probe in the linear order. In LDA, the unvalued phi-features of the matrix verb and the embedded verb undergo coalescence and become a single unified probe. At PF, both the verbs get the same value as that of the closest conjunct. The ungrammaticality of SUA with conjoined objects stems from the fact that in SUA only the matrix probe is a functional probe and the embedded verb already has default phi-features. This creates a blocking-effect at PF because the matrix verb now already has a neighbour with phi-features and the conjuncts are distant thus making it ungrammatical. The problem for NOA was not linear but structural. I have made a proposal in the paper that [-finite] verbs are not capable of having more than one non-specific argument. What is the reason for this inability still remains an open question, however, the data provided goes in favour of specificity being crucial in determining agreement with one embedded object and conjoined ones. Lastly, the data also strengthens the claim that all the three patterns are in complementary distribution and not free variation.

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The Syntax and Semantics of the High Negation Question in Korean

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1. Introduction

In this study, we investigate the syntax and semantics of a certain type of negative polar question in Korean (1). Given that long-form negation *anh* is located higher than the tense morpheme, we call this construction High Negation Question (HNQ). This is comparable to the English counterpart (2). One of the common semantic properties of HNQs ((1) and (2)) is that they convey a speaker bias for the propositional content below the negation (Ladd 1981, Romero & Han 2004, Frana & Rawlins 2019, Goodhue 2022, a.o). Thus, in the context where the speaker has no previous expectations about whether Mary comes or not, (1) and (2) are infelicitous. In contrast, Low Negation Questions (LNQ) in these languages (3) and (4) do not require a speaker bias.[1] The other crucial semantic property of HNQ is that negation in HNQ does not affect the prejacent propositional content (see Section 4.3).

(1) Mary-ka ku phathi-ey wa-ss-ci anh-ni? [HNQ: long-form negation (*anh*)]
Mary-NOM the party-to come-PST-CI NEG-Q
'Didn't Mary come to the party?'

(2) Didn't Mary come to the party? [HNQ]

(3) a. Mary-ka o-ci anh-ass-ni? [LNQ I: long-form negation (*anh*)]
Mary-NOM come-CI NEG-PST-Q
'Did Mary not come?'
b. Mary-ka an wa-ss-ni? [LNQ II: short-form negation (*an*)]
Mary-NOM NEG come-PST-Q
'Did Mary not come?'

(4) Did Mary not come? [LNQ]

This paper reviews some previous approaches to Korean HNQs and discusses their syntactical and semantical properties. We argue that high negation in HNQs can be selected only by $C_{[+Q, -WH]}$, which in turns selects the ASSERT operator above TP. Following Goodhue (2022), we further argue that the ASSERT operator prevents the high negation from affecting the propositional content below it and plays a role in deriving speaker bias. We present numerous empirical data to support our argument.

2. Speaker Bias

Korean has three types of negative polar questions: High Negation Question, Low Negation Question with short-form negation (LNQ I), and LNQ with long-form negation (LNQ II). The LNQ is the

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[1] Korean LNQs allow two forms of negation, long-form (3a) and short-form (3b) negation (Section 2). See Park and Oh (2023) for discussions on the optionality of speaker bias in Korean LNQs.

construction where negation is located below the tense morpheme, and in Korean, it contains two different negation types: short-form negation *an*, which is preverbal, and long-form negation *anh*, which is postverbal. Among them, only HNQs require a speaker bias for the propositional content below negation (Ladd 1981, Romero & Han 2004, Goodhue 2018, 2022). In other words, HNQs are felicitous only when the speaker has previous beliefs or expectations for the propositional content, whereas LNQs are not subject to this requirement. Now, let us consider the contextual situation with and without the speaker bias. In the context of the speaker bias in (5), the speaker pre-assumes that Mary comes to the party. However, the context shows that Mary did not come to the party, contrary to the expectation. Here, the speaker uses an HNQ to double check his/her previous belief as in (5b) and (5e). In this context, LNQs in both English and Korean are felicitous as well, as shown in (5a), (5c), and (5d).

(5) [Context 1] The speaker has prior beliefs/expectations that Mary comes to the party. But the speaker can't find her and asks:

a: Did Mary not come? [LNQ]
b: Didn't Mary come? [HNQ]
c: Mary-ka an wa-ss-ni?
Mary-NOM NEG come-PST-Q
'Did Mary not come?' [LNQ I: short-form negation]
d: Mary-ka o-ci anh-ass-ni?
Mary-NOM come-CI NEG-PST-Q
'Did Mary not come?' [LNQ II: long-form negation]
e: [$_{TP}$ Mary-ka wa-ss-ci] anh-ni? [=(2)]
Mary-NOM come-PST-CI NEG-Q
'Didn't Mary come?' [HNQ]

In the context where the speaker has no prior expectation whether Mary comes to the party as in (6), HNQs and LNQs exhibit a contrast. While HNQs are infelicitous ((6b) and (6e)), LNQs are felicitous ((6a), (6c) and (6d)). This indicates that in these languages, only HNQs requires speaker bias.

(6) [Context 2] The speaker has no prior beliefs/expectations about whether Mary comes or not. And the speaker can't find her and asks:

a: Did Mary not come? [LNQ]
b: #Didn't Mary come? [HNQ]
c: Mary-ka an wa-ss-ni?
Mary-NOM NEG come-PST-Q
'Did Mary not come?' [LNQ I]
d: Mary-ka o-ci anh-ass-ni?
Mary-NOM come-CI NEG-PST-Q
'Did Mary not come?' [LNQ II]

e: #[TP Mary-ka wa-ss-ci] anh-ni? [=(2)]
Mary-NOM come-PST-CI NEG-Q
'Didn't Mary come?' [HNQ]

Based on these observations and following Goodhue's (2022) Speaker Bias Condition (7) (cf. Romero & Han 2004, Sudo 2013, Domaneschi et al. 2017, AnderBois 2019, Frana & Rawlins 2019), we suggest that (7) also holds for Korean HNQs (as well as for English HNQs).

(7) Speaker Bias Condition: [Goodhue (2022)]

An HNQ with propositional content *p* below the negation (HNQ-*p*) is felicitous only if the speaker is or was recently biased for *p*.

In this section, we have shown that speaker bias is required for Korean HNQs. In the next section, we will critically review the previous analyses of Korean HNQs.

3. Previous Analyses and Issues

In this section, we will discuss some previous analyses of Korean HNQs and present their problems.

Some researchers have argued that HNQs are a tag questions (Chang 1984, Koo 1992). In general, tag questions consist of the antecedent clause and the following tag. The speaker assumes that the proposition of the antecedent clause is true and tries to confirm whether his/her belief is true or not, with the following tag (Klima 1964, Katz & Postal 1964, among many others).

Chang (1984) argues that Korean HNQs like (2) are typical tag questions containing the antecedent clause and the tag. He explains that the antecedent consists of the tense morpheme preceding *-ci* and *-ci* functions as the ending marker. The remainder, represented by *anh-ni* 'not-Q' is the tenseless tag. However, he falls short of explaining why the ending marker should only be *-ci* (Generally, Korean is known to have various ending markers, not just *-ci*.) and why the tag does not involve the tense. Koo (1992) argues that Korean HNQs are generated by amalgamating the antecedent clause and the following tag, which contains the *pro*-form *kuleh-* 'do so'. According to Koo's analysis, two separate questions as in (8a) are amalgamated together. When the *pro*-form *kuleh-* becomes null, Korean HNQs are derived as in (8b). Note here that *kuleh-* can also appear overtly.

(8) a. pi-ka wa-ss-ci? kuleh-ci anh-ni?
rain-NOM fall-PST-CI? do.so-CI NEG-Q
'Did it rain? Didn't it?'
b. pi-ka wa-ss-ci (kuleh-ci) anh-ni?
rain-NOM fall-PST-CI (do.so-CI) NEG-Q
'Didn't it rain?' [Adapted from Koo (1992)]

We now present a new empirical argument against the tag question-based analysis. The relevant example is (9), where the adjunct *ku phathi-ey* 'to the party' appears between *-ci* and negation. Given the interpretational link between the adjunct and the antecedent (indicated with underscore), the adjunct seems to undergo Right Dislocation (RD) (cf. Choi 2006, Kim & Park 2010, Ko 2015, Park & Kim 2016, a.o). (9) indicates that RD of this sort in HNQs is keenly disallowed. The tag question analysis, however, falls short of accounting for (9). Before amalgamation takes place, the adjunct first undergoes RD to the right periphery of the antecedent. With amalgamation, (10) is derived, where the *pro*-form *kuleh-* 'do so' appears overtly. What is problematic here is that when the

pro-form becomes null (in order to derive the HNQ) as in (9), the construction is unacceptable. In other words, the fact that with RD, *pro*-form must appear overtly constitutes a non-trivial problem for the tag question-based analysis.

(9) *[TP Mary-ka ____ wa-ss-ci] ku phathi-ey anh-ni?
Mary-NOM ____ come-PST-CI the party-to NEG-Q
'Didn't Mary come to the party?'

(10) [TP Mary-ka ____ wa-ss-ci] ku phathi-ey kuleh-ci anh-ni?
Mary-NOM ____come-PST-CI the party-to do.so-CI NEG-Q
'Didn't Mary come to the party?'

As an alternative, one might explore the possibility that Korean HNQs can be analyzed as involving bi-clauses, where the matrix tense appears as a null morpheme as in (11a), similarly to the English example in (11b). The bi-clausal analysis immediately predicts that the declarative counterpart should also be allowed. Contrary to the prediction, however, the declarative counterpart is degraded as shown in (11c). Under this analysis, the contrast between (11a) and (11c) would remain unresolved. In the following section, we will provide an account for this contrast in terms of selectional properties in HNQs.

(11) a. [CP [CP Mary-ka ku phathi-ey wa-ss]-ci anh-∅-ni]?
Mary-NOM the party-to come-PST-CI NEG-PRES-Q
Intended: 'Isn't it that Mary came to the party?'
b. [CP Isn't it [CP that Mary came to the party]]?
c. *[CP [CP Mary-ka ku phathi-ey wa-ss]-ci anh-∅-ta]
Mary-NOM the party-to come-PST-CI NEG-PRES-DEC
Intended: 'It is not that Mary didn't come to the party.'

Another relevant issue is that although both Korean and English HNQs share the property that HNQs require speaker bias, there is a crucial contrast with the use of high negation in other contexts. The use of high negation in a *wh*-question is prohibited in Korean (cf. Kim 2010). In contrast, English allows high negation in a *wh*-question, and it can be used without speaker bias.

(12) a. *Mary-ka enu phathi-ey wa-ss-ci anh-ni?
Mary-NOM which party-to come-PST-CI NEG-Q
Intended: 'To which party didn't Mary come?'
b. To which party didn't Mary come?

4. Proposal

4.1 Selectional Restriction

We propose that Korean HNQ (1) involves the mono-sentential structure (13) (with English words used) which will be elaborated further in Section 4.2. In particular, we propose that only the Q-markers with [+Q, -WH] like *-ni* can optionally select NegP whose head is long-form negation. This proposal straightforwardly resolves the aforementioned issues. First, since HNQs are invariably mono-sentential and RD is known to be disallowed within a sentence boundary, they do not permit RD within their

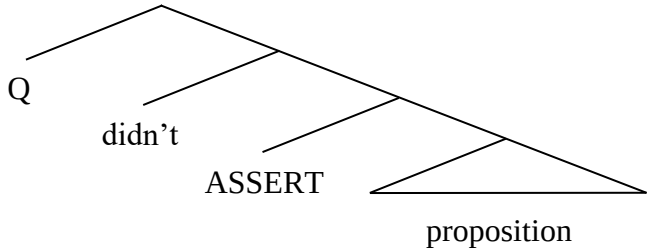
sentence boundaries (cf. (9)). Second, since only the Q-markers with [+Q, -WH] can select NegP, the declarative counterpart (11c) and the *wh*-question with high negation (12a) are disallowed.

(13) [$_{CP}$ [$_{NegP}$ [$_{AssertP}$ [$_{TP}$ Mary came to the party] **ASSERT**] Neg] $C_{[+Q, -WH]}$] [Structure of (1)]

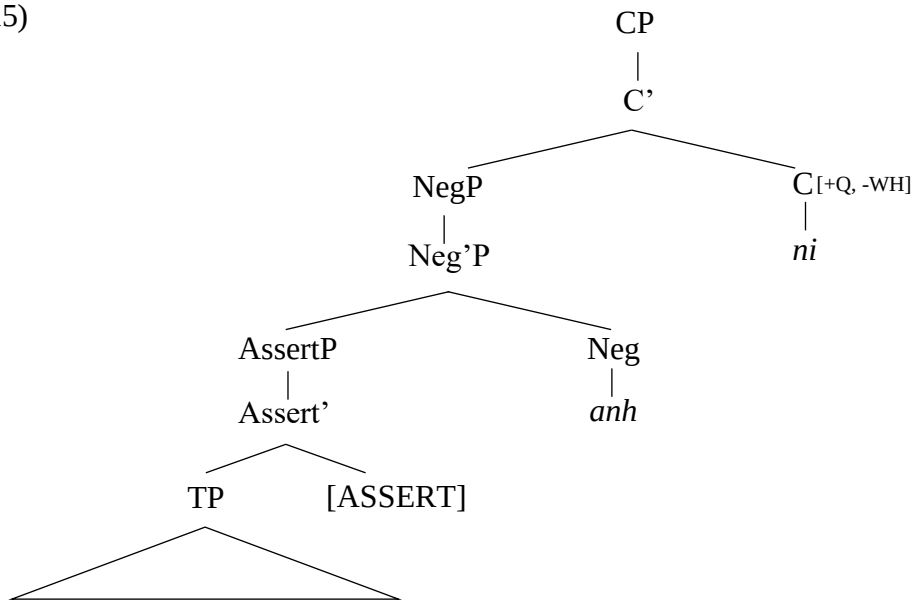
4.2 Speaker Bias and ASSERT operator

Let us consider how the semantics of HNQs is derived. Given the selectional restriction, there is a mismatch between syntax and semantics. This is because, despite the presence of negation in HNQs, the question does not convey any negative meaning affecting the prejacent propositional content. In line with Goodhue's (2022) analysis of English HNQs, we assume that the speech act operator ASSERT resides between high negation and the prejacent propositional content as schematized in (14) for English HNQs. Putting details aside, Goodhue argues that ASSERT prevents negation from affecting the propositional content, and that speaker bias is derived as a conversational implicature arising from the comparison between HNQs and their corresponding positive polar questions (e.g. *Did Mary come to the party?*) (in terms of their relative informativeness). We suggest that the same semantics of high negation applies to Korean HNQs with the structure in (15).

(14)



(15)



Mary-ka ku pathi-ey wa-ss-ci

4.3 Supporting Data

In this section, we provide various data supporting our claim that negation in Korean HNQs does not affect the propositional content below it. First, Contrary to the general understanding that Negative

Polarity Items (NPIs) can be licensed in negative sentences in Korean, they are not licensed in the context of HNQs as in (16). This straightforwardly follows under our analysis: it is because the intervening ASSERT operator blocks high negation from affecting the propositional content, thereby preventing it from licensing NPIs in the propositional content.[2]

(16) *[$_{TP}$ amwuto ku phathi-ey wa-ss-ci] **ASSERT** anh-ni? [HNQ]
nobody the party-to come-PST-CI NEG-Q
Intended: 'Didn't nobody come to the party?

Second, in Korean HNQs, there is no scope interaction with high negation and a quantifier below it. As Yang & Bae (2023) observed, the subject universal quantifier scopes over long-form negation in LNQ as in (17a). On the other hand, no such scope interactions are observed in HNQs as in (17b). This is because high negation does not affect the propositional content (thereby no scope interactions) due to the intervening ASSERT operator.

(17) a. motun haksayng-i o-ci anh-ass-ni?
all student-NOM come-CI NEG-PST-Q
'Did not all students come?' ∀ > ¬
b. [$_{TP}$ motun saram-i ku phathi-ey wa-ss-ci] **ASSERT** anh-ni?
all people the party-to come-PST-CI NEG-Q
'Didn't all people come to the party?' [No scope interaction]
[Yang & Bae (2023)]

Third, we observe that answer particles to HNQs in both Korean and English exhibit the same pattern. The positive and negative answer particles in these languages (as a response to (18a) and (18b)) can only target the propositional content below the speech act layer, confirming and denying it, respectively, as in (18c) and (18d) (cf. Goodhue 2022). This parallelism is particularly interesting, given that the answer systems in these languages are known to differ to negative questions like LNQs (3) and (4) (cf. Kuno 1973, Krifka 2013, Holmberg 2016). The parallel patterns in these languages can be straightforwardly captured under our analysis since their syntax and semantics are the same in the relevant respect.

(18) a. [$_{TP}$ Mary-ka ku phathi-ey wa-ss-ci] anh-ni? [=(1)]
Mary-NOM the party-to come-PST-CI NEG-Q
'Didn't Mary come to the party?'
b. Didn't Mary come to the party? [=(2)]
c. Ung/Yes (she came to the party).
d. Ani/No (she didn't come to the party).

4.4 Extension: *ko*-coordination

We have shown that Korean HNQs are used only when the speaker is biased. We further observe

[2] This cannot be attributed to the 'expletive' nature of high negation (Kim 1981): Otherwise, it would be hard to account for how speaker bias arises in HNQs.

that Korean HNQs with *ko*-coordination (of TPs) also retain a speaker bias as in (19a). It is interesting to notice that high NegP-coordination in (19b) is unacceptable, contrasting with low NegP-coordination (19c). We suggest that the contrast arises because the domain that *ko*-coordination affect is restricted. In particular, we suggest that the maximal domain for *ko*-coordination is TP. This rules out (19b), which involves the coordination of high negation above TP. This also accounts for why CP-coordination is not allowed even without negation (19d) (unlike *kuliko*-coordination):[3]

(19) a. [$_{CP}$ [$_{NegP}$ [$_{TP}$ Bill-un wa-ss]-ko [$_{TP}$ Mary-nun ttena-ss]-ci **anh**]-ni]?
Bill-TOP come-PST-and Mary-TOP leave-PST-CI NEG-Q
'Didn't Bill come and Mary leave?'

b. ?*[$_{CP}$ [$_{NegP}$ [$_{TP}$ Bill-un wa-ss-ci] **anh**]-ko
Bill-TOP come-PST-CI NEG-and
[$_{NegP}$ [$_{TP}$ Mary-nun ttena-ss-ci] **anh**]-ni]?
Mary-TOP leave-PST-CI NEG-Q
Intended: 'Didn't Bill come and didn't Mary leave?'

c. [$_{CP}$ [$_{TP}$ [$_{NegP}$ Bill-un o-ci **anh**]-ko
Bill-TOP come-CI NEG-and
[$_{NegP}$ Mary-nun ttena-ci **anh**]-ass]-ni]?
Mary-TOP leave-CI NEG-PST-Q
'Did Bill not come and did Mary not leave?'

d. *[$_{CP}$ [$_{CP}$ Bill-un wa-ss-**ni**]-ko [$_{CP}$ Mary-nun ttena-ss-**ni**]]?
Bill-TOP come-PST-Q-and Mary-TOP leave-PST-Q
Intended: 'Did Bill come and did Mary leave?'

5. Conclusion

This paper has investigated the syntax and semantics of HNQs in Korean. We have shown that HNQs convey speaker bias, and high negation in HNQs does not affect the prejacent propositional content. We critically reviewed the tag question and bi-clausal analyses of HNQs and argued that Korean HNQs are neither tag questions nor bi-clausal, but are mono-sentential. We propose that high negation in HNQs can be selected only by $C_{[+Q, -WH]}$, which selects the ASSERT operator above TP. To fortify our analysis, we adopt Goodhue's (2022) claim that the ASSERT operator plays a role in yielding speaker bias and prevents high negation from affecting propositional content below it. We also present a variety of empirical arguments in favor of our claim such as NPI licensing, scope interaction, and answer particles. We have also investigated behaviors of high and low negation in *ko*-coordination. We have argued that the maximal domain for *ko*-coordination is TP rather than CP.

[3] *Ko*-coordination of CPs containing high negation (i.e. coordination of HNQs) is also disallowed, as predicted:

(i) ?*[$_{CP}$ [$_{TP}$ Bill-un wa-ss-ci] **anh**-ni]-ko [$_{CP}$ [$_{TP}$ Mary-nun ttena-ss-ci] **anh**-ni]?
Bill-TOP come-PST-CI NEG-Q-and Mary-TOP leave-PST-CI NEG-Q
'Didn't Bill come? and Didn't Mary leave?'

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