



The Korean Generative Grammar Circle

Proceedings of the 24th Seoul International Conference on Generative Grammar

2022 Linearization

Edited by Tae Sik Kim & Jungu Kang

August 12-14, 2022

Held virtually

Hosted by

The Korean Generative Grammar Circle
Sogang University

Funded by

Center for Korean Studies, Korea University

The 24th Seoul International Conference on Generative Grammar

2022

Linearization

Dates: August 12-14, 2022
Held virtually

Keynote Speaker:

Guglielmo Cinque (Ca' Foscari University of Venice)

Invited Speakers:

Nobu Goto (Toyo University)

Lauren Clemens (University at Albany, SUNY)

Sunwoo Jeong (Seoul National University)

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Acknowledgement

This conference could not have been possible without the participation and assistance of so many people whose names cannot all be mentioned here. Their contributions are sincerely appreciated and gratefully acknowledged. Nevertheless, we, the organizers of SICOGG 24, would like to express our special gratitude to Youngdong Cho (Seoul National University) for his help with the SICOGG 24 website and to Jungu Kang (Sogang University) for help with administrative details.

The 24th Seoul International Conference on Generative Grammar

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First published in 2022

Published by Hankook Munhwasa

Seoul, Republic of Korea

Preface

This volume includes most of the papers and posters presented at SICOOG 24, which, due to the ongoing COVID 19 epidemic, was held virtually from August 12th to 14th, 2022. I would like to thank the presenters for bringing the latest issues in generative grammar from a variety of language families to the table thereby encouraging lively discussions and debate. I am also grateful to the authors of the papers and posters for their timely submissions and kind cooperation in the publication of this volume.

SICOOG (Seoul International Conference on Generative Grammar), which has been hosted by the Korean Generative Grammar Circle (KGGC) since 1989, has endeavoured to invite prominent linguists from around the world to present ground-breaking contributions, offering our attendees the opportunity to participate in discussions on cutting-edge research.

The purpose of this year's conference is to bring together syntacticians and other linguists worldwide to discuss current issues in generative grammar. This year's theme is Linearization. The meeting enabled the exchange of ideas and knowledge between the different areas of linguistics for facilitating research and collaborations among generative linguists.

This year's conference featured five well-known invited speakers: our key-note speaker Guglielmo Cinque (Ca' Foscari University of Venice), and our invited speakers Nobu Goto (Toyo University), Lauren Clemens (University at Albany, SUNY), and Sunwoo Jeong (Seoul National University). I appreciate their valuable presentations and their contribution to the success of the conference.

I would like to express my sincere thanks to the organizing committee and to the student assistants for all their hard work into the preparations of this year's SICOOG 24 and for making sure the entire event ran smoothly. I also wish to thank the anonymous reviewers for the difficult task of reviewing the abstracts, which helped us put together a wonderful program, which I'm sure will help us deepen our understanding of language.

Finally, I would like to express my deep gratitude to Professor Tae Sik Kim (Seoul National University of Science and Technology) and Jungu Kang (Sogang University) for editing these proceedings. I hope that these proceedings stimulate lively discussions and enhance our understanding of language and its theoretical underpinnings.

Michael Barrie
Sogang University
August 2022

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Genuine Free Merge and Resource Restriction-Obedient Search: Consequences and Challenges^{*}

Nobu Goto and Toru Ishii
Toyo University and Meiji University

1. Introduction

Chomsky (2019a/MIT lectures; 2019b/UCLA lectures; 2021/WCCFL talk; 2021/*Gengo Kenkyu* paper) argues that *Merge*, both *External Merge* and *Internal Merge*, obeys *Resource Restriction*, a general property of brain computation. Resource Restriction reduces resources available to computation (the set of elements accessible to operations) to the minimum, thereby contributing to computational efficiency. More specifically, assuming that Resource Restriction includes the conditions that restrict accessible elements, such as *Binarity*, *Minimal Search*, *Phase Impenetrability Condition*, etc., Chomsky claims that External Merge is not constrained by Minimal Search, but Internal Merge is.

The purpose of this paper is to adopt and refine the current system developed by Chomsky. Specifically we would like to refine the system by suggesting: (i) Merge, both External Merge and Internal Merge, is totally free from Minimal Search, and (ii) Search to determine the input of Merge obeys Resource Restriction that does not include Minimal Search. It will be shown that the refined system can get rid of unnecessary complications of the system, and provide a unified account of various movement phenomena/restrictions in such a way that cannot be obtained otherwise. Under the proposal, Binary, part of Resource Restriction, plays an important role in determining the generativity of Merge, so we will also address the hitherto less clear question of why Merge must be Binary, suggesting a new possibility to answer this question in terms of *Language Specific Conditions*, such as *Theta-Theory* (Chomsky 2021) and *Criterial Freezing* (Rizzi 2006). We will further consider the more general operations of search and set-formation, arguing that Binary Merge is a special case of *FormSet* that is not constrained by the Language Specific Condition (Binary). With this segregation of Binary Merge and FormSet, we provide a principled reason why FormSet is mandatory in particular syntactic environments such as coordinated structures (Chomsky 2021) and multiple nominative constructions (Goto and Ishii 2021).

This paper is organized as follows. Section 2 reviews some aspects of the recent framework that are relevant to the following discussion, and points out some theoretical/conceptual problems, especially about the relation between Merge and Minimal Search. Section 3 proposes two theories: *Genuine Free Merge Theory* and *RR-obedient Search Theory*. Section 4 explores the empirical consequences of the

^{*} Portions of this paper have been presented at the English Linguistic Society of Japan 15th International Spring Forum (SF15) (May 14-15, 2022), at First International Conference on Biolinguistics of the UQTR (BioLing1) (June 24-26, 2022), and at the workshop of “Workspace, MERGE, and Labeling” at Generative Linguistics in the Old World in Asia XIII (GLOW in Asia XIII) (August 4-7, 2022). This work is supported by JSPS KAKENHI Grant Number 19K00692. We thank Andreas Blümel, Željko Bošković, Noam Chomsky, Naoki Fukui, Shrayana Halder, Yusuke Imanishi, Hisatsugu Kitahara, Howard Lasnik, Kyoungmi Lee, Masako Maeda, Takashi Munakata, Taichi Nakamura, Masao Ochi, Hiromune Oda, Satoshi Oku, Myung-Kwan Park, Yosuke Sato, Yushi Sugimoto, and Kensuke Takita for their helpful comments and suggestions on this work.

proposed theories, providing a unified account of the movement phenomena/restrictions listed above as well as the related phenomena observed in various languages. Section 5 addresses one of the long-standing theoretical issues of why Merge must be Binary, proposing a novel direction to solve the problem. In particular, we will suggest the possibility that Binary results from an overarching principle, which we might call *One-to-One Principle*, that can subsume the insights of both Theta-Theory and Criterial Freezing. In this section we further investigate what segregates Binary Merge and FormSet, trying to identify the syntactic environments in which FormSet is effective. Section 6 concludes.

2. Framework

Resource Restriction (RR) is a concept that has been assumed in a recent series of Chomsky’s lectures (2019a/MIT lectures; 2019b/UCLA lectures; 2021/WCCFL talk) and a paper (2021/*Gengo Kenkyu* paper, hereafter GK paper) as one of the general properties of brain computation that reduces resources available to computation to the minimum, thereby contributing to computational efficiency (see Fong, Berwick, and Ginsburg 2019 for a relevant discussion of RR). According to Chomsky, RR includes the conditions that restrict accessible elements, such as *Binarity*, *Minimal Search* (MS), and *Phase Impenetrability Condition* (PIC). In the recent framework, it is assumed that Merge requires Search to determine its input, but it is Merge that is subject to RR (see Chomsky 2014, 2015; Goto 2016; Kato et al 2016; Larson 2015 for relevant discussion on Search before Merge-application):

- (1) Search $\rightarrow$ Merge
 $\uparrow$
 RR $\supset$ Binarity, MS, PIC

Of particular interest in this scheme is the relation between Merge and MS, which is part of RR. As is well-known, Merge, which takes the form of $(X, Y) \rightarrow \{X, Y\}$, has two cases: External Merge (EM) (X and Y are separate) and Internal Merge (IM) (one of X, Y is contained within the other). Since Chomsky (2004), it has been assumed that EM and IM are unified as simply two instantiations of the single rule Merge. However, it is very important to notice that in the recent framework Chomsky (2021/GK) assumes that EM and IM behave differently with respect to MS, claiming that EM, which accesses Lexicon (Lex), is not constrained by MS, but IM, which accesses workspace (WS), is constrained by MS (see Komachi et al. 2019 for a general summary of some of the current framework):

- (2) EM is not constrained by MS, but IM is.

So, Chomsky (2021/GK: 18), assuming that IM is constrained by MS, analyzes the sentence in (3) as follows: “Raising of *who*₂ yields an ECP violation. If minimality of search is abandoned, nothing bars raising of *who*₁, which is otherwise a legitimate operation, yielding (6) [= (3)]” (the strike-through lines remain the same as in the original):

- (3) **who*₃ do you wonder if ~~*who*₂~~ was appointed ~~*who*₁~~

In view of the history that the MS-constrained IM system has provided a number of interesting empirical consequences while revealing an important aspect of the efficiency of computational system of human language (see, among many others, Chomsky 1986a, b; Rizzi 1990; Chomsky 1995, 2000), the claim that IM should be restricted by MS seems to have received a certain amount of empirical justification. Also, given the situation where items in the Lex have no structural relationship to each

other and are simply stored randomly, the claim that EM is not restricted by MS is arguably plausible, and in fact, to ensure the creative aspect of language use, EM that initiates the generation of free expression should be able to freely search all items in the Lex. In fact, the idea that IM is constrained by minimality has existed for a long time, so that the whole system may seem to be on the right track.

But, if we cast doubt on the whole system, we observe that there still remain some theoretical and conceptual uncertainties, especially about the relation between Merge and MS. First, in the recent paper, Chomsky (2021/GK: 17) says: “ Σ [= MS] is a third factor element, on the shelf and available for any operation.” If so, it is a mystery why only EM is free from MS. What is it that a principled reason why EM does not obey MS? Without a genuine explanation of why this is so, that is, why only IM obeys MS, or why only EM does not, it raises the suspicion that it may simply be an arbitrary use of the third factor element. As we have seen above, if EM and IM are unified as simply two instantiations of the single rule Merge, such asymmetrical aspect should be explicitly explained under the always available third factor element.

Second, although RR includes MS as well as the PIC (see (1) above), once we consider their actual implementation, we notice that there is some redundancy between them. For example, consider when there are two copies of X above and below the phase head (PH):

- (4) $[X_2 [PH [\dots \cancel{X_1} \dots]]]$

In this case, for MS, the higher X_2 is accessible, but the lower X_1 is inaccessible (here the strike-through line stands for inaccessibility). But it is important to recall that this kind of (in)accessibility is already ensured by the PIC (Chomsky 2000, 2001), which is also a part of RR: for the PIC as well, the higher X_2 is accessible, but the lower X_2 is inaccessible. Since eliminating redundancies has been a working hypothesis in the linguistic inquiry (Chomsky 1995: 152), such a redundancy should be eliminated. So the question to be asked is which should be eliminated, MS or the PIC. If the PIC is indispensable for the strict cyclicity of derivation (Chomsky 2021/GK: 18), it should be MS that may be eliminated.

Third, there are already several counterarguments for assuming MS in IM. For example, Fry (2014) and Takahashi (2001) have independently argued that the MS-constrained IM system is empirically untenable. It seems that this already suggests something important about the irrelevance of MS to Merge.

3. Refinements

To avoid such concerns from the beginning, we would like to dissociate Merge from MS, and propose that Merge is totally free from MS:

- (5) *Genuine Free Merge Theory*
Merge (both EM and IM) is totally free from MS.

We call this *Genuine Free Merge Theory*. With this theory, the EM/IM distinction with respect to MS is eliminated, and the EM/IM uniformity for Merge is maintained. However, the question is still left open: how are items to which Merge will apply determined by Search? To answer this question, we propose that Search to determine the input of Merge obeys RR that includes Binarity and the PIC. Binarity restricts the number of the accessible targets of an operation to two, and the PIC makes the complement of a phase head inaccessible. We call this *RR-obedient Search Theory*:

- (6) *RR-obedient Search Theory*
Search obeys Resource Restriction that includes Binarity and the PIC.

Thus, for Chomsky, it is Merge that is subject to RR (see (1) above), but for us, it is Search that is subject to RR. And for Chomsky, it is Binararity, MS, and the PIC that are included in RR, but for us, it is only Binararity and the PIC that are included in RR. Under our Genuine Free Merge Theory, MS is completely dissociated not only from Merge but also from Search that determines the input of Merge, as follows:

$$(7) \quad \begin{array}{c} \text{Search} \rightarrow \text{Merge} \\ \uparrow \\ \text{RR} \supset \text{Binararity and PIC} \end{array}$$

Under our RR-obedient Search Theory, the example (3) (repeated here as (8), which Chomsky analyzes under MS) can be explained in terms of Binararity. Consider (9), the WS of (8) before IM is applied:

$$(8) \quad * \text{Who}_3 \text{ do you wonder if } \text{who}_2 \text{ was appointed } \text{who}_1 (= (3))$$

$$(9) \quad \text{WS} = [\{C \{_{TP} \text{who}_2 \{T \{v \{R \text{who}_1\}\}\}\}\}]$$

Here to accomplish *wh*-movement, we will first need to apply Search to determine one *C* and one *who* to satisfy Binararity. But in (9), there are two accessible *wh*-elements to Search from *C*: *who*₂ and *who*₁. *Who*₁ in the complement of *R* is required to meet *Theta Theory* (Chomsky 2021/GK) and *who*₂ in the Spec of *T* is required to satisfy *Labeling Theory* (Chomsky 2013, 2015). If Search is applied to this WS, it results in a Binararity violation because there are three accessible elements to Search: *C* for *wh*-movement, *who*₂ for labeling, and *who*₁ for theta role. This violates Binararity. So the example can be explained as a violation of Binararity on Search, without assuming MS. One might wonder why *who*₁ is not blocked by the PIC. We are assuming here that the complement of passive *v* is not blocked by the PIC (Chomsky 2000, 2007, 2008), so *who*₁ is accessible to *C*.¹

Goto and Ishii (2022) suggest that the RR-obedient Search Theory can embody the hidden assumption in the *Input-Determinacy* explored by Goto and Ishii (2020a, b, c). The Input-Determinacy requires that rules, including Merge, should apply in a deterministic (that is, non-ambiguous) fashion at the present stage of a derivation. Noticing that the Input-Determinacy overlooks the important fact that it is not Merge but Search that determines the input of Merge, Goto and Ishii (2022) suggest that the insight/consequences of the Input-Determinacy be reconsidered under the RR-obedient Search Theory that clearly assumes Search to determine the input of Merge. So, in the following, I will reconsider how the movement phenomena/restrictions that were dealt under the Input-Determinacy can be recaptured under the RR-obedient Search Theory without assuming the notion of Determinacy.²

4. A Natural Class

4.1. The Subject Island Effect and Its Kin

Our RR-obedient Search Theory gives a new analysis to the subject island effect (Chomsky 1973;

1 Note that IM is a case where Search applies to *P* and *Q* in $\text{WS} = [\{P \dots Q \dots\}]$, where *Q* is a term of *P*. Thus, strictly speaking, the elements accessible in (9) are $\{C \{_{TP} \text{who}_2 \{T \{v \{R \text{who}_1\}\}\}\}$, *who*₂, and *who*₁. In the following, for clarity of explanation, we will consider a label of *P* to be accessible, but even if we consider the entire structure as accessible, it does not affect the following discussion.

2 Goto and Ishii (2022) argue that the insight/consequences of the *Output-Determinacy* in Chomsky et al. (2019) and *Minimal Yield* in Chomsky (2021/GK), a recent version of the Output-Determinacy, can also be captured under the RR-obedient Search Theory developed in this paper.

Huang 1982) and its kin. (10) is an example of the subject island effect and (11) is its WS before *wh*-movement is applied (*t*(race) is just for expository purposes to indicate movement):

(10) ***Who** did [pictures of *t*] please you?

(11) WS = [$\{C \{_{TP} \{ \dots \mathbf{who}_2 \} \{T \{_{vP} \{ \dots \mathbf{who}_1 \} \{v \dots \} \} \} \}$]

In (11), there are three elements are accessible to Search: *C*, *who*₂, and *who*₁. This violates Binarity, so IM cannot generate (10).

As shown in (12), the subject island effect disappears when an expletive *there* occupies the Spec of T (Lasnik and Park 2003 and Stepanov 2007). (13) is the WS of (12) before *wh*-movement is applied:

(12) **Who** is there [a picture of *t*] on the wall? (Stepanov 2007: 92)

(13) WS = [$\{C \{_{TP} \text{there} \{T \{_{vP} \{ \dots \mathbf{who} \} \{v \dots \} \} \} \}$]

In (13), there are only two accessible elements to Search: *C* and *who*. This satisfies Binarity, so IM can generate (12).

Unlike extraction out of a subject, extraction out of an object is possible, as shown in (14). The WS of (14) before *wh*-movement is applied is (15):

(14) **Who** did you see [a picture of *t*]?

(15) WS = [$\{C(\text{did}) \{_{TP} \text{you} \{T \{_{vP} \text{you} \{v\text{-R}(\text{see}) \{_{RP} \{ \dots \mathbf{who}_2 \} \{R(\text{see}) \{ \dots \mathbf{who}_1 \} \} \} \} \} \}$]

In (15), following Chomsky (2015), we assume that *who*₁ in the complement of *R* is not accessible because of the PIC, and that *who*₂ is in the Spec of *R* since the whole structure of [a picture of *who*] occupies that position to meet Labeling Theory by phi-phi labeling. In this situation, there are only two accessible elements to Search: *C* and *who*₂. This satisfies Binarity, so IM can generate (14).

As shown in (16), Japanese has no subject island effect (Kayne 1984; Lasnik and Saito 1992; Ishii 1997, 2011; Saito and Fukui 1998). Following Fukui (1986) and Kuroda (1988), we assume that subjects in Japanese remain in the Spec of *v* throughout a derivation. Then (17) is the WS of (16) before *wh*-movement is applied:

(16) **Dare-ni** [John-ga [[Mary-ga *t* atta] koto]-ga mondai-da to] omotteru no?
 who-Dat J.-Nom M.-Nom met fact-Nom problem-is that think Q
 Lit. ‘Who, John thinks that [the fact that Mary met _] is a problem.’

(17) WS = [$\{C \{_{TP} \{T \{_{vP} \{ \dots \mathbf{dare-ni} \} \{v \dots \} \} \} \}$]

In (17), there are only two accessible elements to Search: *C* and *dare-ni*. This satisfies Binarity, so IM can generate (16).

If we assume with Uriagereka (1988: 118) and Gallego and Uriagereka (2007: 294) that in Spanish post-verbal subjects stay in the Spec of *v*, while pre-verbal subjects appear in the Spec of *T*, the contrast between (18a, b) can be explained in the same way as that of Japanese (16) and English (10). The WSs of (18a, b) before *wh*-movement is applied are (19a, b), respectively:

- (18) [De qué conferenciantes_i te parece que ...
 of what speakers CL-to-you seem-3.sg that
 a. ... me_z van a impresionar_v [_{v*P} [las propuestas **t**_i t_z t_v]]?
 CL-to-me go-3.sg to to-impress the proposals
 b. * ... [las propuestas **t**_i] me_z van a impresionar_v [_{v*P} t_i t_z t_v]]?
 the proposals CL-to-me go-3.sg to to-impress
 ‘Which speakers does it seem to you that the proposals by will impress me?’
- (19) a. WS = [{C {TP {T {_{vP} { ... de qué conferenciantes } {_v ...
 b. WS = [{C {TP { ... de qué conferenciantes₂ } {T {_{vP} { ... de qué conferenciantes₁ } {_v ...

In (19a), there are only two accessible elements to Search: C and *de qué conferenciantes*. This satisfies Binarity, so IM can generate (18a). One might wonder how T in (19a) meets Labeling Theory. Following Goto (2017b), we assume that V-raising can contribute to labeling in null subject languages.³ In (19b), on the other hand, there are three accessible elements to Search: C, *de qué conferenciantes*₂, and *de qué conferenciantes*₁. This violates Binarity, so IM cannot generate (19b).

4.2. Movement Restriction in Verb Particle Constructions

We can account for the contrast between (20a, b) (Lasnik 2001 and Boeckx 2012): extraction out of the object is possible when an object appears after particle, but impossible when it appears between verb and particle. We assume with Lasnik and Boeckx that when the object appears between verb and particle, it moves from the post-particle position to the pre-particle position. Then the WS of (20b) before *who* is moved to R is (21) (the *wh*-movement is required to satisfy Labeling Theory by phi-phi):

- (20) a. **Who** did Mary call up [friends of **t**]_i?
 b. ***Who**₁ did Mary call [friends of **t**₁]₂ up t₂? (Lasnik 2001: 111)
- (21) WS = [{_v {_{RP} {**R**(call) {friends of **who**₂} up {friends of **who**₁} } } }]

In (21), there are three accessible elements to Search: R, *who*₂, and *who*₁. This violates Binarity, so IM cannot generate (20b). (20a) is explained in the same way as (14).

4.3. Anti-Locality Effect

We can explain the anti-locality effect (Lasnik and Saito 1992): subjects cannot undergo topicalization (see also Erlewine 2016, 2020 and references cited therein). Following Chomsky (1977), Rizzi (1997), Hiraiwa (2010), and Grohmann (2011), we assume that topicalization moves a topic element to the Spec of C. Then (23) is the WS of (22) before topicalization:

- (22) ***John**, **t** came yesterday.

3 See Goto (2017b) for potential problems of assuming the strong/weak parameter on T in Labeling Theory as in Chomsky (2015), in which it is assumed that T in a null subject language like Spanish is strong enough to label the TP structure even without an overt subject in its Spec, but T in a language like English is too weak to label the TP structure, requiring an overt subject in its Spec to label the structure.

$$(23) \quad \text{WS} = [\{\text{C } \{\text{TP } \textbf{John}_2 \text{ T } \{\text{vP } \textbf{John}_1 \text{ v } \dots\}\}\}\}]$$

In (23), there are three accessible elements to Search: C, *John*₂, and *John*₁. This violates Binarity, so IM cannot generate (22). On the other hand, as shown in (24), topicalization of objects is possible. The workspace of (24) is (25):

$$(24) \quad \textbf{Mary}, \text{ John likes } t.$$

$$(25) \quad \text{WS} = [\{\text{C } \{\text{TP } \text{John} \text{ T } \{\text{vP } \{\text{v } \{\text{RP } \textbf{Mary}_2 \text{ R, } \textbf{Mary}_1\}\}\}\}\}\}]$$

Again, following Chomsky (2015), we assume that *Mary*₁ in the complement of R is not accessible because of the PIC and *Mary*₂ in the Spec of R is necessary to meet Labeling Theory by phi-phi labeling. In (25), there are only two accessible elements to Search: C and *Mary*₂. This satisfies Binarity, so IM can generate (24).⁴

Our analysis of the anti-locality effect is compatible with the *Vacuous Movement Hypothesis* (VMH) (George 1980; Chomsky 1986b, 2013; Ishii 2004; Agbayani 2006), which states that a *wh*-subject does not move locally to the Spec of C from the Spec of T, as shown in (26b):

$$(26) \quad \begin{array}{l} \textbf{Who} \text{ left?} \\ \text{a. } [\text{TP } \text{who} [\text{T } [\text{vP } \textbf{who} [\text{v-R(leave)}] \dots]] \\ \text{b. } * [\text{CP } \text{who} [\text{C } [\text{TP } \textbf{who}_2 [\text{T } [\text{vP } \textbf{who}_1 [\text{v-R(leave)}] \dots]]]] \end{array}$$

In (26a), there are only two accessible elements to Search: T and *who*. This satisfies Binarity, so IM can generate (26a). In (26b), on the other hand, there are three accessible elements to Search: C, *who*₂, and *who*₁. This violates Binarity, so IM cannot generate (26b).

4.4. The *That*-trace effects and Its Kin

We can explain the *that*-trace effect (Kayne 1984; Lasnik and Saito 1992; Chomsky 1986a; Rizzi 1990; Ishii 2004; Mizuguchi 2008; Abe 2015; Bosković 2016; Douglas 2017; Erlewine 2016, 2020). (27) is an example of the *that*-trace effect, and (28) is the WS of (27) before *wh*-movement:

$$(27) \quad * \textbf{Who} \text{ do you think that } t \text{ saw Bill?}$$

$$(28) \quad \text{WS} = [\{\text{C(that)} \{\text{TP } \textbf{who}_2 \text{ T } \{\text{vP } \textbf{who}_1 \text{ v } \dots\}\}\}\}]$$

In (28), there are three accessible elements to Search: C, *who*₂, and *who*₁. This violates Binarity, so IM cannot generate (27).

As shown in (29), the *that*-trace effect disappears when C is deleted. Following Chomsky (2015), we assume that when C is deleted, T becomes a phase head, and T-complement that contains *who*₁ is not accessible because of the PIC. Then the WS of (29) is (30):

$$(29) \quad \textbf{Who} \text{ do you think } t \text{ saw Bill?}$$

$$(30) \quad \text{WS} = [\{\textbf{R } \{\text{C} \rightarrow \emptyset \{\text{TP } \textbf{who}_2 \text{ T } \{\text{vP } \textbf{who}_1 \text{ v } \dots\}\}\}\}\}]$$

⁴ See Goto and Ishii (2020a, b, c) for more extensive discussion on the anti-locality effect.

In (30), there are only two accessible elements to Search: R and *who*₂. This satisfies Binarity, so IM can generate (29).

Our analysis can also explain so called the adverb effect. As shown in (31), the *that*-trace effect is canceled when certain adverbs such as *tomorrow* appear after *that*. Following Douglas (2017), we assume that *tomorrow* splits the CP domain into two parts, C₂ and C₁, and following Goto (2011), we assume that in such a layered CP structure, subject agreement (phi-phi labeling) takes place at the Spec of the lower C₁ head, and *who*₁ in the lower C₁-complement is transferred. Then the WS of (31) is (32):

(31) **Who** did she say that tomorrow *t* would regret this words?

(32) WS = [{C₂(that) {C_{P1} **who**₂ {tomorrow {C₁ {T {v_P **who**₁ {v ...}}}}}}}]

In (32), there are only two accessible elements to Search: C₂ and *who*₂. This satisfies Binarity, so IM can generate (31).

Our account of the *that*-trace effect can also accommodate Rizzi and Shlonsky's (2007) "skipping strategy," which express a generalization that captures apparent violations of the *that*-trace effect, as shown in English (33b) and French (34b) (the examples are taken from Rizzi and Shlonsky 2007):

(33) a. ***What** do you think that *t* is in the box?
b. **What** do you think that there is *t* in the box?

(34) a. ***Quelle étudiante** crois-tu que *t* va partir?
which students believe-you that go leave
b. **Quelle étudiante** crois-tu qui *t* va partir?
which students believe-you that go leave
Lit. 'Which student do you believe that is going to leave?'

The contrasts follow if we assume with Taraldsen (2001) and Rizzi and Shlonsky (2007) that *-i* of *qui* in French (34b) is an expletive-like element. The WSs of (33b) and (34b) are (35) and (36), respectively:

(35) WS = [{C(that) {T_P there {T {v_P **what** {v ...}}}}}]

(36) WS = [{C(que) {T_P -i {T {v_P **quelle étudiante** {v ...}}}}}]

In both (35) and (36), there are only two accessible elements to Search: C and one *wh*-element (*what* in (35) and *quelle étudiante* in (36)). This satisfies Binarity, so IM can generate (33b) and (34b).

We also account for the absence of the *that*-trace effects in *pro*-drop languages such as Italian, Spanish, and Greek. As originally observed by Perlmutter (1971), these languages do not exhibit *that*-trace effects, as illustrated in (37)-(39) (cf. Rizzi 1982, 1990; Uriagereka 1988):

(37) **Chi** credi [che *t* vincerà]? (Italian)
who think that win
'Who do you think that *t* will win?' (Rizzi and Shlonsky 2007: 127)

(38) **Quién** dijiste [que *t* salió temprano]? (Spanish)
who said-you that left early
'Who did you say left early?' (Perlmutter 1979: 103)

- (39) **Pjo** nomizis [oti **t** tilefonise]? (Greek)
 who think-2s that telephoned
 ‘Who do you think called?’ (Roussou 2002: 40)

As noted in the analysis of (18a) above, we assume that in these languages raising of a verb with rich agreement to the Spec of T can meet Labeling Theory by phi-phi labeling (Goto 2017b). Then the workspace of (37), for example, is (40):

- (40) WS = [$\{C(\text{che}) \{TP \text{ vincerà } \{T \{_{vP} \text{ **chi** } \{v\text{-}R(\text{vincerà}) \dots\} \} \} \}$]

In (40), there are only two accessible elements to Search: C and *chi*. This satisfies Binarity, so IM can generate (37). (38) and (39) receive the same explanation.

As originally pointed out by Ishii (2004: 212), Japanese does not exhibit *that*-trace effects, as shown in (41), where the subject null operator OP is scrambled out of a *that*-clause. As noted in the analysis of (16) above, we assume that subjects in Japanese stay in the Spec of *v*. The WS of (41) is (42):

- (41) [**OP** [John-ga [t Mary-ni hanasikaketa to] omotteiru] yorimo]
 John-NOM Mary-DAT talked to that think than
 harukani ookuno hito-ga Susy-ni hanasi tagatte ita
 far more people-NOM Susy-DAT wanted to talk
 ‘Far more people wanted to talk with Susy than John thinks that talked to Mary.’

- (42) WS = [$\{C \{TP \{T \{_{vP} \text{ **OP** } \{_{RP} \text{ Mary-ni } R(\text{hanasikake}) \} v\text{-}R(\text{hanasikake}) \} T(\text{ta}) \} C(\text{to}) \} \}$]

In (42), there are only two accessible elements to Search: C and OP. This satisfies Binarity, so IM can generate (41).

As originally noted by Maling and Zaenen (1978), Icelandic does not exhibit *that*-trace effects either, as shown in (43), where the subject *wh*-phrase is *hver* ‘who’ is moved out of a *that*-clause. Here we assume with Holmberg and Hróarsdóttir (2003) that *wh*-phrases in Icelandic move directly from the Spec of *v* to the Spec of C. The WS of (43) is (44):

- (43) **Hver** sagðir þú að t hefði borðað þetta epli?
 who said you that had eaten this apple
 ‘Who did you say had eaten this apple?’ (Maling and Zaenen 1978: 480)

- (44) WS = [$\{C(\text{að}) \{TP \{T \{_{vP} \text{ **hver** } \{v \{ \dots$

In (44), there are only two accessible elements to Search: C and *hver*. This satisfies Binarity, so IM can generate (43).

4.5. Further-Raising

Our RR-obedient Search theory explains further-raising. In English, as shown in (45), subjects cannot undergo further-raising across finite clauses. (46) is the WS of (45):

- (45) ***John and Peter** seem that **t** are very smart.

$$(46) \quad \text{WS} = [\{\text{C}(\text{that}) \{ \text{TP } \textbf{John and Peter}_2 \{ \text{T } \{ \text{vP } \textbf{John and Peter}_1 \{ \text{v } \dots \} \} \} \} \}]]$$

In (46), there are three accessible elements to Search: *C*, *John and Peter*₂, and *John and Peter*₁. This violates Binarity, so IM cannot generate (45).

As shown in (47), further-raising is possible in languages like Spanish. Following Fernández-Salguero (2005), we assume that the subject in Spanish originates from the Spec of *v*, and following Goto (2017b) again, we assume that V-raising can contribute to labeling in such a null subject language like Spanish. Then the WS of (47) is (48):

$$(47) \quad \begin{array}{llllll} \textbf{Juan} & \textbf{y} & \textbf{Pedro} & \text{parece} & \text{que} & \textbf{t} & \text{son} & \text{muy} & \text{listos.} \\ \text{John} & \text{and} & \text{Peter} & \text{seems} & \text{that} & & \text{are} & \text{very} & \text{smart} \\ & & & \text{'John and Peter seems that } _ \text{are very smart.'} & & & & & \text{(Fernández-Salguero 2004: 100)} \end{array}$$

$$(48) \quad \text{WS} = [\{\text{C}(\text{que}) \{ \text{TP } \text{son} \{ \text{T } \{ \text{vP } \textbf{Juan y Pedro} \{ \text{v } \dots \} \} \} \} \}]]$$

In (48), there are only two accessible elements to Search: *C* and *Juan y Pedro*. This satisfies Binarity, so IM can generate (47).⁵

4.6. Merge-over-Move

The contrast in (49) also follows from our RR-obedient Search Theory (for previous approaches to the contrast, see, e.g., Chomsky 1995; 2000; Shima 2000, Goto 2013; 2017a; Epstein, Kitahara, and Seely 2014). Following Abe (2018) and Goto (2017a), we assume that the associate of *there* is located in the Spec of *R* to receive partitive Case (Belletii 1988; Lasnik 1995). Then the WS of (49a, b) are (50a, b):

- (49) a. *There seems a man to be in the room.
c. There seems to be a man in the room.

$$(50) \quad \begin{array}{ll} \text{a.} & \text{WS} = [\{\text{T}(\text{to}) \{ \text{v}+\text{R}(\text{be}) \{ \text{RP } \textbf{a man}_2[\text{Partitive}] \{ \text{R}(\text{be}) \{ \textbf{a man}_1 \text{ in the room } \dots \} \} \} \} \}]] \\ \text{b.} & \text{WS} = [\{\text{TP } \text{there} \{ \text{T}(\text{to}) \{ \text{v}+\text{R}(\text{be}) \{ \text{RP } \textbf{a man}_2[\text{Partitive}] \{ \text{R}(\text{be}) \{ \textbf{a man}_1 \text{ in the room } \dots \} \} \} \} \} \}]] \end{array}$$

In (50a), there are three accessible elements to Search: *T*, *a man*₂, and *a man*₁. This violates Binarity, so IM cannot generate (49a). In (50b), on the other hand, there is no need to apply Search to *a man*, so there is no Binarity violation.

⁵ Note that further-raising is not allowed in English irrespective of the appearance of the complementizer *that*:

- (i) a. *John seems reads a book.
b. *Who seems will leave.

To accommodate these cases, we assume that in raising predicates such as *seem* and *be likely*, C-deletion, phasehood-inheritance, and vP-Transfer, the processes assumed in (29), do not apply even if the complementizer does not appear, and rather that CP exists for successive-cyclic movement (see Bošković and Lasnik 2003 for relevant discussion). Given this assumption, (ia, b) can be explained basically in the same way as (45). The assumption that CP exists for successive-cyclic movement in a raising predicate is motivated by the fact that the *that*-trace effect is not canceled even if the complementizer that does not appear in the raising predicate:

- (ii) a. *Who_i is it likely *t_i* will read the book?
b. ?*Who_i does it appear *t_i* likes Mary? (Kayne 1984: 3)

Given that CP exists for successive-cyclic movement in the raising predicate, (iia, b) can be explained basically in the same way as (27).

4.7. Island Violation Repair by Ellipsis

Merchant (2001: 185) observes that the subject island effect is cancelled if the extraction site is elided:

- (51) a. ***Which Marx brother** is [a biography of *t*] going to appear this year?
 b. A biography of one of the Marx brothers is going to appear this year, but I don't know **which (Marx brother)**.

Following Merchant (2001), we assume that the subject in the elided position stays in the Spec of *v* throughout a derivation. Then the WS of (51b) is (52):

- (52) WS = [{C {T {_{VP} {a biography of **which (Marx brother)**} {_v {is going to appear}}...}

In (52), there are only two accessible elements to Search: *C* and *which (Marx brother)*. This satisfies Binarity, so IM can generate (51b). The same account extends to the following contrast (from Merchant 2001: 185): the *that*-trace effect is cancelled if the extraction site is elided.

- (53) a. *John said that someone would write a new textbook, but I can't remember **who** John said [that *t* would write a new textbook].
 d. John said that someone would write a new textbook, but I can't remember **who**.

Lasnik (2001) observes that extraction out of a pseudogapping object is not allowed:

- (54) a. Bill selected a painting of John, and Susan should [a photograph of Mary]_i [_{VP} select *t_i*].
 b. ?*Who will Bill select a painting of, and **who_j** will Susan [a photograph of *t_j*]_i [_{VP} select *t_i*]?
 (Cf. Who_i did you select a picture of *t_i*?)

Following Lasnik (2001), we assume that the remnant in pseudogapping undergoes IM for agreement that targets a phrase above VP (IM for phi-phi labeling in the present terms), and also following Gengel (2013), we assume that it undergoes focus movement that targets a phrase above *v*P. Then the WS of (54b) is (55):

- (55) WS = [{C(will) {_{TP} Susan {T {_{VP} {a photograph of **who₃**} {_{v'} Susan {_v {_{RP} {a photograph of **who₂**} {R(select) {a photograph of **who₁**} ...}

In (55), there are three accessible elements to Search: *C*, *who₃*, and *who₂*. This violates Binarity, so IM cannot generate (54b).

4.8. Determinacy Violation Repair by Resumptive Pronouns

We can also explain the adjunct island effect (Huang 1982). (56) is an example of the adjunct island effect. Following Nakashima (2018), we assume that adjuncts may be left in WS without removed from WS. Then the WS of (56) is (57):

- (56) ***Who** did they leave [_{CP} *t* before speaking *t*]?

- (57) WS = [{C {T {_{CP} **who₂**, C'}}}, {_{CP} **who₁**, C'}]

In (57), there are three accessible elements to Search: C, *who*₂, and *who*₁. This violates Binarity, so IM cannot generate (56).

As pointed out by Ross (1967), when a resumptive pronoun instead of a copy appears in the adjunct clause, the adjunct island effect is cancelled as shown in (58b) (Boeckx 2012: 81). Under the assumption that adjuncts may be left in WS without removed from WS, the WS of (58b) is (59):

- (58) a. ***Which woman** did John started laughing [after *t* kissed Bill]?
 b. (Tell me again:) **which woman** was it that John started laughing [after **she** kissed Bill]?

(59) WS = [{C {T {CP **which woman**, C'}}}], {CP she, C'}]

In (59), there are only two accessible elements to Search: C and *which woman*. Note that *which woman* in the adjunct clause is replaced by *she*. This satisfies Binarity, so IM can generate (58b). The circumvention of island effects with resumptive pronouns is also observed in a complex NP environment as shown in (60), which follows from the above analysis in the same way, given that the *that*-clause selected by N is an adjunct (cf. Stowell 1981):

- (60) a. ***Who** did Sue read [the claim that *t* was drunk] in the Times?
 b. **That man**, Sue read [the claim that **he** was drunk] in the Times? (Boeckx 2012: 6)

4.9. No Superfluous Steps

Our RR-obedient Search Theory provides us with an important insight to understand the last resort nature of successive-cyclic movement that avoids superfluous steps. Compare two possible derivations of (61a, b), where the derivations of the embedded clause are omitted for simplicity:

- (61) **What** did you say that John bought *t*?
 a. Successive-cyclic/phase-by-phase movement
 [CP [C(that) [TP John [_{VP} John [_{V-R}(buy) [RP **what** [R(buy) [...
 b. Superfluous/non-phase-by-phase movement
 *[CP [C(that) [TP **what**₂ [TP John [_{V-R}(buy) [RP **what**₁ [R(buy) [...

In (61a), *what* moves from the Spec of R to the Spec of C successive-cyclically, without stopping over the other intermediate positions. In (61b), on the other hand, *what* moves from the Spec of R to the Spec of T before moving to the Spec of C, stopping over (or adjoining to) the intermediate position “superfluously”. In the minimalist literature, it has been assumed that the derivation (61a) is favored over the derivation (61b). But the question is why. Our RR-obedient Search Theory can give a principled explanation: in (61a), there are only two accessible elements to Search: C and *what*, but in (61b), there are three accessible elements to Search: C, *what*₂, and *what*₁. The former satisfies Binarity, but the latter violates Binarity, so IM can generate (61a), but cannot generate (61b).

4.10. A-movement

Taking (62) for example, let us consider how our RR-obedient Search Theory analyzes A-movement:

- (62) John is likely to be arrested.

On A-movement, two kinds of approaches have been developed in the literature. The first approach assumes that ν Ps involved in A-movement are not phases and A-movement takes place in one fell swoop (*i.e.* non-successive-cyclically), skipping the intermediate positions entirely, according to which (62) is analyzed as in (63):

- (63) [TP John [T(is) [ν P likely [to [ν P [be arrested **John**]]]]]]

In (63), *John* moves in one fell swoop from its base position to the matrix Spec of T, without leaving its copies in the intermediate positions. This derivation is supported by Lasnik (1999), Chomsky (2000, 2007, 2008, 2021/GK), and Epstein and Seely (2006).

The second approach assumes that ν Ps involved in A-movement are phases and A-movement takes place successive-cyclically, without skipping over the intermediate positions, according to which (62) is analyzed as in (64):

- (64) a. [ν P John [ν [arrest **John**]]]
 b. [ν P John [ν [likely [T(to) [ν P **John** [ν [arrest **John**]]]]]
 c. [TP John [T(is) [ν P **John** [ν [likely [...

In (64), *John* moves from its base position to the Spec of the matrix T successive-cyclically phase by phase, leaving its copies in the intermediate positions. This approach is advocated by Legate (2003).

What is important for us is that neither approach violates Binarity. In (63), there are only two accessible elements to Search: T and *John*. This satisfies Binarity, so IM can generate (62). Likewise, in (64), the intermediate copies of *John* become inaccessible because of the PIC after each-phase- ν -complement (RP) Transfer, so the derivation satisfies Binarity successive-cyclically phase by phase.

In this way, our RR-obedient Search Theory can create a new natural class, which cannot be obtained otherwise for various movement restrictions in collaboration with the independently motivated assumptions (see Goto and Ishii 2020a, b, c for more relevant data).

5. On Binary: Implications for More General Operations

Let us briefly summarize the discussion so far and try to identify the problem that can further facilitate the understanding of the system. First, we have assumed that Merge requires Search to determine its input. In the recent framework, Merge, especially, IM is assumed to follow MS, but we have proposed that neither Merge nor Search is restricted by MS, for the reasons mentioned above (Section 2). We have called that Genuine Free Merge Theory. Second, we have suggested that Search does not obey MS, but it obeys Binarity and the PIC, part of RR. We have named that RR-obedient Search Theory. According to our RR-obedient Search Theory, if the number of accessible elements to Search is two ($n=2$), we can get a Merge-generable sentence, but if the number of accessible elements to Search is more than two ($n \geq 3$), we cannot get a Merge-generable sentence. Under the proposed analysis, therefore, the notion of Binary, which is part of RR, plays an important role in determining the generativity of Merge. An important question arises. Why Binary plays such a crucial role in the system? Why is it that Merge must be Binary? In the following we would like to address this hitherto less clear question, trying to seek for a new possibility to answer the question.⁶

6 To this question, Chomsky (2001: 115) already made an interesting suggestion about 20 years ago that Merge must be binary to minimize search space: “In the probe-goal system [...] it follows from optimal computational considerations that Merge must be binary, minimizing search for the goal” (Chomsky 2001: 115). Even 20 years

Before considering the *why*-question, let us think about more accessible question of *what* is Binary. Considering that Binary is a relation consisting of two elements, it would not be implausible to reinterpret binary as one-to-one relation. If this reasoning is on the right track, we might be able to address the *why*-question more reasonably by asking the following question:

(65) What are the *Language-Specific Conditions* (LSCs) that require a one-to-one relation?

Looking back the history of generative grammar, there were various theories that incorporate the notion of one-to-one relation: see Chomsky (1981), George and Kornfilt (1981), Fukui (1986), Kuroda (1988) for *Case and agreement*; Koopman and Sportiche (1982) for *Bijection Principle*; Chomsky (1981, 2021) for *Theta-Theory*; Kayne (1984) for *binary-branching structure building*; Richards (1998) for *Principle of Minimal Compliance*; Rizzi (2006) for *Criterial Freezing*. Among others, a careful consideration of the nature of Theta Theory and Criterial Freezing may provide a key to approaching the issue, because they are crucially involved in EM and IM.

Consider first what is the requirement of Theta Theory. What Theta Theory requires is a one-to-one relation of a single head and a single phrase that is associated with a theta-role, as shown in the relation between a verb and an object:

(66) {V, Obj} (one-to-one relation associated with theta-role)

Consider then what is the requirement of Criterial Freezing. What Criterial Freezing requires is a one-to-one relation of a single head and a single phrase that is associated with scope/discourse-related information, as shown in the relation between a C head and a *wh*-element:

(67) {C, Wh} (one-to-one relation associated with scope/discourse-related information)

It should be noted here that the two requirements have something in common: both require a one-to-one relation between H and XP, and the relation established is associated with some interpretation that contributes at the Conceptual Intentional (CI) Interface. Considering this similarity, let us assume, as one of the LSCs, that there exists an overarching principle, which may be called *One-to-One Principle*:

(68) *One-to-One Principle*

For a syntactic object (SO) to be interpreted at the CI interface (particularly with respect to theta-role and scope/discourse-related information), the SO must be in one-to-one relation of a single head (H) and a single phrase (XP): {H, XP}.

Following Genuine Free Merge Theory, we assume that not Merge but Search to determine the input of Merge is subject to this One-to-One Principle.

Let us see how Binarity is derived from the One-to-One Principle. First, consider EM (69):

(69) EM

later, he still seems to take that possibility to be relevant, as is clear from the passage from a recent speech at WCCFL: “[...] binarity [...] reduces search” (Chomsky 2021/WCCFL talk: 24:34). But it is very important to notice that he also points out that such a search-space restriction approach to Binary is not so conclusive: “The conclusion has been generally assumed, but has resisted explanation and is not obvious; some considerations might yield a preference for *n*-ary categories” (Chomsky 2001: 115). The question of Binary still remains. Incidentally, in the following, we will also reveal the situation where *n*-ary is preferred by “some consideration.”

Step 1 Search(LexUWS)

Step 2 Search (H, XP) under One-to-One Principle

Step 3 EM(H, XP) = {H, XP} ($n=2$): theta-associated

In the case of EM, Search accesses Lex and WS, and sees everything, unless barred by stipulation (Step 1). Then, in accord with the One-to-One Principle, Search picks up two relevant elements (Step 2). In this case, the elements should be a single head H in Lex and a single phrase XP in WS that is associated with a theta-role. This satisfies the One-One Principle, namely binarity. EM applies to this input (Step 3). So, the output of EM results in binary automatically, and Binarity of EM follows. Then, consider IM (70):

(70) IM

Step 1 Search(WS) under the PIC

Step 2 Search (H, XP) under One-to-One Principle

Step 3 IM(H, XP) = {H, XP} ($n=2$): scope/discourse-related information-associated

In the case of IM, Search accesses WS, and sees everything, unless blocked by the PIC (Step 1). Then, in accord with the One-One principle, Search picks up two relevant elements (Step 2). In this case, the elements should be a single head H and a single phrase XP that is associated with scope/discourse-related information. This satisfies One-to-One Principle, namely binarity. IM applies to this input (Step 3). So, the output of IM results in binary automatically, and Binarity of IM follows. So, for the question of why Binary, we now have an answer. That is because Search obeys the One-to-One Principle, one of the LSCs.⁷

Here, we can ask a few questions. For example, Search and Merge we have looked at above can be considered special cases of Search and Merge in the sense that they are constrained by the LSC. If Search is the third factor element, there should be more general Search operation that is not constrained by the LSC. And if Merge is just a set-formation operation, there should be more general Merge operation that is not constrained by Binarity. Then the question is what are more general cases of Search and Merge that are not constrained by the LSC and Binarity.

Let us, then, assume a more general case of Search that is not constrained by the LSC, and see what steps it follows. To distinguish it from the conventional Binary Search, let us call it n -ary Search. N -ary Search is not constrained by the LSC, so it can freely take any number of elements from Lex/WS: $X_1, \dots, X_m$. Also since Merge is just a combinatorial operation, it should be possible, in principle, to apply elements more than two, yielding multi-membered sets. To distinguish it from the conventional Binary Merge, therefore, let us call Merge that yields multi-membered sets *FormSet* (FST): $\{X_1, \dots, X_m\}$. Given these considerations, it follows that Binary Search and Binary Merge are quite special in the sense that they are constrained by the LSC, but n -ary Search and FST are more general in the sense that they are not constrained by LSC.⁸

7 The One-to-One Principle proposed here seems to have something to do with Harada's (1975) "uniqueness principle" and Fukui's (1999) "uniqueness parameter." We leave the comparison of these for future research.

8 In analyzing coordinated structures, Chomsky (2021/GK: 31-32) says: "Generation of these structures first selects $X_1, \dots, X_m$ from WS, forming $Y = \{X_1, \dots, X_m\}$, freely using the core operation of set-formation already discussed." The selection of $X_1, \dots, X_m$ and the formation of $\{X_1, \dots, X_m\}$ by "the core operation of set-formation" arguably correspond to our n -ary Search and FST, respectively. However, note that we are trying to make another in-depth observation on the difference between the "special" operations and the more general operations in terms of the LSC/One-to-One Principle by clarifying when they should be segregated. We will see soon consequences of our attempt, which cannot be obtained in Chomsky's system.

Given this picture, further questions arise. Is there an “external” FST that corresponds to EM? Is there an “internal” FST that corresponds to IM? And if they are, what syntactic relations are established among them? And if labeling is basically necessary for CI interpretation (Chomsky 2013), how labels are assigned to the multiple-membered sets? There are many other questions to consider. But, probably, one of the most important questions for the moment is: whether or not Binary Merge and FST interact with each other, and if so, how they segregate. Significantly, the above comparison between Merge and FST presents us with one possible direction to pursue the issue.

The major difference between Merge and FST is that Merge is subject to the LSC, but FST is not. This difference provides us with a clear demarcation between the environments where Merge and FST are effective (or mandatory). As argued above, given that the LSC contains Theta-Theory and Criterial Freezing and that the syntactic objects generated accordingly are labeled, it follows that Merge that yields a binary structure is effective when these conditions are satisfied, whereas FST that yields a flat structure is effective when these are not. As far as we can see, this segregation of Merge and FST is a novel finding.

One of the consequences of this segregation is that it can provide a concrete reason for why FST is used in coordinated structures. Chomsky (2021/GK: 31-33) argues that FST (“the core operation of set-formation” in his terms; see footnote 7) is involved when the conjunction head and independently created syntactic objects are merged together. To derive (71), he argues that α in (71a) and β in (71b) are independently created and FST is applied to these with the conjunction head & to combine into the same set as in (71c) (the set to which FST is applied is in bold):⁹

- (71) John arrived and spoke.
 a. {John, arrive} (= α)
 b. {John, speak} (= β)
 c. $WS = [\&, \alpha, \beta]$ (by FST)

The derivation continues after this, but the point here is why FST is mandatory in this environment? Chomsky (2021/GK) does not answer that question, but given the segregation of Merge and FST, we can give a certain answer: FST is effective here, because neither Theta Theory, Criterial Freezing, nor Labeling Theory are involved. Note that, as Chomsky (2013) argues, given that an XP-YP structure cannot be labeled (p. 43) and if the conjunction head & is not available as a label (p. 47), it follows that the whole syntactic object in (71c) has no label, although it might be possible later to determine a label of the object through relevant syntactic operations, such as raising of *John* to the Spec of T and raising of one of α or β to the Spec of & (see Chomsky 2013: 46).

Another relevant consequence is that it can provide a principled reason for a FST analysis of multiple nominative constructions in Japanese. Goto and Ishii (2021) conduct various syntactic tests, reaching the conclusion that multiple nominative phrases, as shown in (72a, b), be generated by FST that yields a flat structure, as shown in (73):

- (72) a. Bunmeikoku-**ga** dansei-**ga** heikin-zyumyoo-**ga** mizikai.
 Civilized.countries-**Nom** male-**Nom** average-life.span-**Nom** short-Pres
 ‘It is in civilized countries that male’s average life span is short.’ (Kuno 1973)

⁹ In fact, Chomsky (2021/GK: 33) argues that a set-formation process $\{\alpha, \beta\}$ is involved to yield a set of $\{\alpha, \beta\}$ before & is merged with α and β (see his (40b)). But, for some reason, the “set” created is missing in the subsequent derivation (see his (43)). Since the set-formation process is not clear, we do not take that into account in this paper. Note that Merge cannot form a set of &, α , β “in one time” as it violates Binary. So it seems reasonable to assume that FST is relevant here to yield the set. As argued above, FST can combine as many syntactic objects as it can.

- b. Ano ziko-**ga** takusan-no nihonzin-**ga** sinda.
 that accident-**Nom** many-Gen Japanese-**Nom** die-Past
 ‘It was in that accident that many Japanese died.’ (Tateishi 1991)

(73) { ...NP-*ga*, NP-*ga*, NP-*ga*... } (by FST)

They carefully analyze the structure in terms of the Labeling Algorithm, drawing the conclusion that no label is assigned to such a structure. These conclusions are based on the careful examination of the empirical facts and the recent technology, but it remains unclear why FST is effective in this particular environment. But, given the segregation of Merge and FST, we can give an answer: FST is effective here, because neither Theta Theory, Criterial Freezing, nor Labeling Theory are involved.¹⁰

In this way, given the segregation of Merge and FST, it is possible to avoid the *ad hoc* use of FST and give a principled reason for why FST is mandatory in such a particular environment.¹¹

6. Conclusion

In this paper, we have proposed that Merge is totally free from MS (Genuine Free Merge Theory) and Search obeys Resource Restriction that includes Binarity and the PIC (RR-obedient Search Theory). We have also argued that Binarity follows from the LSC called One-to-One Principle that subsumes Theta Theory and Criterial Freezing, and Binary Search and Binary Merge are special in the sense that they are constrained by the LSC, but *n*-ary Search and FST are more general in the sense that they are not constrained by LSC. We have suggested that Binary Search and Binary Merge are effective when these LSCs are involved, but *n*-ary Search and FST are effective when the LSCs are not involved.

Thus in the first half, we discussed the optimal relationship between Search, Merge, and RR, and in the second half, we used the findings to consider more general operations. Combining language-specific perspectives with more general perspectives might lead to a new possibility for language research in the future.

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10 Needless to say, many questions arise once we consider more carefully the internal structure of the structure itself and each of the elements that constitute the whole. See Goto and Ishii (2021) for a detailed analysis of multiple nominative constructions in Japanese, in which they also consider why English disallows such a case.

11 Two cases examined here are arguably generated by an “external” FST. If there is also an “internal” FST, many questions arise. What are the specific cases of such an example? How is Search applied? How is a label determined? How does it interact with the PIC, *etc.*? These are issues to be addressed in the future.

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Sicilian DOM in a Romance perspective*

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1. Introduction

The main goal of this study is an examination of differential object marking (DOM) in the Sicilian dialect of Ragusa, focusing on data from Guardiano (1999, 2000, 2010, 2022), as well as novel data. The contribution is two-fold; on the empirical side, this research is interested in mapping the Ragusa DOM contexts, given that this is a rather uncharted territory and given the wide variation with DOM in the dialects of Sicily.¹ A comparison with better studied Romance languages such as Spanish or Romanian will serve as a guideline, revealing the presence of various DOM contexts previously unexplored in the Ragusa dialect. On the theoretical side, the Ragusa dialect raises important questions which have been at the center of debate in the domain of DOM: is Ragusa DOM a syntactic or a purely morphological mechanism, and more generally, what type of analysis is best suited? This paper will focus on various syntactic effects induced by DOM, illustrating differences between clitic doubled DOM and DOM with no clitic doubling. This indicates that Ragusa DOM has a syntactic nature.

The structure of the paper is as follows. Section 2 starts by introducing the most important DOM contexts in Ragusa, through a comparison with Spanish and Romanian. Section 3 focuses more narrowly on a defining trait of Ragusa DOM, namely its restrictions to configurations which contain an overt D, with a strict [+human] specification, irrespectively of specificity. Section 4 turns to the presentation of syntactic effects induced by Ragusa DOM. Section 5 addresses the problem of DOM licensing in syntax and proposes a derivation for co-occurrence restrictions induced by DOM, alongside their repair strategies. Section 6 shows that marked objects are not just a matter of raising to a higher position as compared to unmarked objects; an additional licensing operation beyond uninterpretable Case they are subject to explains their special morphology as well as their licensing restrictions. Section 7 contains the conclusions.

2. DOM contexts in Ragusa: a comparison with Spanish and Romanian

* We would like to thank Alexandra Cornilescu, Ion Giurgea as well as the audiences at AICED 2022 (Bucharest, online) and SICOOG 24 2022 for discussion and constructive feedback on the material discussed here. This work has been supported by the project MIUR PRIN 2017K3NHHY *Models of language variation and change: new evidence from language contact*, and by a research grant from the University of Modena and Reggio Emilia. All errors are our own.

¹ For some references on Sicilian DOM, see especially Rohlf's (1969, 1971, 1973), Tekavcic (1972), Sornicola (1997a and b, 1998), La Fauci (1990), Varvaro (1988), Leone (1995), Guardiano (1999, 2000, 2010, 2022), Iemmolo (2007, 2009), Braiton (2017), Ledgeway (2019), a.o.

Just like many other Western Romance languages, the dialect of Ragusa exhibits a split in the morpho-syntactic marking of direct objects (see especially Bosson 1991, 1998, and the references in fn. 2). Certain types of [+human]/[+animate] objects must/can be introduced by the marker *a*, which is homophonous with a dative/locative preposition ('to'). At a first approach, its conditions of use appear to be typical to animacy-based DOM systems seen elsewhere in Romance, or even outside Romance, where a scale similar to the one in (1) is salient. Typically, specifications at the higher end of this scale induce differential marking.

- (1) Animacy scale (adapting Aissen 2003, Comrie 1989, a.o.)
 1/2 person > proper name > person > human > animate > inanimate

For example, the Ragusa differential marker is obligatory with personal pronouns and proper names, as illustrated in the examples in (2). The animate definite in (3)a equally needs differential marking, while the inanimate in (3)b/c is not grammatical with the same marker, regardless of specificity or definiteness. Only the unmarked form of the inanimate is possible, as in (3)d.

- (2) Ragusa DOM obligatory on personal pronouns and proper names²

- a. viristi ***(a)** mmia³ / idu.
 saw.2SG DOM 1SG 3SG.M
 'You saw me/him.'
- b. (u) vitti ***(a)** Ggiovanni.
 CL.3SG.M saw.1SG DOM Giovanni
 'I saw Giovanni.'

- (3) Ragusa DOM: animacy-based split

- a. (u) 'ncunṭrai/ vitti **o** / ***u** sinnicu.
 CL.3SG.M met.1SG saw.1SG DOM.DEF.M.SG DEF.M.SG mayor
 'I met/saw the mayor.'
- b. Vitti **a** nu dditturi.
 saw.1SG DOM a doctor
 'I saw a doctor.'
- c. *Vitti **a** nu ṭṛatturi ca passava.
 saw.1SG DOM a tractor that passed by.IMP.3SG
 Intended: 'I saw a tractor that was passing by.'
- d. *Vitti **o** ṭṛatturi ca passava.
 saw.1SG DOM+DEF.M.SG tractor that passed by.IMP.3SG
 Intended: 'I saw a tractor that was passing by.' (o > a_{DOM} + u_{DEF.M.SG})
- e. Vitti nu/u ṭṛatturi ca passava.
 saw.1SG a/DEF.M.SG tractor that passed by.IMP.3SG
 'I saw a tractor that was passing by.'

2 Abbreviations: ACC=accusative, CL=clitic, DAT=dative, DEF=definite, DOM=differential object marking, F=feminine, IMPF=imperfective, LOC=locative, NEG=negative, PL=plural, POSS=possessive, SG=singular.

3 *a*-marking induces Rafforzamento Fonosintattico (RF). In example (2)(a), the result is the gemination of the following consonant. See especially Fanciullo (1997), Loporcario (1997), a.o., for details on RF.

Setting aside direct objects at the higher animacy scale morpho-syntactically is widespread across Romance languages that exhibit DOM. Spanish, that belongs to Western Romance just like the Ragusa dialect, is well known for a very similar split: as seen in (4), the differential marker is obligatory with definite animate objects while being blocked on inanimates (Torrego 1998, Rodríguez Mondoñedo 2007, López 2012, Ormazabal and Romero 2013a, b, 2019, a.o.). Additionally, Spanish uses the same *a* preposition, which is homophonous with the dative, to signal the animates that get special marking.

(4) (Standard) Spanish DOM: animacy-based split

Busco ***(a)** la niña/ **(*a)** el libro.
 look for.1SG DAT=DOM DEF.F.SG girl DAT=DOM DEF.M.SG book
 ‘I’m looking for the girl/book.’
 (adapted from Ormazabal and Romero 2013a, b)

One difference the Ragusa dialect shows with respect to standard Spanish refers to interactions with clitic doubling. The sentences in (2)b and (3)a show that animate (third person) direct objects (pronouns or lexical nominals) surface not only with differential marking, but also with clitic doubling (the latter not being obligatory). The clitic must use accusative morphology. In Standard Spanish, clitic doubling of differentially marked lexical nominals is not grammatical. Clitic doubling of DOM is instead seen in Romanian, a Balkan Romance language, which grammaticalizes a locative preposition (*pe* ‘on’) to signal differentially marked objects (Cornilescu 2000, Irimia 2020b, Tigău 2011, 2021, among many others). Two examples from Romanian are in (5); they equally illustrate the same restriction of the differential marker to animates.⁴ We thus see in the Ragusa dialect a mixed pattern, which reconciles both Western and Balkan Romance DOM settings.

(5) Romanian DOM and clitic doubling

a. Au prezentat(-o) **pe** elevă.
 have.3PL presented-CL.3SG.F.ACC LOC=DOM student.F.SG
 ‘They have introduced the student/the work.’
 b. Au prezentat(*-o) **(*pe)** lucrare.
 have.3PL presented-CL.3SG.F.ACC LOC=DOM work
 Intended: ‘They have introduced the work.’

Importantly, DOM in the Ragusa dialect also presents some idiosyncratic properties, which set it aside from both Romanian and Spanish. They refer to impossibility to override animacy or [+humanness] and to insensitivity to specificity. More specifically, only objects specified as [+human] (and, not obligatorily, [+animate]) can have differential marking in Ragusa. Additionally, differential marking is obligatory with certain types of [+human] objects (see Section 3 for more details on their structure), *regardless of specificity*. In the examples in (6) differential marking on the [+human] object is necessary, no matter whether the interpretation is specific or non-specific.

4 For a comparative overview of Romanian and Spanish DOM, see especially Irimia (2020b) or Tigău (2021).

(6) Ragusa DOM and specificity

- a. staiu circannu ***(a)** na picciotta.
 stay.1SG looking DOM a.F.SG girl.F.SG
 ‘I’m looking for a (specific) girl.’
- b. vitti ***(a)** na signùra ca passava.
 saw.1SG DOM a.F.SG woman who passed by.3SG.IMPF
 ‘I saw a (random) woman who passed by.’
- c. Giovanni ha circatu ***(a)** na brava picciotta ppi tutta
 Giovanni has looked for DOM a.F.SG good.F.SG girl.F.SG for all.F.SG
 a so vita ma nunn’ a truvàu /ma
 DEF.F.SG his life but NEG CL.F.SG.ACC found.3SG /but
 nun truvàu a nudu.
 NEG found.3SG DOM none
 ‘Giovanni has been looking for a good girl all his life but couldn’t find her/any.’

In Spanish and Romanian, on the other hand, DOM is generally sensitive to specificity in contexts of this type. The contrasts below are telling: the addition of special marking on the object normally induces a specific interpretation in (7).⁵ Moreover, restrictions to non-specific readings normally block the differential marker. The Quine definite in (7)e, which is interpreted as non-specific (Ion did not have a specific woman in mind he was looking for) is ungrammatical with DOM in Romanian. The same Quine definite, with a non-specific reading, requires DOM in the Ragusa dialect, as we have already seen in (6)c.

(7) Spanish and Romanian - interactions with specificity

- a. Busco una segretaria.
 look for.1SG a.F.SG secretary.F.SG
 ‘I’m looking for a secretary.’
- b. Busco **a** una segretaria.
 look for.1SG DOM a.F.SG secretary.F.SG
 ‘I’m looking for a specific secretary.’ (standard SPANISH)
- c. Caut o secretară.
 look for.1SG a.F.SG secretary.F.SG
 ‘I’m looking for a secretary.’
- d. O caut **pe** o secretară.
 CL.3ACC.F.SG look for.1SG DOM a.F.SG secretary.F.SG
 ‘I’m looking for a specific secretary.’ (ROMANIAN)
- e. Ion caută (***pe**) femeia perfectă de mai bine de 20 de ani.
 Ion look for.1SG DOM woman perfect.F.SG for more well of 20 of years
 ‘Ion has been looking for the perfect woman for over 20 years.’ (ROMANIAN)

Taking into account these observations, an analysis for differential marking in Ragusa has to be formulated without appeal to specificity. We turn to this issue in the next section.

⁵ In Romanian and Spanish, DOM shows interactions with specificity only in certain contexts. It is otherwise clear that DOM is not a specificity mechanism per se (see Torrego 1998, Cornilescu 2000, Rodríguez Mondoñedo 2007, López 2012, Ormazabal and Romero 2013a, b, 2019).

3. Ragusa DOM, D and restrictions to [+human]

Following recent discussion in Guardiano (2022), we propose that there are two major (structural) restrictions which constrain *a*-marking:

(8) DOM in Ragusa: structural conditions

- CONDITION 1 *a*-marking is only possible if the head D is phonetically realized
 CONDITION 2 [+human] referents *must* be *a*-marked

Table (9) lists various types of direct objects, organized on the basis of the two parameters in (8): i) do they contain an overt D head? ii) are they specified as [+human]? We notice that differential marking is obligatory only on those nominal classes that concurrently meet the two conditions.

(9)	Condition 1	Condition 2	<i>a</i> -marked?
a. 1 st /2 nd p. pronoun	realized in D	intrinsically [+human]	YES
b. personal names	raise to D (or expletive)	intrinsically [+human]	YES
c. kinship expressions	can raise to D	intrinsically [+human]	YES
d. [+hum] 3 rd p. pron.	realized in D	[+human]	YES
e. [+hum] pron. Dems	(pres.) in D	[+human]	YES
f. [+hum] sing count N	overt D	[+human]	YES
g. [+hum], [+def] pl N	overt D	[+human]	YES
h. [-hum,+an] pr. Dems/...	overt D	[-human]	Optional
i. [-hum,+an] sing c. N	overt D	[-human]	Optional
j. bare pl N	no overt D	[+animate]	NO
k. [-anim] proper names	overt D	[-animate]	NO
l. [-anim], [+def] pl N	overt D	[-animate]	NO
m. [-anim], [-def] sing N	overt D	[-animate]	NO
n. [-anim] pron Dems/...	overt D	[-animate]	NO
o. [+def] mass N	overt D	intrinsically [-animate]	NO
p. [+def] abstract N	overt D	intrinsically [-animate]	NO
q. bare mass N	no overt D	intrinsically [-animate]	NO
r. bare abstract N	no overt D	intrinsically [-animate]	NO

Even if specificity is not relevant, the dialect of Ragusa matches the general profile of DOM in Romance as a bidimensional (or even multidimensional) system: more than one feature is necessary to obtain the special marker. As such, overt D by itself is not sufficient – for example, overtly marked definites (a category that contains an overt D) specified as [-human/-animate] cannot take the differential marker, as we have seen in examples such as (3)d, e. Alternatively, humanness, and more generally animacy are not sufficient either. For example, bare nominals which lack an overt D head are not grammatical with the *a*-marker, even if human. This is seen in (10),

(10) Ragusa – DOM not possible on bare nouns, irrespective of animacy

Vitti (*a) surdati.

saw.1SG DOM soldier.M.PL

Intended: ‘I saw soldiers.’

Dependency on an overt D head is not surprising when it comes to DOM across the Romance family. It confirms that the special objects encode a complex nominal structure, which excludes categories of type NP. In fact, for many other languages, including Romanian and Spanish, it has been observed that bare objects do not accept differential marking; the various exceptions require additional conditions, such as information-structure specifications (focus, overt heavy modification, etc.) for bare nominals to be able to receive DOM (see Irimia 2022 for extensive discussion and a comprehensive list of references). However, Ragusa illustrates just one of the parameters in this domain in that it requires the overt D. Spanish and Romanian illustrate another setting, in the sense that DOM is not just a matter of the D head being phonetically realized; structure beyond DP is relevant, with DOM having been claimed to require the projection of the KP layer hosting structural Case features above the DP (see especially López 2012, or Ormazabal and Romero 2013a, b, 2019 for discussion).

In the next section we turn to syntactic effects the complex internal structure of differentially marked nominals induces at sentential level.

4. Ragusa DOM and syntactic effects at sentential level

An important debate into the nature of DOM has centered around whether this phenomenon has a purely morphological source (i.e., simply signalling objects with some types of features, such as [+human], without implying syntactic effects) or must be analyzed as deeply rooted in syntax (see Irimia 2021 for further details). For various Romance languages it has been claimed that differential marking must be seen as a syntactic mechanism, given that it induces important effects which cannot be derived in the morphology. We focus on this aspect in this and the following section, illustrating some co-occurrence restrictions imposed by Ragusa DOM. These lead us to the conclusion that a syntactic analysis is necessary for this language too.

Co-occurrence restrictions with DOM have been initially illustrated for (varieties of) Spanish. As López (2012) or Ormazabal and Romero (2013a, b and references cited therein) have shown, there are speakers for whom DOM results in ungrammaticality if the configuration contains a dative which is clitic doubled (using the dative form of the clitic). A relevant example is (11).

(11) Spanish: DOM and clitic doubled dative ungrammatical

**Le* enviaron *a* todos los enfermos *a*
 CL.DAT.SG sent.3PL DOM all.M.PL DEF.M.PL sick people.M.PL DAT
la *doctora*.
 DEF.F.SG doctor.F.SG

Intended: ‘They sent all the sick people to the doctor.’

(Ormazabal and Romero 2013b, ex. 2b, adapted)

We know that in these examples it is not the lexical dative per se that causes ungrammaticality. An example with both DOM and a lexical dative which is not clitic doubled results in grammaticality, as seen below. This example also indicates that the co-occurrence restriction is not a matter of morphology or PF more generally; as two *a*-marked nominals that look

identical are possible (DOM and the dative), the issue with (11) cannot be due to haplology, that is the need to avoid the presence of two categories that are too similar at the surface level and which happen to be found very close to each other in the same configuration.

(12) Spanish: DOM and dative grammatical

Enviaron **a** todos los enfermos *a la* doctora.
 sent.3PL DOM all.M.PL DEF.M.PL sick people.M.PL DAT DEF.F.SG doctor.F.SG
 ‘They sent all the sick people to the doctor.’

As expected, DOM and a dative clitic are grammatical in the same sentences. This is illustrated in the transitive sentence in (13).

(13) Spanish: DOM and dative clitic grammatical

Le enviaron **a** todos los enfermos.
 CL.DAT.3SG send.PST.3PL DOM all.M.PL DEF.M.PL sick people.M.PL
 ‘They sent all the sick people to him.’

To summarize, DOM leads to ungrammaticality if the configuration contains a dative indirect object which is clitic doubled. Functioning as repair strategies there are the following options: i) remove DOM (if possible; this excludes contexts in which absence of DOM would lead to ungrammaticality on certain types of animates); ii) remove clitic doubling, as in (12); iii) remove the full lexical dative, as in (13).

4.1. Ragusa DOM and co-occurrence restrictions with clitic doubled datives

Similarly to the Spanish examples illustrated above, in the dialect of Ragusa, DOM gives rise to ungrammaticality if the configuration contains a lexical dative (introduced by the *a* preposition) and a dative clitic doubling the full lexical dative.

In (14) and (15) we illustrate with DOM on a [+animate] DP and with DOM on a [+human] DP, respectively. Both (14)a and (15)a show that the differential marker is not possible with a dative which is clitic doubled. The repair strategies are similar to what we have been mentioning for Spanish: i) remove DOM, if possible, as in (14)b, d, e which contain an animate object (in (15) instead, DOM cannot be removed from the [+human] direct object); ii) remove the dative clitic double, as in (14)d and (15)c; iii) remove the full dative, maintaining just the dative clitic, as in (14)e and (15)d. Importantly, the dialect of Ragusa exhibits an additional repair strategy, not seen in Spanish, namely the presence of accusative clitic doubling of DOM, as in (14)c and (15)b. Thus, if DOM results in ungrammaticality with a dative which is clitic doubled, a configuration containing both a clitic doubled DOM and a clitic doubled dative is *grammatical*.

(14) Ragusa DOM and co-occurrence restrictions (DOM animate)

- a. **Cci* puttam **a** stu cani *o* *so* *paṭruni*.
 CL.DAT.3SG send.1PL DOM this dog DAT.DEF.M.SG his owner
 Intended: ‘We are sending this dog to his owner.’
- b. ?*Cci* puttam stu cani *o* *so* *paṭruni*.
 CL.DAT.3SG send.1PL this dog DAT.DEF.M.SG his owner
 Intended: ‘We are sending this dog to his owner.’

- c. *Cci* **u** puttamu **(a)** ştu cani *o*
 CL.DAT.3SG CL.ACC.3SG send.1PL DOM this dog DAT.DEF.M.SG
so paṭṛuni.
 his owner
 ‘We are sending this dog to his owner.’
- d. Puttamu **(a)** ştu cani *o* *so paṭṛuni.*
 send.1PL DOM this dog DAT.DEF.M.SG his owner
 ‘We are sending this dog to his owner.’
- e. *Cci* puttamu **(a)** ştu cani.
 CL.DAT.3SG send.1PL DOM this dog
 ‘We are sending this dog to him.’

(15) Ragusa DOM and co-occurrence restrictions (DOM human)

- a. **Cci* mannamu **a** ştu malatu *o* *ḍḍitturi.*
 CL.DAT send.1PL DOM this sick person DAT.DEF.M.SG doctor
 Intended: ‘We are sending this sick person to the doctor.’
 (structure without focus)
- b. *Cci* **u** mannmu **a** ştu malatu *o*
 CL.DAT.3SG CL.ACC.3SG.M send.1PL DOM this sick person DAT.DEF.M.SG
ḍḍittari.
 doctor
 ‘We are sending this sick person to the doctor.’
- c. Mannamu **a** ştu malatu *o* *ḍḍitturi.*
 send.1PL DOM this sick person DAT.DEF.M.SG doctor
 ‘We are sending this sick person to the doctor.’
- d. *Cci* mannamu **a** ştu malatu.
 CL.DAT send.1PL DOM this sick person
 ‘We are sending him this sick person.’

5. DOM co-occurrence restrictions and their derivation

Various analyses (Ormazabal and Romero 2007, 2013a, b, Cornilescu 2020, Tigău 2020, a.o.) have derived the DOM co-occurrence restrictions introduced above by adapting accounts that have originally been proposed for the PCC (Person Case Constraint). The unifying line for both is the presence of syntactic configurations in which there is more than one category that requires syntactic licensing, but only one licensor available.

Let’s illustrate first with a classical example from the PCC, also known as the *Me-Lui* phenomena. These types of restrictions are common across Romance languages, especially when it comes to clitic clusters. Given their relevance to many linguistic domains, ranging from syntax to PF, they have an extensive literature building on classical work by Perlmutter (1971), Bonet (1991), Anagnostopoulou (2003), or Béjar and Rizac (2003), a.o.

A well-studied sub-type of the PCC is the so-called *Strong PCC*, informally presented as in (16), from Ormazabal and Romero (2007). In the domain of clitics, this implies that if there is a dative clitic in the configuration, then the accusative clitic can only have a third person specification. A 1st or 2nd person accusative clitic gives rise to ungrammaticality, as seen in the examples in (17): an accusative 1st person clitic is not possible with a 3rd person dative clitic in (17)a, while if the accusative clitic is switched to the third person, with the dative clitic being

higher on the person hierarchy, the structure returns to grammaticality, as in (17)b.

(16) Strong PCC: If dative, then accusative = 3rd person
(adapted from Ormazabal and Romero 2007)

(17) Strong PCC in Spanish (examples adapted from Ormazabal and Romero 2007)

- | | | | | |
|----|-----------------------------------|--------------|------------|----------|
| a. | *Juan | se/le | me | manda. |
| | Juan | CL.3SG.DAT | CL.1SG.ACC | send.3SG |
| | Intended: 'Juan sends me to him.' | | | |
| b. | Juan | me | lo | manda. |
| | Juan | CL.3SG.DAT | CL.1SG.ACC | send.3SG |
| | 'Juan sends it/him to me.' | | | |

In many syntactic accounts, it is generally assumed that the PCC reduces to a problem of licensing. For example, in Anagnostopoulou's (2003) analysis, 1st and 2nd person clitics are special in that they require obligatory licensing in the syntax, in terms of [PERSON] feature. Dative clitics similarly introduce a [PERSON] index irrespectively of its person specification, which equally needs licensing. The configuration in (17)a contains only one relevant licenser, but two categories that need licensing (the 1st person accusative and the dative clitic). As one of these categories cannot be licensed, the derivation crashes. In (17)b, instead, the third person accusative clitic does not need licensing in the syntax; thus, the licenser can be used for the dative clitic and the derivation is successful.

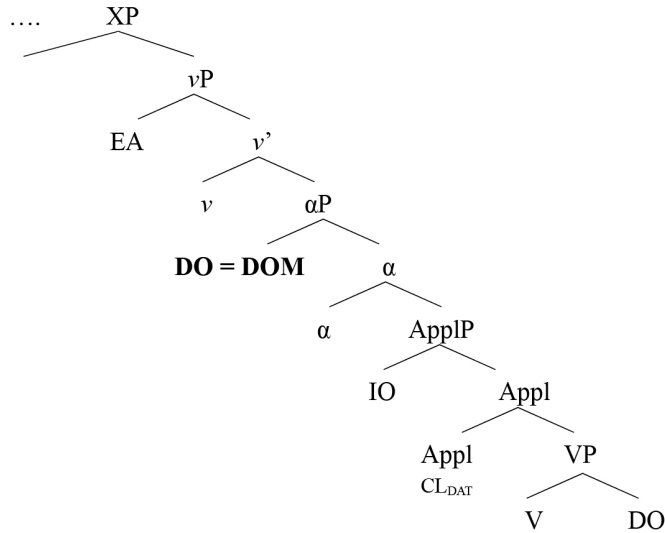
5.1. DOM and clitic doubled datives

A similar type of reasoning has been applied to the derivation of co-occurrence restrictions induced by DOM. Remember that ungrammaticality ensues if a configuration contains both DOM and a clitic doubled dative; we have seen that this holds both in Spanish and the Ragusa dialect.

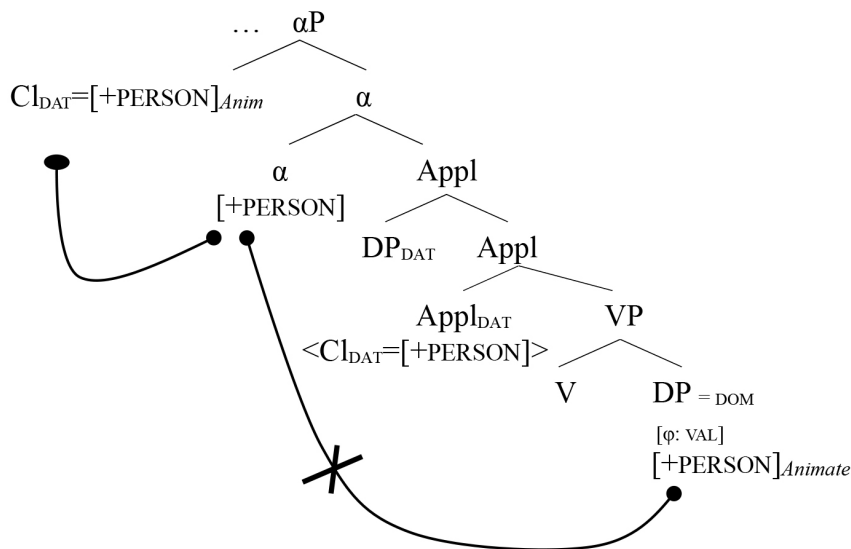
A general assumption is that DOM needs licensing in an intermediate position between VP and *v*, as in (18); for example, the α head proposed by López (2012). DOM licensing has been analyzed in terms of Case (for example, in López 2012 or Ormazabal and Romero 2007, 2013a, b, a.o.) or, alternatively in terms of a specification distinct from structural Case, for example a [PERSON] feature which (broadly) stands for the grammaticalization of animacy, [+human] or referential (third person) entities which are relevant to the discourse setting (Cornilescu 2000, Rodríguez Mondoñedo 2007, Richards 2008, a.o.). As we show later, in this work, we adapt an analysis of DOM as a [PERSON] licensing operation beyond Case, *per se*.

What is relevant in the configuration in (18) is that the clitic doubled dative equally needs licensing in a position below *v*P. As there is only one licenser available, namely the α head, the derivation will crash. One of the categories that needs obligatory licensing in the syntax cannot get licensed. This is illustrated in (19), using licensing in terms of [PERSON], for both DOM and the clitic doubled dative.

(18) Licensing Positions for internal arguments



(19)

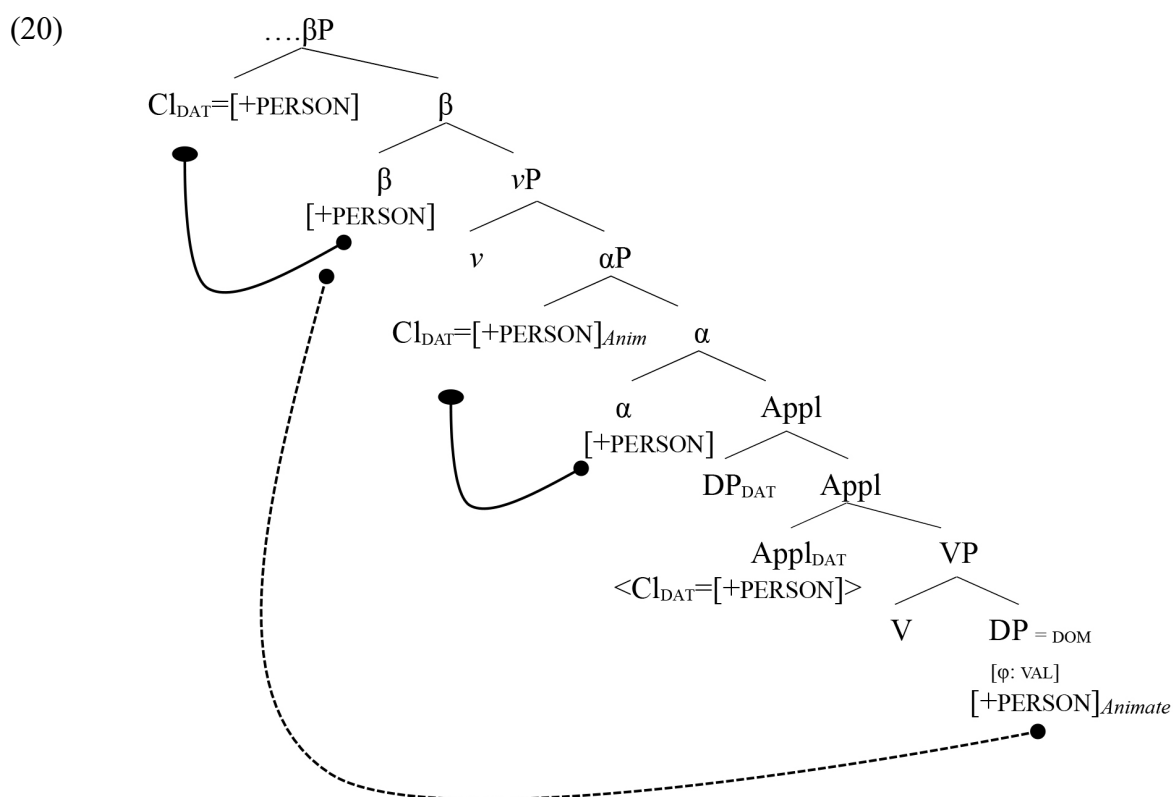


The repair strategies have as a result the removal of one of the categories that needs licensing from the relevant domain. The removal of differential marking, in those instances in which it is possible, leaves the α head available for the licensing of the clitic doubled dative. In turn, the removal of the clitic double (as in (12), (14)d or (15)c) renders the licenser available for the differential marker. Lexical datives which are not clitic doubled do not need licensing in the same way as DOM or as datives that are clitic doubled; in fact, some accounts assume that α -marked datives are simply PPs, acting as adjuncts, and which therefore do not need licensing in terms of Case or [PERSON]. As discussed in more detail in Irimia (2020a, 2020b), we assume that datives need licensing in terms of Case, while clitic doubled datives need licensing in terms of a [PERSON] feature, thus competing with DOM.

In turn, configurations involving DOM and the dative clitic (as in (14)e, (15)d)) are grammatical because the two categories do not compete for licensing: the dative clitic needs a different type of licensing (in terms of Case, as opposed to [PERSON]) or needs licensing in a

different position.⁶ Now, why does clitic doubling of DOM (as in (14)c or (15)b) equally act as a repair strategy?

To explain the facts, we follow some observations made by Cornilescu (2020). Working on data from Romanian, Cornilescu (2020) has demonstrated that accusative clitic doubling on DOM introduces an (additional) [PERSON] feature, which requires licensing in a position above αP , more specifically even above vP . In the next section we will see evidence from binding indicating that in both Romanian and the Ragusa dialect, clitic doubled DOM indeed appears to be licensed in a higher position than DOM which is not clitic doubled. What matters for now is that as a result of the contribution brought in by the accusative clitic double, the differentially marked argument is licensed in a higher position, leaving the α head available for the licensing of the clitic doubled dative. This is illustrated in (20).



6. Ragusa: Positions for objects and DOM licensing

The facts introduced in the previous section lead us to a more detailed discussion about licensing positions for DOM. In several accounts, for example López (2012), it is assumed that what sets differentially marked objects aside from other objects is their need to be licensed in a higher position. More generally, differential objects are taken to need licensing above VP, as opposed to unmarked objects which might be able to stay low inside the VP. López' (2012)

⁶ Disambiguating between these two possibilities goes beyond the space available in this short paper and we leave aside a detailed discussion.

hypothesis of DOM licensing by the α head above the VP captures this intuition.

López (2012) has provided additional evidence from binding to support the idea that differentially marked objects are licensed in a higher position than the unmarked objects. Let's look at the examples below, adapted from López (2012). They illustrate interactions between DOM and indirect objects when it comes to binding. Relevantly for our purposes, an unmarked direct object cannot bind into an indirect object (IO). A coreferential reading involving the direct object and the IO is not possible in (21)b; this suggests that the unmarked object is found in a position lower than the IO. If differential marking is introduced on the object (the negative quantifier in these examples is grammatical both marked and unmarked), binding into the IO becomes possible, as in (21)a. Thus, it must be the case that the differentially marked argument is found higher than the IO. The assumption that DOM is licensed above VP derives the data unproblematically.

(21) Spanish DOM and binding into indirect objects

- a. Los enemigos no entregaron a **su**_i hijo **a** ningún_i prisionero.
 DEF.M.PL enemy.M.PL NEG delivered.3PL DAT his son DOM no.M.SG prisoner
 'The enemies did not deliver any prisoner to his son.' (López 2012, ex. 18, p. 41)
- b. Los enemigos no entregaron a **su**_{*i} hijo ningún_i prisionero.
 DEF.M.PL enemy.M.PL NEG delivered.3PL DAT his son no.M.SG prisoner
 'The enemies did not deliver any prisoner to his son.' (López 2012, ex. 18, p. 41)

Let's examine the Ragusa data now. We can see from the contexts in (22) that the facts are somehow different from what we have seen for Spanish; crucially, binding into the IO goes through from both an unmarked object and a marked object. This indicates that in the Ragusa dialect direct objects can be found in a high position irrespective of whether they are differentially marked or not. Thus, what sets DOM aside from unmarked objects is not necessarily an obligatory raising operation. Some other account needs to be found for DOM, and in the next subsection we make some remarks in this direction.

(22) Ragusa: direct objects and binding into indirect objects

- a. Puttamu **(a)** tutti_i i cani e so_i paṭṛuni.
 bring.1PL DOM all.M.PL DEF.M.PL dogs DAT.DEF.M.PL their owners
 'We bring all the dogs to their owners'
- b. Puttamu **a** tutti_i i piccirìdi e so_i maiṣṭri.
 bring.1PL DOM all.M.PL DEF.M.PL children DAT.DEF.M.PL their teachers
 'We bring all the kids to their teachers.'

6.1. Positions for clitic doubled DOM

The interactions between DOM and (clitic doubled) datives we discussed in the previous section have shown that accusative clitic doubling on DOM acts as a repair strategy in configurations with clitic doubled datives. The relevant examples are (15)b or (14)c. The analysis we proposed follows Cornilescu's (2020) observations initially formulated for Romanian: accusative clitic doubling presupposes the licensing of DOM in a higher position, above the vP. As a result, the α head is left 'free' and can license the clitic doubled dative, with

the result that the derivation does not crash.

Cornilescu (2020) motivated the possibility of higher licensing in clitic doubled DOM starting from contrasts in binding between DOM with no clitic doubling and DOM with clitic doubling. Two illustrative examples are in (23). The relevant point is that clitic doubled DOM allows binding into the external argument (EA). In (23)b co-reference between the subject and the clitic doubled differentially marked object is possible; this entails that the licensing of clitic doubled DOM is realized in a position above the EA, possibly even above vP. A differentially marked argument which is not clitic doubled does not allow binding into the EA. This is seen in (23)a, where co-reference between the differentially marked argument and the EA is not possible. Thus, differentially marked arguments, even if possibly licensed above VP, do not involve licensing above vP. A similar conclusion has been reached by López (2012) for Spanish DOM too: the marked objects do not allow binding into the EA; they allow binding into the IO, indicating that they are licensed in a position above the IO but below the EA. Remember that standard Spanish does not allow clitic doubling on DOM, and thus contrasts similar to (23) cannot be tested.

(23) Romanian DOM and binding into external arguments

- | | | | | | |
|----|---|-------------------|--------------|-------------|--------------------------------|
| a. | Muzica | lor* _i | plictisește | pe | mulți _i . |
| | music.DEF.F.SG | their | annoy.3SG | DOM | many |
| | ‘Their music annoys many people’ | | | | |
| b. | Muzica | lor _i | îi | plictisește | pe mulți _i . |
| | music.DEF.F.SG | their | CL.3M.PL.ACC | annoy.3SG | DOM many |
| | ‘Their own music annoys many people.’ (Cornilescu 2020: ex. 24, 25) | | | | |

The Ragusa dialect confirms the results from Romanian. As we can see in (24)a, a direct object which is not clitic doubled does not allow binding into the external argument. A coreferential reading between subjects and objects is not possible; the sentence can only entail that what killed the snakes is the poison produced by/belonging to some other entities, distinct from the snakes themselves. Direct objects without clitic doubling must thus be licensed in a position below the position where the EA is introduced and licensed (most probably Spec, vP). This example also shows that differential marking does not behave in a different way from unmarked nominals in that its presence does not ensure binding into the EA. In (24)b, on the other hand, the direct object is both differentially marked and clitic doubled. Similarly to what we have seen in Romanian, clitic doubling makes available binding into the EA. As a consequence, (24)b can be interpreted as involving the killing of the snakes by their own poison.

(24) Ragusa DOM and binding into external arguments

- | | | | | | | | | |
|----|--|------------------|----------|------------|--------------|---------------------|----------|-----------------------|
| a. | u | so* _i | viliènu | ammazzàu | (a) | ttutti _i | i | ścursùna. |
| | DEF.M.SG | POSS3 | poison | killed.3SG | DOM | all.M.PL | DEF.M.PL | snakes |
| | ‘Their/his poison killed all the snakes.’ (no binding into EA) | | | | | | | |
| b. | u | so _i | (știssu) | viliènu | i | mmazzàu | a | ttutti _i . |
| | DEF.M.SG | POSS3 | self | poison | CL.3M.PL.ACC | killed.3SG | DOM | all.M.PL |
| | ‘Their own poison killed them all.’ (talking about the snakes) | | | | | | | |

6.2. Positions for objects and DOM licensing in Ragusa

To summarize, the various examples we have examined for the Ragusa dialect indicate

that there are interpretive and positional differences between direct objects that are clitic doubled and direct objects that are not clitic doubled. However, no positional differences can be postulated for differentially marked objects, as opposed to unmarked object. At least, data from binding similar to those used by López (2012) to motivate a higher position for DOM in Spanish do not output the same result in the Ragusa dialect. This latter point raises a non-trivial question: if DOM is not set aside from unmarked objects in terms of a higher position, what exactly individuates it? The co-occurrence restrictions we have presented in this paper indicate that differential marking has important syntactic effects. An analysis which relegates the special marking just to the morphology would not be sufficient. The co-occurrence restrictions with clitic doubled datives alongside their repair strategies cannot be derived in the morphology or a result of PF mechanisms.

What we would like to tentatively propose here is that an analysis according to which DOM signals a *supplementary licensing operation* on objects containing more than one *feature* that requires licensing (similarly to what Irimia 2020a, b, 2021 has proposed for various oblique DOM languages) explains not only the co-occurrence restrictions but also insensitivity to raising or positional constraints. According to Irimia (2020a, b, 2021), what is at stake in the licensing of DOM is the [PERSON] feature, beyond structural Case per se. In the Ragusa dialect, various types of unmarked objects give evidence of licensing in the syntax, as indicated by their raising above the IO; their high position can be seen as the effect of this operation. More specifically, it can be assumed that unmarked objects need to undergo licensing in terms of a structural Case feature. Differentially marked arguments contain an additional [PERSON] feature, which requires a separate licensing operation; this latter licensing operation has nontrivial consequences both at the syntactic level (such as competition for licensing with other [PERSON] categories, such as clitic doubled indirect objects) and at the syntax-morphology interface, in the spelling of ‘oblique’ morphology. In a sense, this [PERSON] feature can be seen as an index on D, a hypothesis also entertained by López (2012) for DOM in Spanish and other languages. [PERSON] can be merged only if the D head is present; this, in turn, explains why differential marking is not possible on categories that do not have an overt D head, for example the bare nominal in (10) or the other relevant categories in the Table in (9).

We can further point out that in the Ragusa dialect support for DOM as a licensing condition beyond Case per se comes from interactions with information structure. More specifically, there appears to be a tight connection between the obligatory presence of the differential marker and topicality. Let’s look at the two examples below. In (25)a, an object interpreted as novel in the discourse can omit the differential marker, even if human animate definite objects are normally marked in a non-dislocated position. In (25)b, on the other hand, the human definite object is interpreted as a familiar topic. In this context, DOM is obligatory; all the native speakers consulted mention that removing it would lead to ungrammaticality. These splits based on information structure are possible with those categories which might not need obligatory DOM, when non dislocated. There are various classes for which DOM is always obligatory (pronouns, proper names, etc.), and might not permit the drop of the differential marker in non-topical configurations similar to (25)a. This is a picture that is found in other Romance languages too; it indicates that, despite a tight connection with notions such as focus or topic, the differential marker is slowly proceeding towards a grammaticalization path as a discourse-related mechanism which specifies the role of animates in the wider discourse setting.

(25) Ragusa DOM and information structure

- a. *Who do you know?* (e.g. looking at a picture)
 (a) *st' uòmminu canùsciu.* (pointing to a specific person in the picture)
 DOM this man know.1SG
 'This man I know.'
- b. *Do you know this man?* (e.g. pointing to a person in a picture)⁷
 se, *(a) *st' uòmminu u canùsciu.*
 Yes DOM this man CL.3SG.M.ACC know.1SG
 'Yes, I know this man.'

7. Conclusions

This paper has focussed on a presentation of differential object marking in the dialect of Ragusa, integrating existing data in the literature (Guardiano 1999, 2000, 2010, 2022) with novel contexts, previously unaddressed. First, an examination of various configurations in which the differential marker is possible in the language has shown a unification under two important conditions, repeated in (26). More precisely, differential object marking is possible in Ragusa only if the functional head D is phonetically realized and it is obligatory on [+human] referents. Humanness and animacy cannot be overridden.

(26) Ragusa DOM subject to two conditions:

- CONDITION 1 *a*-marking is only possible if the head D is phonetically realized
 CONDITION 2 [+human] referents *must* be *a*-marked

Secondly, we have turned to various types of novel data which underline the syntactic effects of the differential marker at the sentential level. For example, the existence in the language of co-occurrence restrictions involving DOM and clitic doubled dative requires an explanation. We have shown that such effects cannot be derived as blocking effects with a morphological or more generally a PF nature. They are instead rooted in the core syntax, as the differential marker signals the application of an obligatory licensing operation in narrow syntax, and it moreover competes for licensing with clitic doubled datives. One of the repair strategies in these contexts, the doubling of DOM via an accusative clitic, suggests that differentially marked objects which are clitic doubled get licensed in a different/higher position than the differentially marked objects which are not clitic doubled. Binding effects provide a strong motivation for this hypothesis: only clitic doubled differentially marked objects allow binding into the EA; thus, such objects are probably licensed in a position above the EA, as opposed to differentially marked objects which are not clitic doubled, which do not allow binding into the EA, and which are licensed in a position below the EA.

Another conclusion made available by the data is that, in the Ragusa dialect, marked and unmarked arguments are not necessarily disambiguated in terms of position. We have presented data indicating that binding into the IO is possible with both. Thus, it must be the case that unmarked objects can be found high, in a position above the IO, just like the marked objects. Their raising can be attributed to the licensing of a structural Case feature they share with marked objects

⁷ Note that the accusative clitic illustrated in this example is a resumptive clitic and not a doubling clitic.

Instead, we have proposed that an additional licensing need introduced by a [PERSON] feature in the composition of differentially marked arguments, which is relevant in the discourse, is what sets DOM aside. Ragusa DOM as an additional licensing mechanism beyond Case per se captures interactions with information structure as well as both similarities to and differences from unmarked objects.

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An AGREE-based account of the gap distribution in *tough*-constructions vs gapped-degree phrases

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1. Introduction

Tough-constructions (henceforth **TC**) and gapped-degree phrases (henceforth **GDP**) are two surface-similar adjectival constructions selecting for a “gapped” infinitival complement. As shown in (1), both constructions appear compatible with an object-gap ($_og$), meaning, a dependency between the matrix subject and the embedded object position.

- (1) a. Suzi is **tough** to talk to $_og$.
b. Suzi is friendly **enough** to talk to $_og$.

But despite the superficial similarities between *tough*-constructions and gapped-degree phrases, only the latter allow for subject-gaps ($_sg$), as shown in (2).

- (2) a. * Joseph is **tough** $_sg$ to talk to Suzi.
b. Joseph is friendly **enough** $_sg$ to talk to Suzi.

This contrast has been successfully explained using the notion of ANTI-LOCALITY, which is a constraint banning movement dependencies that appear “too short”. The specific implementation of this constraint, due to Erlewine (2016), and advocated for by Brillman and Hirsch (2016), was designed to disallow movement from one Specifier position to an immediately higher Specifier position – hence its name, Spec-to-Spec ANTI-LOCALITY. In the case of the TC/GDP contrast, this constraint predicts that the presence of a DegP layer located above CP in gapped-degree phrases, should allow to rescue subject-gapped-degree phrases from ungrammaticality. This relies on the assumption that $\bar{A}$ -movement chains can skip intermediate positions (here in particular, Spec-CP).

Spec-to-Spec ANTI-LOCALITY however, cannot directly account for a specific subclass of gapped-degree phrases – *tough*-gapped-degree phrases (henceforth **TGDP**). TGDPs are gapped-degree phrases featuring a degree-modified *tough*-predicate. Surprisingly, those constructions generally behave like *tough*-constructions gap-wise, meaning, they disallow subject-gaps (3b) and allow object-gaps (3a).¹

¹ Certain TGDPs, such as (i), actually appear grammatical.

(i) Suzi is **too tough** $_sg$ to like Joseph.

Brillman and Hirsch (2016) rightfully noticed that those constructions are only acceptable under a specific reading, which is not the standard reading assigned to *tough*-constructions. This intuition is clarified by the following inferences:

- (3) a. Suzi is **too tough** to talk to _{og}.
 b. * Joseph is **too easy** _{sg} to please Suzi.

Given that those structures most probably involve a DegP layer just like regular gapped-degree phrases, Spec-to-Spec ANTI-LOCALITY predicts that subject-gaps should be allowed. Brillman and Hirsch (2016) proposed a workaround to this issue, based on the assumption that ungrammatical subject-gap TGDPs may feature a structure different from that of GDPs, whereby the Degree phrase adjoins to the *tough*-predicate, instead of complementing it. In this paper, we propose an alternative account of the gap distribution of *tough*-constructions, gapped-degree phrases and *tough*-gapped-degree phrases, which does not rely on any specific implementation of ANTI-LOCALITY, but rather, makes use of an extension of Kinyalolo's Constraint (Kinyalolo 1991), combined with two independently motivated semantic constraints. Additionally, we will see that our account allows us to retain one single θ -grid for *tough*-predicates, while making the status of the complement clause more transparent in the case of *tough*-gapped-degree phrases.

2. Background on the syntax of *tough*-constructions and gapped-degree phrases

2.1 *Tough*-constructions

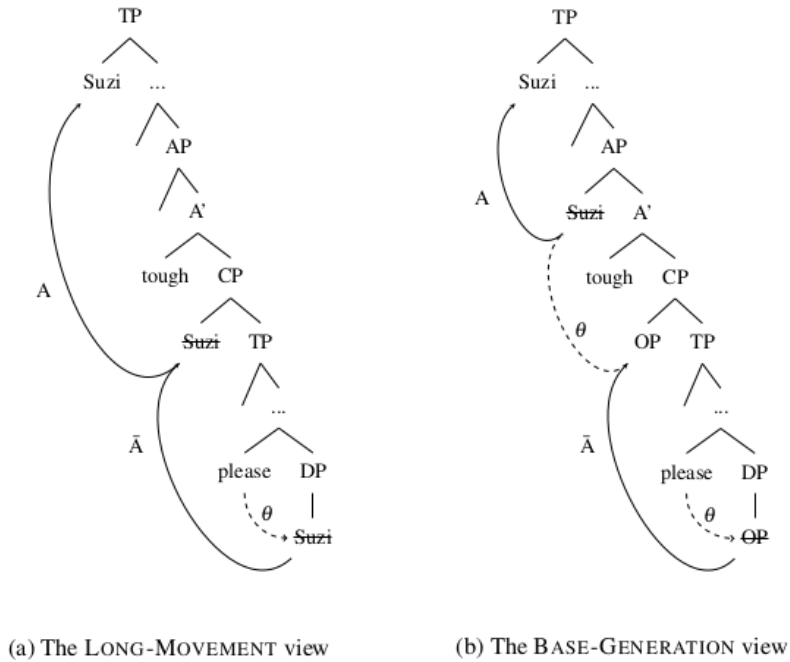
In the rich literature on *tough*-constructions, the “linking” mechanism between the matrix subject and the embedded gap has been analyzed as movement, as in the LONG-MOVEMENT approaches (Rosenbaum 1967, Hicks 2009, Longenbaugh 2017 i.a.), or binding/agreement as in the BASE-GENERATION approaches (Chomsky 1977, Lasnik and Fiengo 1974, Rezac 2006 i.a.). Standard LONG-MOVEMENT approaches have to make the assumption that *tough*-movement consists in $\bar{A}$ - followed by A-movement, a sequence dubbed “Improper” Movement by Chomsky (1986), and which is generally disallowed. Standard BASE-GENERATION approaches on the other hand, pose problems in terms of θ -assignment. In both cases however, the gap (trace for LONG-MOVEMENT, null operator for BASE-GENERATION) is assumed to $\bar{A}$ -move to the embedded Spec-CP position. Evidence in support for this movement step comes from the absence of intervention effects within the embedded clause (cf. Longenbaugh 2017 and (4a)); parasitic-gap licensing (cf. Chomsky 1982 and (4b)); and island-creation (cf. Chomsky 1977, Rezac 2006 and (4c)).

- (4) a. *Aspects* was **annoying** [to be asked by Joan [to convince Matt to read _{og}]].
 b. ? *On Raising* is **easy** to admire _{og} without having read _{pg}.
 c. * Where₂ was *Syntactic Structures*₁ **enjoyable** [to read ₁ ₂].

The two approaches to *tough*-constructions, LONG-MOVEMENT and BASE-GENERATION, are summarized in Figure 1.

- (i) Suzi is **too tough** _{sg} to like Joseph.
 ⇨ It was too difficult for Suzi to like Joseph.
 ⇒ Suzi is too tough a person to like Joseph.

We will come back to this distinction in the next sections.

Figure 1: Two views on the derivation of *tough*-constructions

2.2 Gapped-degree phrases

The literature on gapped-degree phrases uniformly adopted a binding approach to those constructions (see Meier 2003, Nissenbaum and Schwarz 2011, Brillman and Hirsch 2016, Brillman 2017 i.a.). Nissenbaum and Schwarz (2011), Brillman (2015, 2017), and Brillman and Hirsch (2016) in particular, assume that a null operator moves to the Specifier of a Degree phrase (Spec-DegP), DegP being located immediately above CP. This movement (or at least a step thereof) has $\bar{A}$ -properties, supported again by the possibility of a long-distance dependency, island-sensitivity, and parasitic gap licensing (Brillman 2015, Brillman and Hirsch 2016, Brillman 2017). This is illustrated in (5).

- (5) a. *Aspects* is **too** dense [to be asked by Joan [to convince Matt to read $_{og}$]].
 b. ? *On Raising* is **too** well-written to admire $_{og}$ without having read $_{pg}$.
 c. * *Where₂* was *Syntactic Structures₁* **too** abstract [to read $_{1}$ $_{2}$].

Building on an observation by Hartman (cf. Hartman (2011a), Hartman (2011b)), Brillman also suggested that gapped-degree phrases, like *tough*-constructions supposedly, exhibit defective intervention effects linked to A-movement (cf. Chomsky (2000)). This led to the conclusion that null operator movement to Spec-DegP in gapped-degree phrases was in fact two-step Improper Movement. More specifically, it was argued that the null operator $\bar{A}$ -moved to Spec-CP, before A-moving to Spec-DegP. Arguments based on defective intervention must be taken with care however. Bruening (2014) for instance, showed that minimal displacement of the intervening PP (the experiencer) in the *tough*-construction can render the structure grammatical, as exemplified in (6).

- (6) Sugar is (to many people) **important** (*to many people) to give up $_{og}$.

This is unexpected if the kind of intervention effect attested in *tough*-constructions is driven by A-movement to the matrix Spec-TP, as suggested by Hartman. Another issue pointed out by Bruening is that of adjunct intervention, which in *tough*-constructions yields the same ungrammaticality pattern as experiencer intervention, as exemplified in (7) below.

- (7) Sugar was (in such conditions) **hard** (*in such conditions) to give up _{og}.

This is again unexpected under a defective intervention analysis, because adjuncts are no interveners with respect to A-movement. We think that those two observations by Bruening extend to gapped-degree phrases:

- (8) This jacket is (for Johnny) **too** small (*for Johnny) for Mary to buy _{og}.

- (9) This towel is (at the moment) **too** wet (? at the moment) to use _{og}.

This puts into question an Improper Movement account of gapped-degree phrases. Moreover, if movement to Spec-DegP was indeed a mixture of A- and A-movement, then, one should decide on the nature of the kind of one fell swoop movement “skipping” Spec-CP that has to be posited to explain the grammaticality of gapped-degree phrases under the ANTI-LOCALITY account that we will describe in more detail in the next section. If one fell swoop movement to Spec-DegP inherits the properties of the target position, and if DegP is indeed an A-position, then, the various $\bar{A}$ -properties of gapped-degree phrases would remain mysterious. For all these reasons, we will assume that movement from Spec-CP to Spec-DegP is $\bar{A}$ and not A, and that gapped-degree phrases are not Improper Movement structures. Figure 2 below summarizes the various movement chains posited in the literature for *tough*-constructions and gapped-degree phrases.

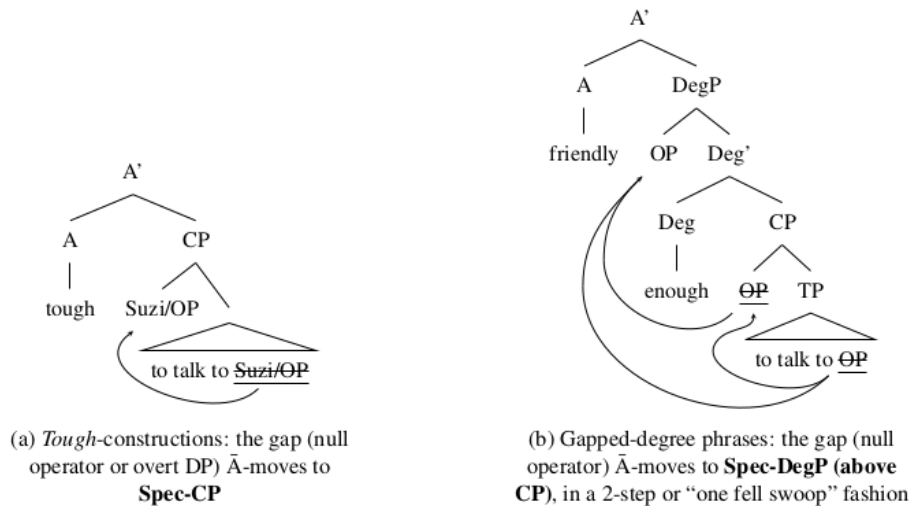


Figure 2: Movement chains assumed in the literature for *tough*-constructions and gapped-degree phrases (object-gap case)

2.3 The “Spec-to-Spec” ANTI-LOCALITY account of the gap contrast

The gap contrast between *tough*-constructions and gapped-degree phrases has been explained in previous work *via* a specific notion of ANTI-LOCALITY (henceforth **AL**), designed such that

movement from Spec-TP to Spec-CP, characteristic of subject-gap *tough*-constructions, is considered AL-violating. This specific implementation of ANTI-LOCALITY, dubbed “Spec-to-Spec” ANTI-LOCALITY and due to Erlewine (2016), disallows movement dependencies between two Specifier positions such that one is located immediately above the other. This constraint directly disallows movement from Spec-TP to Spec-CP, and therefore predicts subject-gap *tough*-constructions to be ungrammatical (see Figure 3a). To derive the grammaticality of both types of gapped-degree phrases (subject- and object-gap), the ANTI-LOCALITY account requires the additional assumption that movement from Spec-TP to Spec-DegP be allowed to “skip” the Spec-CP position. This way, gapped-degree phrases are expected to feature a longer movement dependency than subject-gap *tough*-constructions, and are in turn predicted to escape Spec-to-Spec ANTI-LOCALITY. Figures 3c and 3d illustrate this line of reasoning.

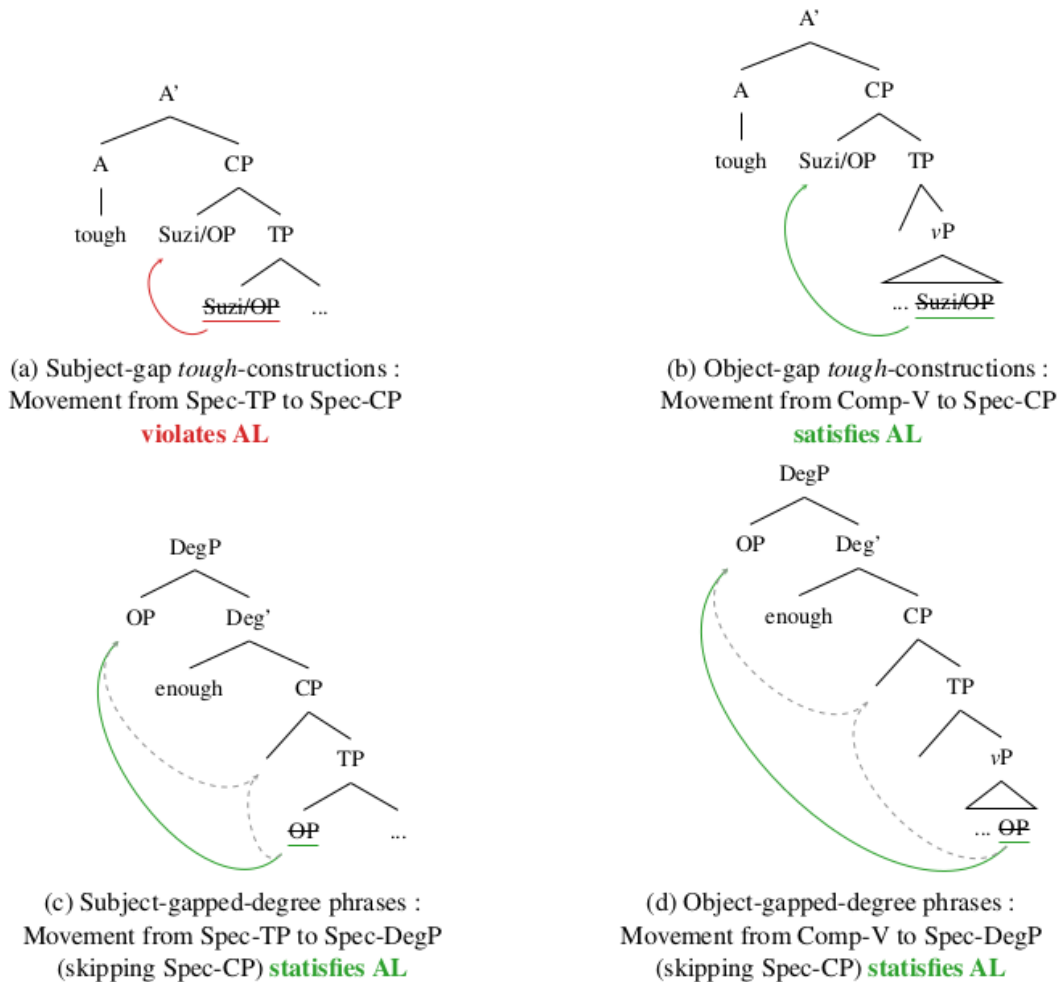


Figure 3: Movement chains posited by the “Spec-to-Spec” ANTI-LOCALITY account of Brillman and Hirsch (2016) for *tough*-constructions and gapped-degree phrases

Regarding *tough*-gapped-degree phrases, the ANTI-LOCALITY account requires one more assumption. Indeed, if ANTI-LOCALITY simply applied to a GDP structure involving a *tough*-predicate (instead of a regular gradable adjective), subject-gaps would be predicted to be grammatical, because movement from Spec-TP to Spec-DegP (skipping Spec-CP) would be possible. Brillman and Hirsch (2016) do not strictly disallow this possibility, but argue that it

competes with another, surface-similar, yet ungrammatical derivation, whereby the degree phrase adjoins to the adjectival phrase, making the structure analog to a *tough*-construction in the relevant respects. The two competing derivations are illustrated in Figure 4 below.

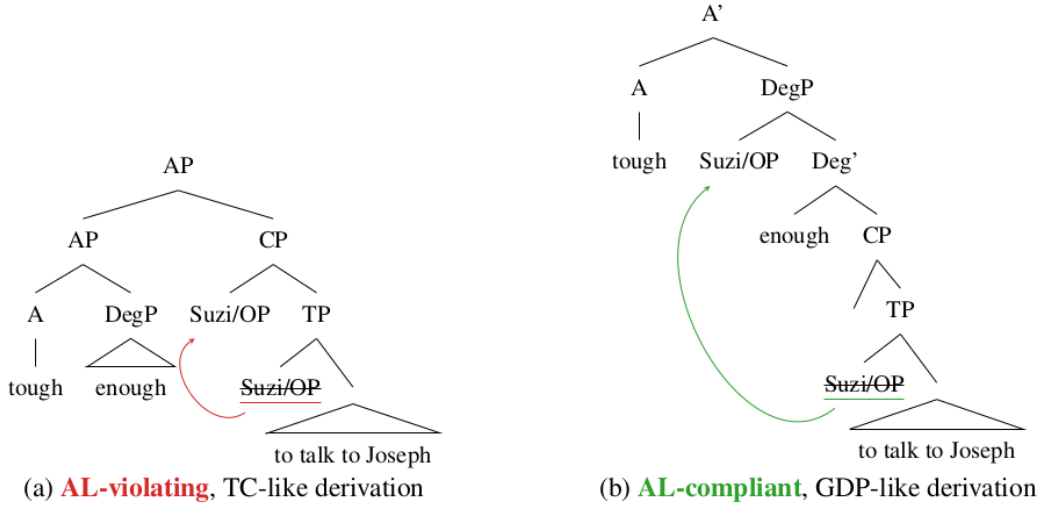


Figure 4: Movement chains posited by the “Spec-to-Spec” ANTI-LOCALITY account of Brillman and Hirsch (2016) for structurally ambiguous *tough*-gapped-degree phrases (subject-gap case)

The assumption that *tough*-gapped-degree phrases are structurally ambiguous comes from the fact that those constructions can receive two different readings, one in which the predicate acts like a standard *tough*-predicate (i.e., modifies the event denoted by the embedded clause), and another in which the *tough*-predicate seems to behave like a regular gradable adjective, modifying the matrix subject. Those two readings are rendered in (10a) (in that order) for the object-gap case. The adjoined structure associated to a TC-like derivation and represented in Figure 4a, is supposed to correspond to the standard *tough*-reading, while the “stacked” structure associated to a GDP-like derivation and represented in Figure 4b is supposed to correspond to the non-standard reading of *tough*. The former reading is the only one that appears unavailable in the subject-gap case, as exemplified in (10b).

- (10) a. Suzi is **too tough** to talk to _{og}.
 ⇒ It is too tough to talk to Suzi. TC-like derivation
 ⇒ Suzi is too tough a person to be talked to. GDP-like derivation
- b. Suzi is **too tough** _{sg} to talk to Joseph.
 ≠ It is too tough for Suzi to talk to Joseph. TC-like derivation
 ⇒ Suzi is too tough a person to talk to Joseph. GDP-like derivation

We think that this account captures the right intuition about the semantic behavior of *tough*-gapped-degree phrases. However, it also posits two very different structures for *tough*-gapped-degree phrases, as well as two different θ -grids for the *tough*-predicate (one in which *tough* modifies an event-type complement, and another in which it modifies an individual-type

subject). More generally, the ANTI-LOCALITY account is based on a much debated constraint² that might appear counter-intuitive if we assume that syntactic restrictions should target configurations or operations characterized by some degree of formal complexity (from a processing or production point of view). In fact, short-distance dependencies, such as subject *wh*-movement, are normally seen as easier from an acquisition and languages processing standpoint (see e.g. Friedmann, Belletti, and Rizzi 2009). It is thus surprising for a constraint such as ANTI-LOCALITY to disallow similar kinds of configurations.

3. Contribution and Roadmap

Is ANTI-LOCALITY really part of the grammar, or just the manifestation of a more general and grounded principle? In this paper, we propose an alternative account of the gap distribution of *tough*-constructions, gapped-degree phrases and *tough*-gapped-degree phrases which does not require to appeal to the notion of ANTI-LOCALITY. Instead, our account heavily builds on recent observations by Oxford (2020) and Pesetsky (2021), by relying on an AGREE-based constraint: Kinyalolo's Constraint (henceforth **KC**, cf. Kinyalolo 1991, Carstens 2003 i.a.), a repairable constraint targeting cases of multiple agreement by the same goal with different probes. More specifically, we propose that the embedded gap present in the constructions at stake successively moves from its original subject or object position to higher Specifier positions, as a result of Agreement with the corresponding heads – T (subject-gap cases), C, and Deg (gapped-degree cases). We argue that the range of constructions observed results from (1) repairs of Kinyalolo's Constraint violations occurring during those steps of successive Agreement, and (2) independently motivated semantic type-mismatch considerations targeting the clausal complement of the structures at stake. As a result, our account, unlike the previous ones, is resolutely positioned at the syntax-semantics interface. In particular, it provides an explanation as to why *tough*-gapped-degree phrases may behave like *tough*-constructions gap-wise, without positing two fundamentally different structures and different θ -grids for the *tough*-predicate. It also replaces ANTI-LOCALITY by a general-purpose and independently motivated constraint, successfully capturing the interplay between syntax and semantics in the target constructions.

The paper is organized as follows. In Section 4, we flesh out two semantic, type-driven constraints restricting the shape of the infinitival complement of *tough*-constructions and gapped-degree phrases. In Section 5, following recent observations by Oxford (2020) and Pesetsky (2021), we propose that ANTI-LOCALITY be replaced by a specific implementation of Kinyalolo's Constraint. We derive the gap distribution of *tough*-constructions, gapped-degree phrases and *tough*-gapped-degree phrases in Section 6.

² AL has in fact received many implementations over the years, that are roughly divided into three groups: "Comp-to-Spec" (Pesetsky and Torrego 2001, Abels 2003, Kayne 2005), "Spec-to-Adj" (Bošković 1994, Bošković 1997, Saito and Murasugi 1999, Bošković 2005, Boeckx 2009), and finally, the "Spec-to-Spec" family we are focusing on in this paper (Grohmann 2000, Grohmann 2003, Erlewine 2016).

4. Semantic assumptions

4.1 The constraints at a glance

In this section, we introduce two semantic constraints governing the type of the complement clause in *tough*-constructions and gapped-degree phrases. More specifically, these semantic constraints are intended to act as post-syntactic “filters” allowing to rule out the unattested constructions (e.g., subject-gap *tough*-constructions), among all those generated by the syntax.

- *NoC : the complement clause of *tough*-predicates must contain a C-head.
- *C : the complement clause of degree modifiers should not contain a C-head.

In order to set out the rationale of those constraints, we start by reviewing a recent analysis pertaining to the semantics of embedded clauses.

4.2 Some background on the semantics of embedded clauses

As noted by Kratzer (2006), and more recently by Moulton (2009), Moulton (2015) and Bogal-Allbritten and Moulton (2016), embedded clauses seem to be distributed like DPs. A first piece of evidence in favor of this claim is that attitude verbs like *believe* can combine with either DPs (as in (11a)), or CPs (as in (11b)).

- (11) a. Jotaro believes [_{DP} Jolyne’s story].
 b. Jotaro believes [_{CP} that Jolyne lies].

Another piece of evidence is based on the observation that *that*- and *for*-clauses can be equated with DPs. This is shown in (12).

- (12) a. [_{DP} The fact] is [_{CP} that Jolyne lies].
 b. [_{DP} The challenge] is [_{CP} for Jolyne to escape].

Those syntactic facts are quite unexpected under the traditional view of DPs and embedded clauses, whereby DPs denote properties (type $\langle e, t \rangle$), while CPs denote propositions (type $\langle s, t \rangle$). This set of data, according to Kratzer (2006) and subsequent work, motivates an analysis of CPs whereby the C-head (*that*, *for*) takes a proposition (the “clause”) as argument and returns a property of “individuals with propositional content” (type $\langle e, \langle s, t \rangle \rangle$). This lifting operation is formalized in the equations below (from Kratzer 2006).

$$\begin{aligned} \llbracket C \rrbracket &= \lambda P_{st}. \lambda x_e. \lambda w_s. \text{CONT}(x)(w) = P \\ \text{CONT}(x)(w) &= \{w' \mid w' \text{ is compatible with the intentional content of } x \text{ in } w\} \end{aligned}$$

The key takeaway from this analysis is that an embedded clause involving a CP is expected to be property-denoting, whereas a clause devoid of a CP should be proposition-denoting.

4.3 *NoC: the complement clause of *tough*-predicates must contain a C-head

Let us start with the first semantic constraint, *NoC, according to which *tough*-predicates must combine with a clause containing a C-head. Unlike other adjectives, which usually characterize “pure” individuals, *tough*-predicates have been argued to be properties of events (type $\langle e, \langle s, t \rangle \rangle$). In particular, a *tough*-predicate embedding an infinitival clause will characterize the kind of event denoted by the embedded clause (cf. Gluckman 2019, Gluckman 2021). This suggests that a *tough*-predicate takes its complement clause as a semantic argument, and combines with it *via* FUNCTIONAL APPLICATION, or PREDICATE MODIFICATION. This in turn entails that the embedded clause in a *tough*-construction cannot be a bare proposition (i.e., a set of worlds).³ This claim is made more concrete in (13) below.

- (13) Suzi is tough to talk to _{og}.
 ≈ There is a *talking-to-Suzi* event that is tough.
 ≠ The set of worlds where Suzi is being talked to is tough.

Gluckman (2021) argued that a sentence such as (13) can receive the proper semantic interpretation as soon as the *tough*-predicate combines with the infinitival clause *via* PREDICATE MODIFICATION. Under that view, the infinitival clause is a property of events with propositional content (type $\langle e, \langle s, t \rangle \rangle$). This, in the framework set out by Kratzer (2006), is only possible in the presence of a C-head, be it overt or covert. More specifically, the *for*-head in a *tough*-construction is intended to lift a proposition (type $\langle s, t \rangle$) into a type $\langle e, \langle s, t \rangle \rangle$, identical to the type of *tough*-predicates. We therefore argue that *tough*-predicates must combine at LF with a clause containing a C-head (type $\langle e, \langle s, t \rangle \rangle$).

4.4 *C: the complement clause of a degree modifier should not contain a C-head

We now turn to the second constraint, *C, which states that a degree modifier such as *too* or *enough* should not combine with a clause containing a C-head. As argued in Hacquard 2015, gapped-degree phrases “have traditionally been analyzed as comparative constructions which relate an actual degree to a modalized one”. This leads degree-modified adjectives to combine with propositions (cf. also Heim 2000, Nissenbaum and Schwarz 2011, Hacquard 2015). This is exemplified by the following lexical entry for *too* (from Hacquard 2015).

$$\begin{aligned} \llbracket \text{too} \rrbracket &= \lambda P_{\langle d, \langle e, \langle s, t \rangle \rangle \rangle} . \lambda Q_{\langle st \rangle} . \lambda x_e . P(\lambda d : \forall w' \in \text{Acc}(w) . \neg Q(w') \Leftrightarrow P(d)(x)(w'))(x)(w) \\ \llbracket \text{too friendly} \rrbracket &= \lambda Q_{st} . \lambda x_e . \text{Friendly}(\lambda d : \forall w' \in \text{Acc}(w) . \neg Q(w') \Leftrightarrow \text{Friendly}(d)(x)(w'))(x)(w) \end{aligned}$$

According to this lexical entry, *too* takes a predicate P of type $\langle d, \langle e, \langle s, t \rangle \rangle \rangle$, a proposition

³ One could argue that a set of events could be retrieved from a set of worlds using a specific kind of covert operator, which, applied to the set of worlds, would return the set of events that occur in all the worlds from the set, and only in them. However, it remains unclear how to guarantee that any event retrieved *via* this operator really *coincides* with the event originally denoted by the embedded clause, instead of simply *correlating* with it (i.e. being different from the original event, but yet happening in exactly the same relevant worlds). An analysis without this kind of operator, i.e., without a proposition-denoting clause, seems to be more elegant, but also less prone to such inaccuracies.

Q of type $\langle s, t \rangle$ referring to the embedded clause, and an individual x . *Too* then states that x verifies P to a degree d^* in w , d^* being the degree such that the set of accessible worlds where the negation of the embedded clause holds coincides with the set of accessible worlds where the predicate holds for x at a degree d^* . In other words, d^* “guarantees” that the embedded clause is not realized in any accessible world. Crucially, the embedded clause has to be a proposition in order to capture this modal flavor of degree modification. If again we subscribe to the view on embedded clauses set out by Kratzer (2006) and subsequent work, this means that the complement clause of degree-modified adjectives cannot involve a C-head, because otherwise, it would be lifted into a property. We then conclude that gapped-degree phrases must embed clauses that are devoid of a C-head.

5. Syntactic assumptions

In this section, we introduce Kinyalolo’s Constraint and spell out how it may achieve the same results as ANTI-LOCALITY. We also flesh out the underlying structure of the constructions at stake: *tough*-constructions, gapped-degree phrases and *tough*-gapped-degree phrases.

5.1 A brief review of Kinyalolo’s Constraint (KC)

Kinyalolo’s Constraint was initially formulated as a morphological constraint restricting redundant agreement marking at the word level (see Kinyalolo 1991, Carstens 2003, Carstens 2005). This constraint is illustrated in (14) below for the Bantu language Kilega (example from Kinyalolo 1991 and Carstens 2003). As shown in (14a), subjects in Kilega (here, *elephant*) agree with all the aspectual and modal heads present in the sentence. As shown in (14b) however, this redundant Agreement pattern gets obliterated under incorporation: in that case, only the highest head exhibits overt agreement marking.

- (14) a. Nzogu **zí** - kili **z** - á - twag - a maswá.
 10elephant 10AGR - be.still 10AGR - ASP - stampede - FV 6farm.
 ‘The elephants are still stampeding over the farms.’
 b. pro **mú** - ná - kúbul - (***mú**) - íl - é mázi.
 pro **II_{PL}** - MOD - pour - (***II_{PL}**) - ASP - FV 6water.
 ‘You could have poured water.’

Kinyalolo’s Constraint has regained interest in recent years with work by (Alok and Baker 2018, Oxford 2017, Oxford 2020 and Pesetsky 2021 i.a.), and has been extended to other domains and languages. Pesetsky (2021) in particular, suggests that local movement from Spec-TP to Spec-CP (i.e., agreement with both T and C), instead of being prohibited by ANTI-LOCALITY, leads to a violation of Kinyalolo’s Constraint, which in turn triggers some kind of reduction in either the TP or the CP system. This, according to Pesetsky, would have the potential to explain a variety of phenomena that were previously believed to be driven by ANTI-LOCALITY: *that*-trace effects (seen as CP-reduction, cf. (15)) in languages such as English, and ANTI-AGREEMENT (seen as TP-reduction, cf. (16), taken from Ouali 2006) in languages such as Tamazight Berber. Whether to alter CP or TP seems to depend on the *criteriality* (Chomsky 2000, Rizzi 2006, i.a.) of the Spec-CP position, i.e., whether Spec-CP is linked to scope-discourse semantics (topicality, focus etc.), or alternatively constitutes a final landing site for $\bar{A}$ -movement. A non-criterial CP layer then constitutes a privileged target for KC-repairs.

Criterial positions in (15) and (16) are signaled using the † symbol.

- (15) [_{CP}[†] Who do you think [_{CP} ~~that~~ [_{TP} ~~won the race~~ ?]]]
 (16) [_{CP}[†] mani thamttut ag [_{TP} ~~?lan~~ ~~araw~~ ?]]
 [_{CP}[†] which woman that [_{TP} ~~see.PERF.PART.3SG.FEM~~ boys ?]]
 ‘Which woman saw the boys ?’

Our account is based on this more liberal, and syntactic view of Kinyalolo’s Constraint. Crucially also, we need to postulate that repairs of Kinyalolo’s Constraint do not constitute post-syntactic phenomena, but rather, feed semantic interpretation, such that the deletion of, say, a C-head, has consequences at LF. Finally, we stipulate that the embedded Spec-CP position is never criterial in the structures at stake – in *tough*-constructions in particular. In the case of gapped-degree phrases, this may be justified by the fact that Spec-CP is not the final landing site of the gap (Spec-DegP is). In the case of *tough*-constructions, the justification is perhaps a bit less straightforward since, at least under a BASE-GENERATION approach, Spec-CP is the final landing site of the gap. We postulate however that, even in that kind of configuration, the embedded Spec-CP position does not have the right scope-discourse properties to constitute a criterial position (relatedly, even if the gap ends up in Spec-CP under a BASE-GENERATION account, it remains bound by a higher element, namely, the base-generated matrix subject). In brief, we think that it is reasonable to assume that the embedded Spec-CP is not criterial and therefore, constitutes a preferred target for repairs of Kinyalolo’s Constraint.

5.2 Key assumptions about the underlying syntax the constructions at stake

We remain agnostic regarding the exact nature of the gap in the case of *tough*-constructions. We assume that embedded objects standardly move from the Comp-V position and subjects from the Spec-vP position. Additionally, we posit that $\bar{A}$ -movement is “strictly” successive-cyclic, i.e., never skips $\bar{A}$ -positions. In particular, a gap moving to Spec-DegP in a GDP configuration is unable to “skip” Spec-CP, as it could do in the work of Brillman and Hirsch (2016). We suppose that the three structures at stake involve an adjectival projection (AP), hosting the matrix predicate, i.e. a *tough*-predicate or gradable adjective. Gapped-degree phrases additionally involve a degree-modifying layer (DegP), hosting the degree modifier (*too* or *enough*). This projection is assumed to be located right below the adjectival projection. In the particular case of *too*-gapped degree phrases, the Deg-head is expected to move past the predicate to yield the correct word order. The infinitival clause, which is a complement of DegP in the case of gapped-degree phrases, and a complement of AP in the case of *tough*-constructions, is initially assumed to be a full-fledged CP. The underlying structures of *tough*-constructions and gapped-degree phrases as we just described them, are schematized in Figure 5 below.

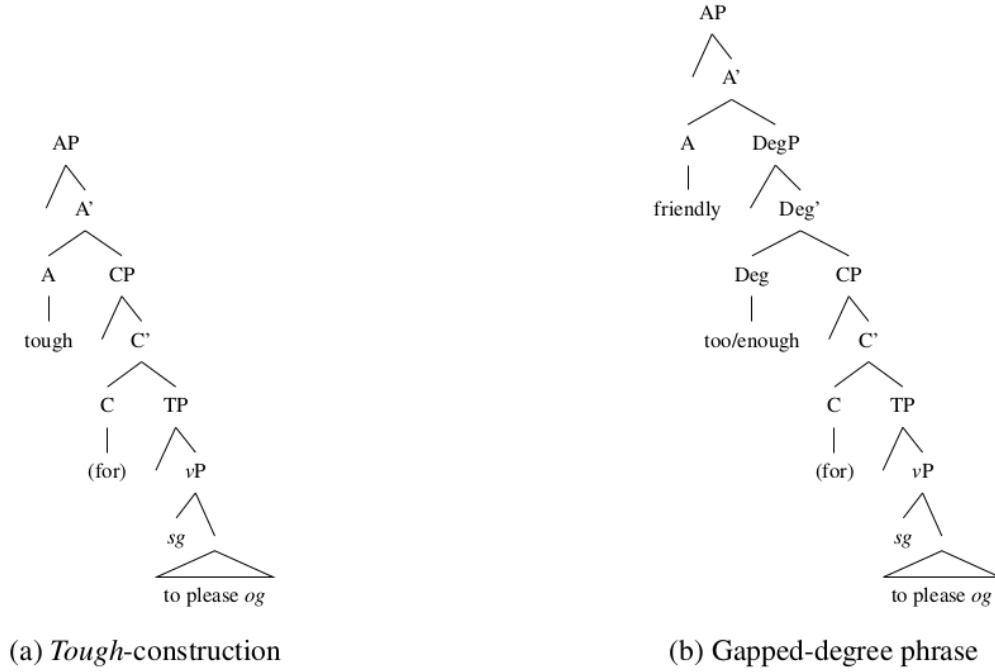
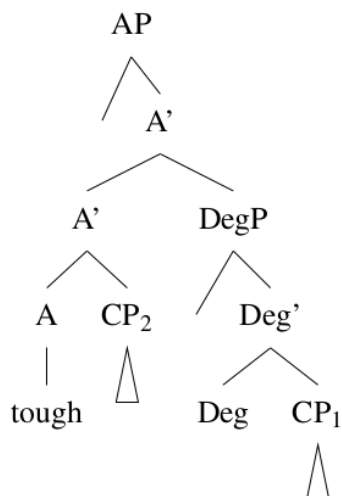


Figure 5: Assumed underlying structure of *tough*-constructions and gapped-degree phrases

We depart from the account by Brillman and Hirsch (2016) with respect to *tough*-gapped degree phrases. Brillman and Hirsch (2016) assumed that those constructions were structurally ambiguous, one parse being TC-like, and another parse being GDP-like. This particular view seemed to require two different θ -grids for *tough*: one in which *tough* specifies an event, and one in which it specifies the subject. *Contra* Brillman and Hirsch (2016), we want to stipulate that *tough*-gapped-degree phrases all have the same core structure, which is similar to that of a gapped-degree phrase, except that DegP is adjoined to the adjectival head instead of being a complement. The two interpretations of the *tough*-gapped-degree phrase then result from different kinds of complements being overtly realized: in the case of the TC-reading, the overt clause corresponds to a complement of the *tough*-predicate, whereas in the case of the GDP-reading, the overt clause corresponds to a complement of the degree modifier. The positions of those two possible complements are indicated in Figure 6. The English sentences in (17) and their French counterparts in (18), which feature overt realization of both clausal complements, illustrate that ungrammaticality arises when the complement clause of the *tough*-predicate, but not that of the degree modifier, contains a subject gap. As a side note, the contrast is perhaps even clearer with the French data from (18), because this language happens to use distinct prepositions to introduce clausal complements of *tough* as opposed to those of degree modifiers: *à* is consistently used for *tough*-constructions, while *pour* appears in gapped-degree phrases.⁴

⁴ One last thing to note about the French examples is that the counterparts of (17a) and (17c), (18a) and (18c) respectively, do not involve object-gaps in the clausal complement of the degree phrase, but instead, some sort of resumptive pronoun referring to the matrix subject (*le*). French gapped-degree phrases (and not only *tough*-gapped-degree phrases) generally disallow object-gaps – a further restriction that we do not attempt to explain here.

Figure 6: Assumed underlying structure of a *tough*-gapped-degree phrase

- (17) a. This book is **easy enough** to read _{og} to find _{og} in this store.
 b. This book is **easy enough** to read _{og} _{sg} to be found in this store.
 c. * This book is **easy enough** _{sg} to be read to find _{og} in this store.
 d. * This book is **easy enough** _{sg} to be read _{sg} to be found in this store.
- (18) a. Ce livre est **assez facile** à lire _{og} pour le trouver dans un magasin.
 b. Ce livre est **assez facile** à lire _{og} pour _{sg} être trouvé dans un magasin.
 c. * Ce livre est **assez facile** à _{sg} être lu pour le trouver dans un magasin.
 d. * Ce livre est **assez facile** à _{sg} être lu pour _{sg} être trouvé dans un magasin.

Under that view, the complement clause in a sentence such as *Suzi is too tough to talk to* can be parsed as either a complement of *tough*, or a complement of the degree modifier *too*.

- (10) a. Suzi is **too tough** [_{CP2}] [DegP [_{CP1} to talk to _{og}]].
 ⇒ Suzi is tough (to impress, to interact with, to persuade, to talk to...), to a degree that makes talking to her impossible in all accessible worlds.
 b. Suzi is too tough [_{CP2} to talk to _{og}] [DegP [_{CP1}]].
 ⇒ Suzi is tough to talk to, to a degree that makes whatever salient task involving her impossible in all accessible worlds.

This allows to posit the same kind of lexical entry for *tough* in *tough*-constructions and *tough*-gapped-degree phrases, also consistent with the claim that an individual cannot be *tough simpliciter*, even in sentences such as those in (19). Put it in another way, our account guarantees that *tough*-predicates always specify an event, be it overtly or covertly realized.

- (19) a. This problem is **tough** (to solve _{og}).
 b. Those kids are **easy** (to manage _{og}).

6. Deriving the gap distribution of the three structures at stake

In this section, we derive the gap distribution of *tough*-constructions, gapped-degree phrases, and *tough*-gapped-degree phrases, based on the stipulated underlying structures for those three constructions, the action of Kinyalolo's Constraint, and the semantic restrictions laid out in Section 4. We proceed construction type by construction type, starting with *tough*-constructions.

6.1 Tough-constructions

Tough-constructions are compatible with object-gaps and incompatible with subject-gaps. Let us start with the object-gap case; in that configuration, the gap moves from the object position to Spec-CP in order to agree with the C-head, which does not lead to any violation of Kinyalolo's Constraint. The resulting structure, having retained its C-head, remains compatible with the semantic requirements of the *tough*-construction (*NoC). We therefore predict object-gap *tough*-constructions to be grammatical. This is schematized in Figure 7a below.

In the subject-gap case, the gap first agrees with T and moves to Spec-TP, then agrees with C and moves to Spec-CP. This leads to one violation of Kinyalolo's Constraint, and to the deletion of the C-head since Spec-CP is assumed not to be criterial. The resulting structure thus involves a *tough*-predicate with a clausal complement devoid of a C-head, which constitutes a violation of *NoC. We therefore predict subject-gap *tough*-constructions to be ungrammatical. This is schematized in Figure 7b below.

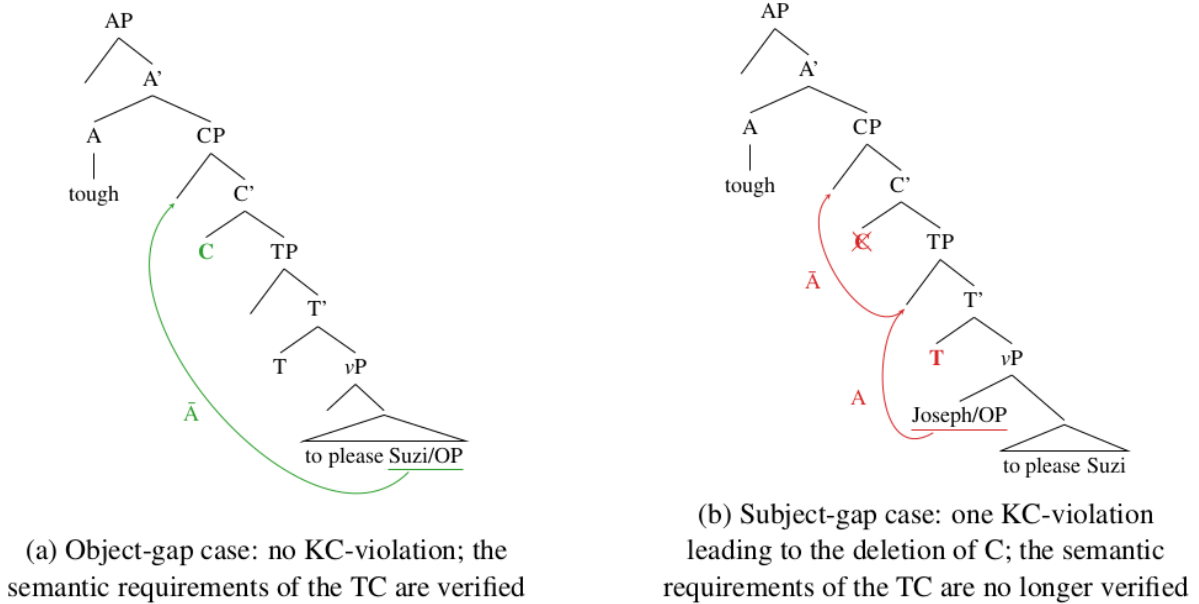


Figure 7: Derivation of subject- and object-gap *tough*-constructions

6.2 Gapped-degree phrases

We now turn to gapped-degree phrases involving standard gradable adjectives (no *tough*-predicate). Those constructions are compatible with both subject- and object-gaps. Let us start again with the object-gap case; in that configuration, the gap moves from the object position to

Spec-CP in order to agree with the C head, then to Spec-DegP in order to agree with the Deg head. This leads to one violation of Kinyalolo's Constraint, and to the deletion of the C-head since Spec-CP is not criterial. The resulting structure thus involves a degree-modifying projection with a clausal complement which is devoid of a C-head, i.e., compatible with the semantic requirements of gapped-degree phrases (*C). We therefore predict object gapped-degree phrases to be grammatical. This is schematized in Figure 8a below.

In the subject-gap case, the gap first agrees with T and moves to Spec-TP, then agrees with C and moves to Spec-CP, then finally agrees with Deg and moves to Spec-DegP. This leads to two violations of Kinyalolo's Constraint, and to the deletion of the C- and T-heads. The resulting structure again involves a degree-modifying projection with a clausal complement which is devoid of a C-head, i.e. compatible with the semantic requirements of gapped-degree phrases. We therefore predict subject gapped-degree phrases to be grammatical as well. This is schematized in Figure 8b below.

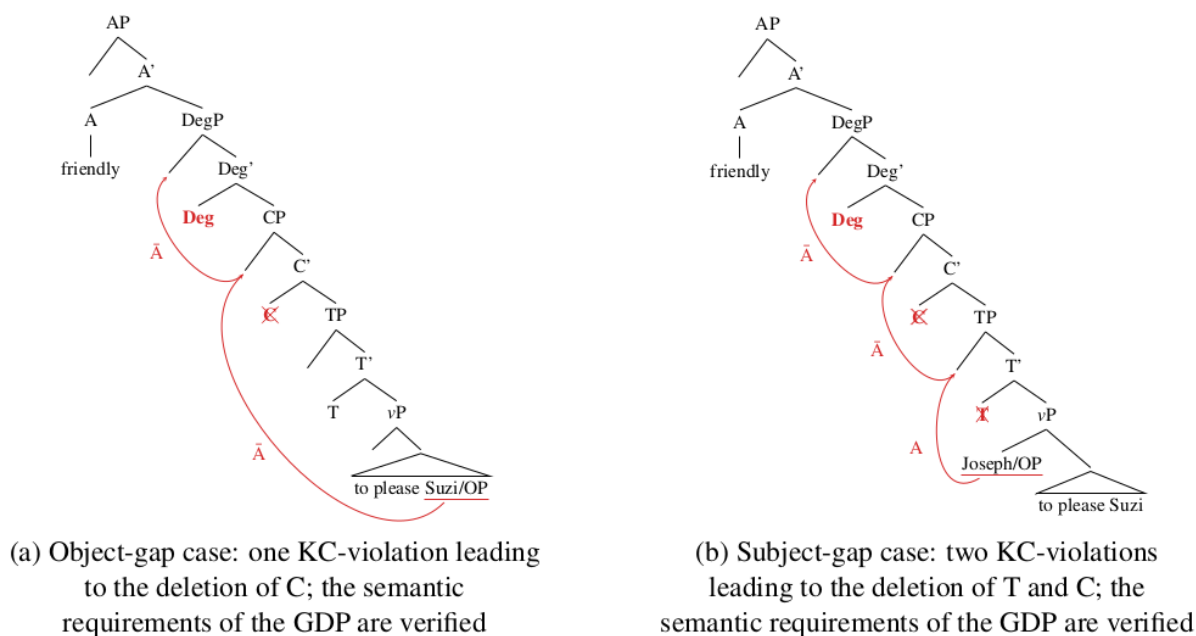


Figure 8: Derivation of subject- and object-gapped-degree phrases

6.3 *Tough*-gapped-degree phrases

We finally turn to the more complex case of *tough*-gapped-degree phrases. As previously mentioned, those structures have two readings, that we argue depend on where the overt complement clause is realized. If the clause is realized as a complement of the *tough*-predicate, then the *tough*-gapped-degree phrase is predicted to be subject to the same restrictions as a TC; if the clause is realized as a complement of the degree modifier, then, the *tough*-gapped-degree phrase is predicted to be subject to the same restrictions as a GDP. This distinction is transparent by languages like French, which do not make use of the same preposition to introduce clausal TC-complements (preposition *à*) vs clausal GDP-complements (preposition *pour*):

- (20) a. Ce livre est assez facile { $\hat{a}_{(TC)}$ / * $\text{pour}_{(GDP)}$ } lire ---_{og} .
 This book is enough easy { $\text{to}_{(TC)}$ / * $\text{to}_{(GDP)}$ } read ---_{og} .
 ‘This book is easy enough to read.’
- b. Ce livre est assez facile { * $\hat{a}_{(TC)}$ / $\text{pour}_{(GDP)}$ } ---_{sg} être lu.
 This book is enough easy { * $\text{to}_{(TC)}$ / $\text{to}_{(GDP)}$ } ---_{sg} be read.
 ‘This book is easy enough to be read.’

Under this hypothesis, the case of *tough*-gapped-degree phrases is simply a mixture of the two previous cases (*tough*-constructions and “simple” gapped-degree phrases). Indeed, focusing first on “TC-like” TGDPs, whereby the infinitival clause is a complement of the *tough*-predicate, the arguments leading to the ungrammaticality of a subject-gap turn out to be exactly the same as those laid out in Section 6.1. Namely, movement of the gap from an object position will not lead to any KC-violation and leave the C-head intact so that the semantic requirements of *tough* are met; while movement of the gap from a subject position will lead to one KC-violation and to the deletion of the C-head, which violates the semantics requirements of *tough*. We thus predict subject-gap *tough*-gapped-degree phrases under the TC-parse to be ungrammatical, and their object-gap counterpart to be grammatical. Turning to “GDP-like” TGDPs, we see again that the arguments leading to the grammaticality of both types of gaps turn out to be exactly the same as those laid out in Section 6.2. Movement from an object position leads to one KC-violation and to the deletion of the C-head, thus guaranteeing that the semantic requirements of the degree modifier are met; while movement of the gap from a subject position leads to two KC-violations and the deletion of both T and C, again in compliance with the semantic requirements of the degree modifier.

7. Conclusion

Under our view, the gap distribution of *tough*-constructions, gapped-degree phrases and *tough*-gapped-degree phrases results from an interplay between syntax and semantics. We indeed captured the contrasts in the gap distribution of those structures thanks to two key ingredients: (1) Kinyalolo’s Constraint, which produced repaired candidate structures fed to (2) semantic type-driven constraints targeting clausal complements. Contrary to the previous ANTI-LOCALITY account, in which ungrammaticality was triggered by movement dependencies that were deemed “too short”, ungrammaticality arises in our account when a repair of a violation of Kinyalolo’s Constraint leads to an unresolvable type-mismatch between the embedding predicate and its clausal complement. In the particular case of semantically ambiguous *tough*-gapped-degree phrases, our framework did not require us to posit two fundamentally different structures, but rather, it led us to assume that different complement clauses (of the *tough*-predicate, of the degree modifier) could be overtly realized, and therefore involve a (potentially problematic) gap. Hopefully, this view provides a clearer picture of the semantics of those constructions as well.

Our account comes with a few *caveats* however. First, it crucially relied on the assumption that deletion of the C-head as a repair of Kinyalolo’s Constraint was total and occurred prior to Spell-Out, in order to have consequences at LF. This assumption might appear quite strong given the fact that Kinyalolo’s Constraint seems to sometimes yield partial obliteration (“impoverishment”) instead of total deletion. This has been argued to occur in Spanish (Nevins 2007, Nevins 2012), languages of the Algonquian family (Oxford 2017, Oxford 2020), as well

as French and Buli (Pesetsky 2021). In all those cases, instead of being completely deleted, the head leading to a violation of Kinyalolo's Constraint is realized as a default or elsewhere form. Within our framework, this would suggest that repaired heads may be able to still be active at LF in certain specific cases.

Second, our account makes challenging predictions from a language processing or language acquisition standpoint. Indeed, unlike the existing ANTI-LOCALITY account by Brillman and Hirsch (2016), our account makes the prediction that gapped-degree phrases should be consistently more difficult to produce and process than *tough*-constructions, as they require on more repair of Kinyalolo's constraint in each case (subject- and object-gap). Our recent acquisition study focused on *tough*-constructions and gapped-degree phrases did not confirm this prediction (see Hénót-Mortier et al. 2022); however, other factors should probably be considered to evaluate the difficulty of a given construction from a child's perspective; for instance: is the child aware of the syntactic requirement of *tough*-predicates or degree modifiers? Does the child always consider embedded clauses to be full-fledged CPs? Those questions are difficult to elucidate and left for future work.

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Standard Negation and Aspectual Definiteness: New Evidence from Cantonese

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1. Introduction

One of the classic puzzles that remains open in Chinese syntax is the interaction between negation and aspect. The puzzle is summarised with Mandarin examples as follows. There are two standard negators in Mandarin, *bù* ‘not’ and *méi(yǒu)* ‘not (have)’. In a simple verbal declarative clause without aspect-marking or any adverbial modification (henceforth ‘bare sentence’, a.k.a. ‘plain sentence’ in Wang 1965) as in (1a), the ‘default’ negative form is to insert *bù* ‘not’ immediately before the verb (1b). The meaning of the affirmative proposition would be reversed; in this case, it denies that the speaker buys books. I will refer to the negative form of bare sentences as ‘bare negative’.

- (1) a. *Wo mai shu*
I buy book
‘I buy books.’
b. *Wo bu mai shu*
I not buy book
‘I do not buy books.’

However, when a verb is marked with perfective or experiential aspect, as in (2a) and (3a) respectively, the only acceptable negator is *méi(yǒu)*. The key difference between negation of the two types of perfectives is that while *méi(yǒu)* must not co-occur with the perfective marker *le* (2b), it can co-occur with experiential *guo* (3b).

- (2) a. *Wo mai-le shu*
I buy-PFV book
‘I bought books.’
b. *Wo mei-you mai(*-le) shu*
I not-have buy-PFV book
‘I did not buy books.’
c. **Wo bu mai-le shu*
I not buy-PFV book
Intended: ‘I did not buy books.’
- (3) a. *Wo mai-guo shu*
I buy-EXP book
‘I have bought books (before).’
b. *Wo mei-you mai-guo shu*

- I not-have buy-EXP book
 ‘I have not bought books (before).’
 c. **Wo bu mai-guo shu*
 I not buy-EXP book
 Intended: ‘I have not bought books (before).’

In fact, the same aspectual constraint has been found in Hong Kong Cantonese, a variety of standard Cantonese, which also has two standard negators – *m4* ‘not’ and *mou5* ‘not.have’. The pattern is illustrated in examples (4-5) below; where *m4* and *mou5* functions similarly as Mandarin *bù* and *méi(yǒu)* respectively.

- (4) a. *Ngo5 mai5-zo2 syul*
 I buy-PFV book
 ‘I bought books.’
 b. *Ngo5 mou5 mai5(*-zo2) syul*
 I not.have buy-PFV book
 ‘I did not buy books.’
 c. **Ngo5 m4 mai5-zo2 syul*
 I not buy-PFV book
 Intended: ‘I did not buy books.’
- (5) a. *Ngo5 mai5-gwo3 syul*
 I buy-EXP book
 ‘I have bought books (before).’
 b. *Ngo5 mou5 mai5-gwo3 syul*
 I not.have buy-EXP book
 ‘I have not bought books (before).’
 c. **Ngo5 m4 mai5-gwo3 syul*
 I not buy-EXP book
 Intended: ‘I have not bought books (before).’

The puzzle has received considerable attention in the Mandarin literature, and the Mandarin negation system has been interpreted as one which has the two standard negators distributed according to aspectual specification: *méi(yǒu)* for perfectives and *bù* as the ‘elsewhere’ strategy. Indeed, Li & Thompson (1981: 415) have described in the grammar that *bù* is “the most general and neutral form of negation”. This paper explores the syntax of Chinese negation and its interaction with aspect from a new perspective, based on the data from four Chinese varieties, namely Beijing Mandarin (BM), Taiwan Mandarin (TM), Hong Kong Cantonese (HKC) and Gaozhou Cantonese (GZC) which is an under-studied Cantonese variety. To anticipate, the data from GZC will showcase a Chinese variety which only has one standard negator, *mau5* ‘not’, yet still displays the same aspectual restrictions observed in the Mandarin varieties and HKC where two standard negators are present. The discovery necessitates a new formal analysis which is more typologically generalisable.

The paper is structured as follows. The remainder of section 1 will briefly review how previous analyses of Chinese negation have treated aspectual restrictions as a kind of ‘division of labour’ between negators as skewed by the two-negator system in Mandarin, and then present data from GZC to demonstrate how a system with only one standard negator can

still display the same aspectual restrictions as Mandarin *méi(yǒu)*. Sections 2 through 4 take steps to lay out a new proposal. In section 2, I argue that negators of the class of Mandarin *méi(yǒu)*, HKC *mou5* and GZC *mau5* are standard negators which reverses the truth value of the proposition by denying the existence of the situation encoded by the predicate. Section 3 will introduce Ramchand's (2008) framework of aspect and her proposal that aspect marks definiteness in the verbal domain. Section 4 then follows that line of argument to demonstrate how aspectual definiteness can account for of the negation-aspect compatibility seen in Mandarin and Cantonese varieties examined in this paper. Section 5 concludes the discussion.

1.1 Previous attempts on the puzzle

Negation in Chinese has been analysed in three main approaches, namely morphological alternation, scope sensitivity, and aspectual selection. What these three approaches share in common is the presumption of a Mandarin-style negation system where there are two standard negators, and the assumption that these two negators are in complementary distribution to account for their compatibility and incompatibility with perfectivity respectively. While these previous analyses are insightful towards Mandarin negation, new empirical data and broader typological examination would justify a more cross-linguistically generalisable approach which is not grounded on any of the above assumptions.

Advocation of a morphological connection between Mandarin *bù* and *méi(yǒu)* began in Wang (1965), where the first formal analysis of the Chinese negation puzzle was offered. Wang claimed that *bù* and *méi* are two morph-phonological realisations of the negator, their distribution is determined by the absence and presence of a perfective marker (experiential aspect included) respectively. Wang further suggested that *yǒu* 'have' in *méi(yǒu)* and perfective *le* are also morphological alternants of the same perfective morpheme, and the experiential marker *guo* is a contracted form of *yǒu-guò*. The idea that Mandarin *méi(yǒu)* is morphologically complex and decomposable, and that *yǒu* 'have' in *méi(yǒu)* and *le* are allomorphs have been explicitly or implicitly adopted in subsequent studies (cf. Chao 1968; Teng 1973; Teng 1974; Huang 1988; Lin 2003). Challenges, nonetheless, have been raised regarding Wang's morphological approach. Precisely, if negation is spelt out as *méi* when *bù* is followed by *yǒu*, then the prediction follows that whenever *méi(yǒu)* is the appropriate negator, the sentence must be marked by one of these two aspects. However, *méi(yǒu)* can sometimes negate imperfective sentences as in (6), and it is hard to justify any postulation of *yǒu* being (covertly) present even in imperfective aspect.

- (6) a. %*Ta* *meiyou* *zai* *shuohua*
 he not-have PROG say.speech
 'He wasn't talking.' (Ernst 1995)
- b. *Ta* *meiyou* *bi-zhe* *yanjing*
 he not-have close-CONT eyes
 'He did not have his eyes closed.' (Teng 1973: 21)

Further, Li & Thompson (1981: 434-438) and Li (2007) have argued that, if morphological alternation between *yǒu* and *le* is valid, it would predict that all sentences negated by *méi(yǒu)* have an affirmative counterpart where perfective *le* is present. The ungrammaticality of (7) which is the would-be affirmative counterpart of (6b) refutes this.

- (7) **Ta bi-zhe-le yanjing*
 he close-CONT-PFV eyes
 Intended: ‘He has his eyes closed.’

A second approach analyses the negation-aspect interaction in Chinese from the point of view of *bù* and its incompatibility with perfective and experiential aspect. This approach, introduced in Huang (1988), considers the puzzle from a semantic angle in terms of scope. Huang (1988) proposed that *bù* always attaches to the first verbal element that follows it, and hence takes narrow scope over the verb. This is known as Principle P as stated below.

- (8) Principle P: The negative morpheme *bù* forms an immediate construction with the first V^0 element following it (Huang 1988: 284).

Principle P makes two important predictions. First, it predicts that any co-occurrences of *bù* with perfective *le*, experiential *guo*, or resultative (or manner-modifying) *de*-phrases would be ill-formed because of semantic anomaly. Huang suggested that where both *bù* and *le* are present in the structure (i.e., *bù V le*), the negation scope will be $[[bù-V]-le]$. Since *bù* and *V* form an immediate constituent and negation happens prior to the attachment of the perfective suffix, by the time *le* attaches to the verb, the negated verb already denotes a non-event – an event that does not exist. And since *le* and *guo* must modify a realised event, semantic anomaly and apparent incompatibility are produced as in (9).

- (9) a. **Wo [[bù mai]-le] shu*
 I [[not buy]-PFV] book
 Intended: ‘I didn’t buy books.’
 b. **Wo [bù mai]-guo shu*
 I [not buy]-EXP book
 Intended: ‘I haven’t bought books before.’

Secondly, Huang adopts the morphological analysis in Wang (1965) by taking *méi(yǒu)* as *bù*-AUX where *méi* is the alternant form for *bù*, and *yǒu* is the perfective auxiliary in complementary distribution with *le*. In structural terms, Huang suggests that *méi(yǒu)* is base-generated higher than *bù* in INFL since *yǒu* is an aspectual auxiliary; (10) illustrates the structure when *méi(yǒu)* and experiential *guo* co-occur.

- (10) [_{IP} *tamen* [_{INFL} *mei you*] [_{VP} [_V *pian-guo*] *Lisi*]]
 they not have cheat-EXP Lisi
 ‘They have not cheated Lisi.’ (based on Huang 1988)

The Principle P approach is not without limitations. For instance, Huang (1988) did not provide any independent evidence for the $[[bù-V]-le]$ structure which is argued to produce semantic anomaly, apart from a few examples where new negators are formed by the compounding of negation and an auxiliary, such as, *bù-yòng* ‘not-need’ to *béng* ‘needn’t’, *bù-yào* to *bié* ‘don’t’, and presumably *méi(yǒu)* < *bù-yǒu* ‘not have’. The main challenge to Principle P is the fact that adverbials can appear between *bù* and the verb as in (11), which questions the claim that *bù* and V^0 form an immediate constituent.

- (11) a. *Ta bu [zai jia] [da sheng de] chang-ge*
 he not at home big sound DE sing-song
 ‘He doesn’t sing loudly at home.’ (Ernst 1995: 675)
- b. *Xiaoming bu [hen kuaile de] tan gangqin*
 Xiaoming not very happy DE play piano
 ‘Xiaoming doesn’t play the piano happily.’ (ibid.: 676)

This observation has led Ernst (1995) to argue that *bù* is not a verbal clitic but a proclitic that unselectively attaches to the nearest host. Nevertheless, Lee & Pan (2001), who also resort to scope sensitivity for negation-aspect compatibility, have dismissed the idea that *bù* cliticizes (or attaches) to either the verb or the nearest host. They argued that *bù* is not a clitic but a focus-sensitive operator with a tendency to negate the following word (‘adjacency tendency’ in their terminology). Lee and Pan thus proposed that incompatibility between *bù* and perfective *le* or *de*-phrases can be remedied by an appropriate focus in the sentence (11).¹

- (12) *Zhangsan guyi bu ba [suoyou]^f de lan*
 Zhangsan deliberately not BA [all] DE rotten
pingguo dou reng-le, weile re ni shengqi
 apple all throw-PFV for make you angry
 ‘Zhangsan deliberately did not throw away ALL rotten apples, so as to make you angry.’ (Lee & Pan 2001: 709)

The third approach which is commonly adopted in contemporary analysis of Chinese negation is the aspectual selection approach. The core argument of this approach is that the distribution of *bù* and *méi(yǒu)* in Mandarin as well as the negation-aspect compatibility observed can be captured by the aspectual requirement of the negators. Different proponents make different suggestions on the aspectual feature(s) that the negators select for or require: boundedness for Ernst (1995), stativity for Lin (2003), and Li (2007) offers the most elaborate account involving the agreement of four aspectual features between the aspect markers and the negators. Precisely, Ernst proposed that *bù* has an unboundedness requirement on its complement while *méi* selects for the contrary. Ernst argues that *bù*, as a negative adverb, can be generated in two positions: spec-AuxP and spec-VP as in (13).

- (13) [_{AuxP} [Neg1] Aux [_{VP} [Neg2] V...]] (based on Ernst 1995: 700)

In general, *bù* is base-generated in spec-VP, but Ernst argues for two conditions under which *bù* may be generated in spec-AuxP instead: (i) there is an overt aspect marker (perfective *yǒu* and progressive *zai*) or a modal; or (ii) an empty Aux⁰ has an aspectual feature ‘strong’ enough to be the host of *bù*, *a la* Huang (1988). Then following ‘naturally’ from its inherent aspectual requirement, *bù* cannot co-occur with any Asp head which is “either inherently perfective (i.e. *yǒu* ‘have’) or hosts a perfective suffix (i.e. *le* or *guo*)” (Ernst 1995: 695). Therefore, when *yǒu* is present, *méi* is attached to *yǒu* as a prefix, assuming with Wang

¹ Note, however, that all the exceptional cases cited in Lee & Pan (2001) are either conditionals or interrogatives, and they are almost never mono-clausal. Therefore, the exceptional negation patterns found in those instances may not be comparable cases to the simple negative declaratives which Huang and Ernst are accounting for. Since the focus of this paper is mainly on negation by the likes of *méiyǒu*, a thorough evaluation on the structural status of *bù* will have to be reserved for future discussion.

(1965) that *méi* is a morphological alternant of *bù* somehow specialised for that purpose. In a similar vein, Lin (2003) argues that *bù* selects for stative situations which require no input of energy, and *méi(yǒu)* selects for eventive situations. Finally, Li (2007) has analysed the negation-aspect compatibility in terms of feature checking between the negators and the aspect markers. Similar to previous accounts, *méi* has been analysed as a negative prefix on the aspect auxiliary *yǒu* ‘have’. Li then postulates four aspectual features which *bù*, *méi(yǒu)* and the aspect markers are argued to inherently possess: [telic], [stative], [progressive], and [resultative]. Different negators and aspect markers have different values specified for these four features (positive [+], negative [–], or neutral [o]), and only the negator and aspect that contain no conflicting feature specifications are compatible with each other. Technically, however, Li (2007) has not provided much independent evidence to justify the features that she claims to exist intrinsically in the negators and the aspect markers. For instance, it has been proposed that perfective *le* presents bounded situations, so when *le* appears with accomplishments, the natural interpretation of the situation is completion. Consequently, perfective *le* is assumed to carry a [+telic] feature. However, telicity concerns the presence of a natural final endpoint to the situation, but what perfective aspect does is to set an arbitrary boundary to the situation thus transforming the situation from an atelic situation to a telic situation. In other words, it is the derived situation that is telic not the aspect marker itself. Therefore, though the aspectual feature checking approach may be convenient in accounting for negation-aspect compatibility, the justification for the features is still pending.

1.2 The need for a new formal analysis

Existing proposals examined so far have been successful in accounting for the Mandarin negation system to various extent. The predictions made for Mandarin have been found largely applicable to Hong Kong Cantonese (HKC) data, where there are also two standard negators in the system – *m4* ‘not’ and *mou5* ‘not.have’, resembling Mandarin *bù* and *méi(yǒu)* respectively (Lam 2018). Generalisation to negation systems with a different composition than the familiar two-negator Mandarin-like system, however, has been met with considerable challenge.

Evidence from Gaozhou Cantonese (GZC)² presents a clear case where aspectual sensitivity observed in Mandarin is not necessarily connected to presence of one more standard negator and the division of labour between them. Precisely, GZC with only one standard negator, *mau5* ‘not’ (as in 14), still shows the same aspectual restriction when *mau5* appears with perfective aspect *de6* (15) and full compatibility when appearing with experiential aspect *gwo3* (16), an observation which is highly resemblant to Mandarin *méi(yǒu)*. Therefore, new empirical data from GZC prompts for a re-understanding of the mechanism behind the negation-aspect (in)compatibility, and a new analysis which can be generalised for both systems with multiple standard negators (such as, the Mandarin varieties and HKC) and those which has only one (as attested in GZC).

² Gaozhou Cantonese is a variety spoken in Maoming county located in the southwestern part of Guangdong Province of the PRC, with an estimate of around 1.1 million speakers based on the 1993 census reported in the 2006 *Gaozhou Chronical* (Zhang 2006).

- (14) *Ngo5* ***mau5*** *mai5* *syu1*
 I **not** buy book
 ‘I do not buy books.’
- (15) **Ngo5* ***mau5*** *mai5-de6* *syu1*
 I **not** buy-PFV book
 Intended: ‘I did not buy books.’
- (16) *Ngo5* ***mau5*** *mai5-gwo3* *syu1*
 I **not** buy-EXP book
 ‘I have not bought books (before).’

Nevertheless, it is important to note that the position of negation bearing a close relationship with temporality is not novel (see Zanuttini 2001 and Miestamo 2005). The presence of paradigmatic asymmetry between affirmatives and negatives has been well-documented in Miestamo (2005), in the sense that, it is not typologically uncommon to find fewer grammatical distinctions made in negatives than in their affirmative counterparts. The data presented in this section demonstrates that the four varieties of Chinese concur with typological description in Miestamo (2005) in having fewer aspectual distinctions under negation. Given that aspect is the most prominently and overtly formalised temporal category in Chinese, it is unsurprising to see aspect as the temporal system to which negation is connected in the Chinese varieties examined.

Miestamo (2005) offers a general functional explanation for affirmative-negative paradigmatic asymmetry. He suggests that because negatives mostly appear in contexts where the corresponding affirmative is somehow present or supposed, the grammatical information expressed in the affirmative may not be necessary in the negative. This functional preference gradually conventionalised into formal restrictions over what grammatical categories can appear in the negative. However, the functional account fall short in account for two important observations in Chinese negation. First, it does not capture the difference in aspect compatibility demonstrated by ‘not’ and ‘not have’ negators. Second, the functional and typological accounts, though discussed relative tendency for perfective or imperfective aspect to be suppressed under negation, are unable to account for the clear-cut contrast in negation compatibility between the two types of perfective aspect, namely perfective and experiential aspects. Therefore, this paper argues that a new and formal account is necessary which takes into account the difference between perfective and experiential aspect as well as the strikingly similar aspectual restriction observed across the four Chinese varieties investigated in this study. The focus of this paper would be on standard negators of the class of Mandarin *méi(yǒu)* (including HKC *mou5* and GZC *mau5*) and on the contrast between perfective and experiential aspects in co-occurring with negation.

2. A closer look at *yǒu/jau5* ‘have’

Research on Chinese negation since Wang (1965) has established a general understanding that the auxiliary *yǒu* ‘have’ is a perfective marker in Mandarin. The idea is based on the observation that *méi(yǒu)* and the postverbal perfective marker *le* cannot co-occur. With Wang’s argument that *méi(yǒu)* is morphologically decomposable into *méi* the negator and *yǒu* the perfective marker, the assumption that *yǒu* ‘have’ is a perfective marker has been

used to explain why *méi(yǒu)-le* is ill-formed – it is ruled out by their allomorphic relation. This line of argument, however, is circular in itself, and no independent evidence has been used to show that *yǒu* ‘have’ is a perfective marker in affirmative contexts; the unacceptability of *méi(yǒu)-le* has been the only justification for any connection between *yǒu* ‘have’ and perfectivity. Therefore, the purpose of this section is to re-examine the nature of *yǒu* ‘have’ (and *jau5* ‘have’ in Cantonese). This re-examination will bring forth a new understanding to the nature of standard negators such as *méi(yǒu)* and *mou5*.

The first and foremost fact about *yǒu/jau5* ‘have’ is that it is not only an auxiliary that may appear in negative sentences but it is primarily a lexical verb meaning ‘to exist’ and ‘to possess/own’. All four varieties under investigation actively use ‘have’ as the lexical verb meaning ‘to exist’ and ‘to own/possess’. Cross-linguistic variation begins with the use of ‘have’ as an auxiliary instead of a lexical verb. In TM and HKC, sentences like (17) are very common, but they are unacceptable in BM or GZC.

- (17) a. *wo you qu Beijing* (TM)
 I have go Beijing
 ‘I did go to Beijing’ or ‘I have been to Beijing.’
 b. *ngo jau hui Bakging* (HKC)
 I have go Beijing
 ‘I did go to Beijing’ or ‘I have been to Beijing.’

The literature has often suggested that ‘have’ is a perfective marker in these cases. However, empirical evidence from Taiwan Mandarin presents a different picture. The data considered are taken from the Sinica Corpus spoken data – representative of TM – with genres specified for AV materials and interviews for more colloquial speech. There is a total of 3770 entries for the keyword search for 有 *yǒu* ‘have’. Among the first one thousand entries, there are 50 instances of *yǒu* followed by a verb (i.e., *yǒu* as an auxiliary), with and without aspect marking as exemplified in (18-20).

- (18) a. *xianzai mai diannao jihu dou you mai*
 now buy computer almost all have buy
guangdieji a!
 CD-ROM SFP
 ‘Nowadays, most of those who buy computers would also buy CD-ROM!’
 b. *Jiaqi wo gen ni shuo, xia xueqi you kai*
 Jiaqi I to you say next term have open
yi ge qiguaide tongshi ke
 one CL strange liberal.studies course
 ‘I’ll tell you what, Jiaqi, there will be a strange liberal studies course opened next term.’
 c. *ni you hen pianji*
 you have very extreme
 ‘You were/have been very radical.’

In the examples above, *yǒu* appeared with verbal or adjectival predicate but the temporal structure of the sentences is not necessarily perfective. Perfective viewpoint presents situations as complete with both initial and final endpoints (Smith 1997), and, specifically in

Chinese, perfective *le* indicates the termination of the situation denoted by the predicate, whereas, in English, perfective (realised as past tense) expresses both the termination and completion of the situation as illustrated in (19-20).

- (19) *wo* *zuotian* *xie-le* *xin,* *keshi* *mei* *xie-wan*
 I yesterday write-LE letter but not write-finish
 ‘I wrote a letter yesterday but didn’t finish it.’ (ibid.: 265)
- (20) a. #Lily swam in the pond and she may still be swimming.
 b. #Mrs. Ramsay wrote a letter, but she didn’t finish writing it.

Consider the TM examples in (18) again, if *yǒu* is a perfective marker as Wang (1965) has suggested, then the expectation would be that those sentences can be replaced by *le* without any change in meaning, as presented in (21) below.

- (21) a. *xianzai* *mai* *diannao* *jihu* *dou* *mai-le*
 now buy computer almost all buy-PFV
 guangdieji *a!*
 CD-ROM SFP
 ‘Nowadays, most of those who buy computers would also have bought CD-ROMs!’
- b. *Jiaqi* *wo* *gen* *ni* *shuo,* *xia* *xueqi* *kai-le*
 Jiaqi I to you say next term open-PFV
 yi *ge* *qiguaide* *tongshi* *ke*
 one CL strange liberal.studies course
 ‘I’ll tell you what, Jiaqi, there will be a strange liberal studies course opened next term.’
- c. *ni* *hen* *pianji* *le*
 you very extreme PFV
 ‘You have become very radical.’

The difference between *yǒu* and *le* may be very subtle in (18b) and (21b), but is clear in the other two examples. In (18a), the sentence expresses the possibility that people would buy computers and CD-ROMs simultaneously, while in (21a) with perfective *le*, the sentence now expresses the idea that people who buy computers would have bought CD-ROMs, with a possibility that the event of buying CD-ROMs precedes the buying of computers. The sentence in (18c) and its counterpart in (21c) shows more substantial variation: the sentence in (18c) refers to the state that the subject was in in a recent past (i.e. ‘You have been very radical just now’), but the sentence in (21c) has a change-of-state meaning, that is, the subject ‘you’ has turned radical, which was not true before. Indeed, the corpus data shows instances of *yǒu* and *le* co-occurring in the same sentence such as (22), which could indicate two possibilities: (i) *yǒu* and *le* are not allomorphs; or (ii) *yǒu* and *le* are allomorphs and in a concord relation. The discussion above rules out the second possibility.

- (22) *yiqian* *shi* *you* *he-le* *hui* *lian* *hong*
 past be have drink-PFV will face red
 ‘In the past, (I) indeed would blush after drinking.’ (TM; Sinica Corpus)

HKC presents a similar case. Law (2014) mentions that, although *jau5* is a perfective marker, it can appear with the experiential viewpoint *gwo3*, as in (28).

- (23) a. *ngo jau zou je*
 I have do thing
 ‘I worked.’ (ibid.: 269)
- b. *ngo jau zou-gwo je*
 I have do-EXP thing
 ‘I have worked before.’ (ibid.)

I suggest that *yǒu/jau5* ‘have’ in TM and HKC can be an auxiliary expressing existence that appears in both affirmative and negative contexts, while the auxiliary *yǒu* in BM only appears under negation. Importantly, the concept of existence of the situation encoded by the auxiliary *yǒu/jau5* ‘have’ is a separate concept from perfectivity and a more fine-grained understanding of perfectivity is necessary. Precisely, while perfectivity indicates termination of the situation (and in some languages, its completion as well), it necessarily entails the existence of the situation (i.e. the existential commitment). When an auxiliary encodes the existence of a situation, the termination of the situation (i.e. the final endpoint) is left unspecified. In other words, completive, perfective and existence are in an entailment relation: completive denotes completion and thus entails termination and existence of the situation, termination denotes the end of the situation and hence entails its existence. The term ‘perfective’ may vary cross-linguistically in terms of whether it denotes both termination and completion or only termination (though completion may be inferred), but both would necessarily entail existence. In HKC, for instance, *jau5* as an auxiliary indicates the existence or realisation of a situation, the perfective viewpoint marker *zo2* signals its termination, and the completive marker *jyun4* ‘finish’ encodes completion. Example (24) illustrates these three levels of specification.

- (24) Three levels of event specification (HKC)
- a. [Situation: at the dinner table, the host asks if you have had any meat]
 Answer:
ngo jau sik jyu aa
 I have eat fish SFP
 ‘I have had fish’ or ‘I did try the fish.’
- b. [Situation: a friend asks you what you had for lunch]
 Answer:
ngo sik-zo jyu
 I eat-PFV fish
 ‘I ate fish.’
- c. [Situation: you are at a wedding banquet with many dishes served in sequence, and you are telling your friend how the banquet is proceeding]
ngo sik-jyun jyu laa
 I eat-finish fish SFP
 ‘I have finished eating fish.’

Taking the conclusion that auxiliary *yǒu/jau5* ‘have’ encodes existence but not perfectivity,

the next issue is how to account for the cross-linguistic variation seen in the status of *yǒu/jau5*. The solution lies in the connection between lexical ‘have’ and auxiliary ‘have’. In a nutshell, I suggest that auxiliary ‘have’ is grammaticalised from lexical ‘have’, with lexical *yǒu/jau5* ‘have’ denoting the existence of an entity (i.e., its argument), while auxiliary ‘have’ encodes the existence of the situation denoted in the predicate as an abstract entity, contra to what has been attested in Germanic and Romance languages where the verb ‘to have’ grammaticalized from a verb of existence and/or possession to a perfect auxiliary.

Establishing ‘have’ as an existential auxiliary in Chinese varieties distinct from its lexical use leads to two crucial implications. First, if *yǒu/jau5* ‘have’ is an existential auxiliary, and if existence and perfectivity though related by entailment are independent concepts, then the traditional assumption that the co-occurrence of *yǒu* and *le* is prohibited by rules of morphological alternation cannot be true. Furthermore, accounts that employ the *yǒu=le* argument as an explanation for the incompatibility between *méi* and *le* are also challenged. In that case, a new analysis is called for to explain the incompatibility between *méi* and *le*; indeed, the issue extends to the Cantonese varieties as well, HKC *mou5* and the perfective marker *zo2*, and GZC *mau5* and *de6* cannot co-occur. Second, if *yǒu/jau5* ‘have’ is not a perfectivity auxiliary, it would not be projected in Asp^0 , and since Mandarin *méi(yǒu)* and HKC *mou5* are generally understood to be generated in the same Asp^0 as *yǒu/jau5* as a consequence of these negators being a compound of negation adjoining to *yǒu/jau5*, the nature of *méi(yǒu)* and *mou5* should be reconsidered.

Precisely, this paper proposes that Mandarin *méiyǒu* and HKC *mou5* are negators of non-existence, while GZC *mau5* is a pure propositional negator. Consider the data involving the negation of predicates denoting different situation types (a.k.a. Aktionsart) asin the bare negatives³ in (25-26). The empirical findings are summarised in Table 1.

- (25) Negation of stative sentences
- | | | | | | | | |
|----|---|------------|-------------------------------|-------------------|-------------|------------|-------|
| a. | <i>wo</i> | <i>(bu</i> | <i> ^{??}mei-you)</i> | <i>zhidao zhe</i> | <i>jian</i> | <i>shi</i> | (BM) |
| | <i>wo</i> | <i>(bu</i> | <i> *mei-you)</i> | <i>zhidao zhe</i> | <i>jian</i> | <i>shi</i> | (TM) |
| | I | not | not-have | know this | CL | event | |
| | Intended: ‘I do not know about this event.’ | | | | | | |
| | ‘I did not know about this event.’ | | | | | | |
| b. | <i>ngo</i> | <i>(m</i> | <i> ^{??}mou)</i> | <i>zidou li</i> | <i>gin</i> | <i>si</i> | (HKC) |
| | I | not | not.have | know this | CL | event | |
| | Intended: ‘I do not know about this event.’ | | | | | | |
| | ‘I did not know about this event.’ | | | | | | |
- (26) Negation of activity sentences
- | | | | | | |
|----|----------------------------|------------|--------------------------|----------------|-------|
| a. | <i>wo</i> | <i>(bu</i> | <i> [?]mei)</i> | <i>paobu</i> | (BM) |
| | <i>wo</i> | <i>(bu</i> | <i> mei)</i> | <i>paobu</i> | (TM) |
| | I | not | not.have | run | |
| | Literally: ‘I do not run.’ | | | | |
| | ‘I did not run.’ | | | | |
| b. | <i>ngo</i> | <i>(m</i> | <i> mou)</i> | <i>paaubou</i> | (HKC) |
| | I | not | not.have | run | |
| | lit. ‘I do not run.’ | | | | |

3 Bare negatives refer to negative declarative sentences without aspectual marking or adverbial modification.

‘I did not run.’

Table 1. Negation-situation type compatibility in Chinese varieties.

	BM		TM		HKC		GZC
	<i>bù</i> ‘not’	<i>méi(yǒu)</i> ‘not-have’	<i>bù</i> ‘not’	<i>méi(yǒu)</i> ‘not-have’	<i>m4</i> ‘not’	<i>mou5</i> ‘not.have’	<i>mau5</i> ‘not’
State [+psych]	✓ _{4.8}	? _{3.4}	✓ _{4.9}	? _{4.4}	✓ _{4.6}	? _{4.2}	✓ _{4.6}
State [–psych]	✓ _{5.0}	?? _{2.5}	✓ _{5.0}	?? _{2.4}	✓ _{4.6}	?? _{2.6}	✓ _{4.7}
Activity	✓ _{4.8}	? _{4.4}	✓ _{5.0}	? _{4.3}	□ _{4.6}	✓ _{4.7}	✓ _{4.6}
Accomplishment	? _{4.1}	? _{4.1}	✓ _{4.6}	✓ _{4.8}	? _{4.2}	✓ _{4.5}	✓ _{4.5}
Achievement	?? _{1.6}	? _{4.4}	?? _{1.6}	? _{4.4}	?? _{2.4}	✓ _{4.7}	? _{3.9}
Semelfactive	? _{3.9}	? _{4.5}	? _{4.0}	✓ _{4.7}	? _{4.3}	✓ _{5.0}	✓ _{4.6}

Table 1 underlines an important finding that is: clear-cut negator selection requirement is only found in two types of predicates, non-psych states and achievements; the former is only compatible with ‘not’, and the latter only with ‘not have’. All other situations can be negated by either negator with little, if any, grammaticality consequence in BM, TM, and HKC. The findings thus prompts for an explanation for how the negators may be distinguished where both are grammatically acceptable. Follow-up interviews with BM, TM, and HKC speakers⁴ show a consistent picture that the difference between *bù/m4* ‘not’ and *méi(yǒu)/mou5* ‘not have’ is a semantic one when they appear in activity, accomplishment and semelfactive sentences. This meaning contrast has been mentioned in passing in Li & Thompson (1981), where they suggest that, with a stative predicate, *bù* simply denies the existence of the state; however, with an activity “over which the subject has some control”, negation with *bù* implies refusal and unwillingness of the subject to take part in the event, so *méi(yǒu)* must be used if the occurrence of the event is to be negated (ibid.: 423). Native speakers consulted have made a similar remark that negation with *méi(yǒu)/mou5* ‘not have’ always denies the realisation of the situation (i.e., the situation did not happen), while negation with *bù/m4* ‘not’ consistently generates a non-volitional or non-habitual reading (i.e., the speaker does not intend to or is not in the habit of taking part in the situation described).

Moreover, GZC with the single standard negator, not only has *mau5* compatible across all situation types, but also demonstrates the interesting semantic pattern that, for all situation types, the negative form marked by *mau5* can yield both a non-existence and a non-volitional/habitual reading; (27) illustrates the ambiguity and Table 2 summarises the cross-linguistic pattern discussed.

- (27) *Ngo mau sik juk*
 I not eat meat
 (i) ‘I did not eat meat.’ (e.g., I did not eat meat last night)
 (ii) ‘I do not eat meat.’ (e.g., I am a vegetarian)

4 At the interview, speakers were asked to (i) specify if any of these ‘not’/ ‘not-have’ pairs of bare sentences are both acceptable; (ii) where they are, to explain the meaning of each sentence (i.e. the sentence with ‘not’ and the sentence with ‘not-have’); and (iii) to rate the acceptability of some bi-clausal sentences on a scale of 1-5. A total of 7 Beijing Mandarin speakers, 6 Taiwan Mandarin speakers, 5 Hong Kong Cantonese speakers, and 3 Gaozhou Cantonese speakers took part in this interview, all of whom participated in the online acceptability judgment task.

Therefore, across the four Chinese varieties explored, the three negators namely *méiyǒu* in Mandarin varieties, *mou5* in HKC and *mau5* in GZC are all associated with existence – precisely, they are all involved in denying the truth of the affirmative proposition by stating that the situation described did not take place, i.e., non-existence of the situation.

3. Aspect marks verbal definiteness

Having established empirically that *méiyǒu*, *mou5* and *mau5* are standard negators associated with non-existence, the remaining question is how that existential nature of the negators may account for the contrastive compatibility with experiential and perfective aspects attested in the four Chinese varieties examined. This paper argues that the answer lies with the concept of definiteness. Precisely, following Ramchand (2008a, b), Chinese aspects are suggested to also encode verbal definiteness. With the negators' non-existential nature, anomaly is expected when occurring with 'definite' aspect due to presupposition effects. To understand the relation that aspect bears to definiteness, a basic understanding of the nature of aspect is in order. Therefore, this section begins with an introduction to the nature of aspect and how it is formally conceptualised in current theories. Then the discussion will move on to examine how the concept of definiteness can be applied to the temporal system, and how aspect can encode definiteness in Chinese particularly.

3.1 Aspect and verbal definiteness

Traditionally, tense and aspect have been conceptualised as temporal relations between two times. In Reichenbach's (1947) 'Tenses of verbs', temporality is understood in terms of the relation between three time points: point of speech (S), point of the event (E), and point of reference (R). Aspect, on the other hand, is represented by the relation between E and R: anterior, a.k.a. perfect, ($E < R$), simple ($E = R$), and posterior ($R < E$). This three-point temporal relation is later re-interpreted in Zagana (1990) and Stowell (1993) and subsequent studies to capture Reichenbach's semantic representations the GB framework. In these syntactic accounts, Tense and Aspect are analysed as dyadic predicates which head maximal projections in the clause, i.e. TP and AspP, and they take time-denoting phrases – phrases encoding the different time points in the traditional semantic framework – as arguments.

Stowell (1993, 2007a, b) suggests that Tense is a two-place temporal ordering predicate expressing three possible meanings which specify the relation between utterance time (UT-T) – comparable to Reichenbach's reference time, and typically the utterance time is the same as the reference time in a main clause – and the event time (EV-T). Aspect has been argued to mirror Tense in being a dyadic spatiotemporal predicate and can be realised syntactically as having the predicate in Asp^0 project as AspP and take two time-denoting constituents as arguments. Klein (1995) defines Aspect as a relation between Event Time and Assertion Time (AST-T). Specifically, Aspect relates Event Time to Assertion Time, and Tense relates Assertion time to Speech Time. The relation between Speech Time and Event Time is always mediated by Assertion Time, in a way reminiscent of how Reference Time (R) in Reichenbach's theory mediates between Event Time (E) and Speech Time (S). Demirdache & Uribe-Etxebarria (2000) have followed previous studies in analysing Tense and Aspect as dyadic spatiotemporal predicates, but unified the structure of Tense and Aspect. They suggest that Asp^0 takes VP as its internal argument which denotes Event Time (EV-T), and takes a reference time equivalent to the Assertion Time (AST-T) as its external argument. Tense, on

the other hand, takes the AST-T as its internal argument, and another reference time which is identical to the Utterance Time (UT-T) as its external argument. Note that although both Tense and Aspect take a ‘reference time’ as their external argument, what that ‘reference time’ refers to varies depending on which temporal category it is an argument of.

In a way, the structural analysis in Demirdache & Uribe-Etxebarria (2000) bears a resemblance to the traditional semantic theory of Tense and Aspect, especially with the concepts of having three different time-denoting phrases for Utterance/Speech Time, Assertion Time (sometimes referred to as reference time) and Event Time, and to postulate their relations by precedence and containment. Ramchand (2008a, b) puts forward an alternative understanding of Aspect. In her theory, the assertion time is always within the ‘time line’ of the event; different aspectual markers would have different specification (e.g., at the onset of the event, towards the final endpoint of the event) and different degree of specification (e.g., it can be a specific time moment, or any random moment within the run time of the event) concerning the position of the asserted time point along the event time line. With such a departure from the traditional interpretation of the relationship between assertion time/reference time and event time, the characterisation of, for instance, perfective aspect as referring to a time outside (precisely, after) the event time, and imperfective aspect as asserting a time within (or overlapping with) the event time becomes inappropriate. In its stead, Ramchand proposes that the perfectivity-imperfectivity division should be interpreted as whether the aspectual marker expresses a specific time moment in the time line of the event: if it does mark a specific time moment, then it is perfective, otherwise it is imperfective. In actual implementation, Ramchand suggests that Asp^0 is the functional head for assertion time, hence it is the functional category which introduces the time variable (t) in its specifier position, binds the event variable (e) which is in the highest specifier position in the VP shell, and most importantly, anchors/relates the event variable to the time variable by a temporal trace function $\tau(e)$ (cf. Krifka 1992). The precise relationship between the two variables depends on the content of the particular Aspect head, but, in its simplest form, the relation between the time variable t and the event variable e is $t \in \tau(e)$, which can be read as: the reference time (t) of the predication is one of the time moments in the temporal trace function of e (Ramchand 2008a: 1701).

Importantly, unlike Giorgi & Pianesi (1997) and Demirdache & Uribe-Etxebarria (2000), Ramchand does not assume the event denoted by the predicate to provide a particular time, the time variable is only introduced by Asp^0 . Therefore, in Ramchand’s model, the first functional projection that provides temporal anchoring to the event structure in νP is the Asp^0 where the time variable is introduced to establish a temporal relation with the internal constituency of the event. The TP (or IP) which embeds the $AspP$ will introduce another time variable and relate the ‘constructed reference time’ in $AspP$ to the speech time. In some sense, the hierarchical structure proposed in Ramchand (2008a, b) and the configuration in Demirdache & Uribe-Etxebarria (2000) present a constant picture in the interpretation of tense and aspect: aspect anchors the event to a constructed reference time, which in turn is anchored by tense to the time of speech in the discourse. However, the alternative view of the relation between assertion time and event time presented in Ramchand (2008a, b) carries an important implication which is a parallel between temporal reference and nominal reference, precisely, between perfectivity and definiteness; section 4 will elaborate on this idea and argue that definiteness is indeed encoded in Chinese aspect, which holds the answer to the interaction between negation and aspectual marking.

Ramchand (2008a, b) captures the perfective-imperfective dichotomy in terms of whether a

specific time point is referred to within the run time of the event; if it is, perfective aspect occurs. In fact, she proposes that “perfective events correspond to a *definite* assertion time/reference time AspP, whereas imperfective events correspond to an *indefinite* assertion time” (Ramchand 2008a: 1703). In other words, if an aspectual marker anchors the event to a specific time point in the event time line (*event temporal trace* in Ramchand’s terminology), it is not only perfective but definite. The result is an impression of some “discrete” temporal relationship. An indefinite aspect, on the other hand, does not anchor the event to any specific time point, so the assertion time can be any time point arbitrarily within the event time frame.

3.2 Aspectual definiteness in Chinese

The idea that aspect encodes definiteness is not completely novel. Empirically, evidence from historical change supports the claim that aspect and definiteness are related. Osawa (2007) has suggested that languages with a strong aspect system – for instance, languages which make systematic formal distinction between perfective and imperfective aspects – tend not to have articles in their nominal system. Historically, once a language loses its aspectual system, articles and the determiner system may emerge. The link there, Osawa suggests, is that both aspect and articles (and determiners in general) can determine the referentiality of nouns. When articles are absent in the system, morphological case distinctions and sometimes word order can function to make referentiality distinctions on the nouns when certain aspectual and/or Aktionsart conditions are met (Osawa 2007). Typologically, no language can do without either a D-system or a morphological case system. Chinese has been cited as an apparent exception and Osawa postulates word order and aspectual information as possible remedies for Chinese.

Consider the case of Chinese, a reasonable doubt concerning this aspect-as-verbal definiteness proposal is: could a language without nominal definiteness marking formalise definiteness in its verbal domain? The short answer is yes. Osawa (2007) points out that Chinese, Slavic languages, Indic languages, Gothic and Old High German are good examples for the kind of typological tendency she describes. Russian, for instance, does not have articles but it is a well-established example where verbal aspect and nominal determination display close interaction; Leiss (2007) and Ramchand (2008a) both postulate that perfective aspect in Russian is definite. In Russian, the combination of case and aspect marking creates definiteness effects on the object NP. On the one hand, NPs marked with accusative case in Russian receive an indefinite reading if the predicate is imperfective, but would be read as definite if the predicate is perfective; on the other hand, a genitive case-marked NP with perfective aspect, would produce a partitive effect on the NP. When negated, the scope of negation is strongly connected to the aspectual specification and the case morphology on the object (Basilico 2008).

Apart from case marking, word order can also create definiteness effects – termed as ‘iconic marking’ in Leiss (2007); Old Icelandic is a case in point. The topic position is found to be the base for definiteness effects on nominals and perfectivity effects on verbs, so that verbs in V1-position are perfectivized. Therefore, in terms of case marking and word order, perfectivity and definiteness seem to be closely connected in languages without an article system. The claim is that perfectivity is definiteness in the verbal domain and verbal definiteness is plausible even in article-less languages.

I argue that Chinese presents a third type of system for marking definiteness. The first type of system marks definiteness in the nominal domain by an article system; English is a clear

example of this type of languages. The second type of system lacks an article system but still marks definiteness on nouns by case morphology; Russian is a case in point where definiteness is indirectly expressed by the interaction of case and aspect morphology. The third type of system does not mark definiteness on nouns overtly (demonstratives aside) – both directly as by articles or indirectly by case⁵ – but express it only on the clausal level, either by word order as in Old Icelandic or by temporal categories such as aspect.

Literature on nominal determination has suggested four defining conditions of definiteness (Lyons 1999), namely:

- (i) the uniqueness condition: the definite noun phrase refers to the only entity which satisfies the description (relative to the particular context) (Russell 1905);
- (ii) the familiarity condition: there is a mutual understanding between the speaker and the hearer, and the definite noun phrase “calls up in the hearer’s mind the exact image of the individual that the speaker is thinking of” (Christophersen 1939: 28);
- (iii) the identifiability condition: a noun phrase is definite if the referent is locatable by the speaker and the hearer (Givón 1978); and
- (iv) the inclusiveness condition: a definite noun phrase refers to the totality of the object or mass in the context that satisfy the description (Hawkins 1978).

These conditions share certain connections, for instance, following Lyons (1999), familiarity can be a reason for the referent to be identifiable. Uniqueness, on the other hand, can be a special case for identifiability and inclusiveness; inclusiveness states that definite noun phrases refer to the totality of the set of entities that satisfy the description, and the uniqueness condition is fulfilled when that set is a singleton set, and since there is only one entity, in the given context, that fits the description, the entity referred to by the definite noun phrase should be identifiable by the speaker and the hearer. In other words, if the uniqueness condition is satisfied then the reference is undoubtedly definite; note that, logically, this does not exclude non-unique references from being definite, if they fulfil some of the other conditions for instance. Indeed, Ramchand (2008a, b) has defined definite aspect as asserting one specific, unique time point in the event time line; hence definiteness is uniqueness in Ramchand’s account. For the purpose of this study, I would also adopt the uniqueness approach to definiteness and based on such an understanding of definiteness, I follow Frege (1893, 1903) in representing uniqueness with the iota operator (ι) which “combines with an open sentence to give an entity-denoting expression, denoting the unique satisfier of that open sentence if there is just one, and failing to denote otherwise” (Partee 1987: 154). To illustrate, (28) show the logical form for the definite nominal description *the student* when it appears in a sentence.

- (28) **The student** is happy.
 = ιx [student(x) & H(x)]

Extending this semantic analysis of definite descriptions to definite reference in temporal relations, as the idea of definiteness in nominals is now extended to the verbal domain, then definite assertion time (or definite aspect) would mean an iota operator binding the time variable introduced by Asp, adopting Ramchand’s model, as in (29). Without the iota

⁵ It has also been argued in Cheng & Sybesma (1999) that classifiers in Chinese marks definiteness.

operator, the time variable in Asp is anchored to the event time line without specifying any particular time point, but just an arbitrary time moment.

(29) Definite assertion time/definite aspect

$\iota t \in \tau(e)$

(read as: ‘there is a unique t which is a member of the temporal trace function of the event e ’)

4. Aspectual definiteness and negation-aspect compatibilities

4.1 Formalising verbal definiteness in Chinese

The discussion on aspect and definiteness has established three facts, namely, (i) the notion of definiteness exists beyond the nominal domain, (ii) verbal definiteness is encoded in the aspectual system, and most importantly, (iii) verbal definiteness can be found in languages which do not have an article system for marking nominal determination. The last finding offers the possibility that verbal definiteness can be found in the Chinese varieties at hand and I will argue that this is indeed the case. Crucially, the importance of drawing connection between Chinese aspect and definiteness is not a mere discovery of definiteness encoding in the verbal domain of an article-less system, but that the definiteness that Chinese aspectual markers encode holds the key to the negation-aspect compatibility discussed in this paper, which has long been a controversial puzzle in Chinese syntax. This section is devoted to illustrating how verbal definiteness is encoded in Chinese aspect, and will show how verbal definiteness can provide a new perspective and a new answer to the Chinese negation puzzle.

In Leiss (2007) and Ramchand (2008a, b), perfectivity is definiteness, but the four Chinese varieties examined present some complication. The complication lies with the contrastive compatibility with negation shown in the two realisations of perfectivity – experiential and perfective aspect. I suggest that the perfective markers (Mandarin *le*, Hong Kong Cantonese *zo2*, and Gaozhou Cantonese *de6*) are definite, while the experiential markers are indefinite although it has been generally regarded as a type of perfect marker (Comrie 1976).

To elaborate, firstly, perfective aspect is definite, and it is the only aspect that express definite assertion time inherently and unambiguously. In Chinese, as in Russian, perfective aspect anchors the event denoted by the predicate to one specific, unique time point within the event time line. Since the perfective event is understood to be realised and terminated, it is plausible to assume the time point specified to be the final endpoint of the event time line (if the event is instantaneous, where the initial and final endpoints are virtually overlapping, then so would the time point specified by the perfective aspect, i.e., the initial endpoint and final endpoint as well as the assertion time are the same). Experiential aspect, on the other hand, is indefinite. The indefiniteness of experiential aspect has been mentioned in Comrie (1976) and Iljić (1987) in the sense that though experiential aspect is a type of perfect aspect, it indicates the event concerned to have taken place at least once up to the moment of speech. Therefore, experiential aspect denotes an event that (i) might not be completed or finished but has been realised as in (30), and (ii) is not a unique event but one instance of a class of occurrences as in (31) – the event of going to Tokyo has happened three times, but when the frequency is not overtly marked, the experiential sentence would state that the event of ‘going to Tokyo’ has taken place at least once.

(30) *wo kan-guo zhe bu xi danshi mei kan-wan*

- (31) I watch-**EXP** this CL movie but not watch-finish
 ‘I have watched this movie but didn’t finish it.’ (Mandarin)
ngo hui-gwo Dungging (saam ci)
 I go-**EXP** Tokyo **three times**
 ‘I have been to Tokyo three times.’ (HKC)

Therefore, while perfective aspect is definite and the logical form is as represented in (30), experiential aspect is indefinite. Experiential aspect denotes some time moment within the event time frame (it can be the final endpoint if the event is finished but not necessarily) and this reference time is before the speech time (i.e., a past time). The semantic representation in (32) summarises the properties of experiential aspect as being an assertion time marker denoting an event to be realized at least once in the past.

- (32) Experiential aspect: $\exists t \in \tau(e) \wedge t < t_s$
 (read as: there is a reference time (t) of the predication such that it is one of the time moments in the temporal trace function of e , and it is prior to the time of speech, t_s)

Indeed, Comrie (1976) has noted in passing that experiential aspect (a.k.a. experiential perfect) has been termed and interpreted as indefinite perfect or existential perfect. The latter analysis pinpoints the special property of experiential aspect as referring to events that are members of a kind rather than unique instances. In fact, the meaning in (31) can be expressed by the perfective marker *zo2* in HKC as in (33) with basically no change in meaning if the frequency adverb ‘three times’ is present, but when the frequency adverb is absent, the interpretation that the event is one of a class of occurrences will be lost in (33). Therefore, in short, experiential aspect marks the existence of at least one event that fulfils the description of the predicate while perfective aspect denotes a unique event that fulfils the description of the predicate.

- (33) *ngo hui-zo Dungging (saam ci)*
 I go-**PFV** Tokyo **three times**
 ‘I went to Tokyo three times.’ (HKC)

Crucially, the fact that experiential aspect, as a kind of perfect aspect, is indefinite shows that the generally assumed parallel between the perfective-imperfective division and the definite-indefinite dichotomy may not be that straightforward typologically.

4.2 Definiteness and Chinese negation-aspect compatibilities

With the empirical and theoretical evidence in support of the proposal that verbal definiteness is present in Chinese varieties and is encoded in the various aspectual markers, I would further propose that the definiteness of the aspectual markers is what determines their compatibility with standard negation: only indefinite aspect is compatible with negation. The proposal is based on the presupposition effect observed in definite expressions in the nominal domain and argues that the same effect also applies to the clausal level due to the existential nature of the Chinese negators concerned.

The discussion of the link between the definiteness-indefiniteness contrast and the concept

of presupposition began in a passing note in Frege's (1892) *On Sense and Reference*. In his seminal work, Frege suggested that a definite expression is presupposed to bear reference in an assertion, and that if the entity that the definite expression describes does not exist, the proposition which contains this definite expression is not false but does not have a truth value; as seen in the quote: "If anything is asserted there is always an obvious presupposition that the simple or compound proper names used have reference" (Frege 1892: 69). The idea is illustrated with the example in 'Kepler died in misery' where the proper name (i.e., a definite expression) *Kepler* is deemed to bear reference to a particular individual. Frege noted that the existence of this individual is just as presupposed in the affirmative assertion as in the negative counterpart, 'Kepler did *not* die in misery'. Following Frege's argumentation, this is true because the semantics of the negative sentence does not mean that "Kepler did not die in misery, or the name 'Kepler' has no reference"; the interpretation in the second clause is not present in ordinary use of English. This means that the presupposition that 'Kepler' has reference is not part of the affirmative assertion but some background assumption that applies equally to both the affirmative assertion and its contrary assertion. Frege's observation on presupposition has been more elaborately discussed in Strawson's (1950) *On Referring* – although the term *presupposition* is only introduced in Strawson (1952) – when he re-examined Russell's understanding of the nature of definite descriptions.

In Russell's (1905) *On Denoting*, indefinite expressions with *a/an* are understood to involve an existential quantification over the entity as in (34), while definite expressions with *the* state the existence of one and no more than one thing which is the entity denoted in the NP as in the classical *King of France* example in (35) (adapted from Abbott 2008: 126).

- (34) A man arrived.
 a. $\exists x [\text{man}(x) \wedge \text{arrived}(x)]$
 b. There exists something which is both a man and arrived.
- (35) The King of France is bald.
 a. $\exists x [\text{King-of-France}(x) \wedge \forall y [\text{King-of-France}(y) \rightarrow y = x] \wedge \text{Bald}(x)]$
 b. There is one and only one entity who is King of France and he is bald.

Strawson noticed that in a sentence involving a definite expression, the part of the logical form (underlined) which states the existence and uniqueness of the entity that meets the descriptive content of the nominal bears a different status from the rest of the logical form. The difference is that the underlined part is a presupposition that stands regardless of the truth value of the asserted proposition *p*; in other words, the presupposition can survive under negation and it is the prerequisite of the assertion but not part of the assertion per se.

The fact that the existence or reference of the denoted definite entity is presupposed carries broader implications than simply the nature of definite NPs. Frege also discussed that in subordination, the meaning of the subordinate clause is dependent on the fact that the definite expression bears reference in the main clause. (36) is a case in point.

- (36) After the separation of Schleswig-Holstein from Denmark, Prussia and Austria quarrelled.

Frege explained that in (37), the event of Schleswig-Holstein being separated from Denmark is a necessary prerequisite for the evaluation of the subordinate clause 'Prussia and Austria

quarrelled’. Therefore, to the mind of someone who believes ‘the separation of Schleswig-Holstein from Denmark’ to be non-existent, the event in the second clause is absent of any ground of reference, and thus is neither true or false. In other words, if the presupposition is false, it entails that the sentence with that presupposition lacks any truth value. Atlas (2004) has captured the observation formally, in the sense that the first clause, ‘after the separation of the Schleswig-Holstein from Denmark’ provides a time relative to which the second event ‘Prussia and Austria quarrelled’ took place, as in (37).

$$(37) \quad \begin{array}{l} \exists tQ(p, a, t) \\ t \in T \\ \text{where } T = \{t: t > t_s\} \end{array}$$

The logical form reads: there exists some time or time interval at which Prussia and Austria quarrelled, this time (or time interval) t is a member of the set T which is the domain of quantification, and T is specified as t being greater than (i.e. after) the time of the separation of Schleswig-Holstein from Denmark, t_s . It thus follows that if the event of Schleswig-Holstein separating from Denmark is false, then t_s bears no reference either, and the domain of quantification T would be ill-defined, resulting in the lack of truth value for the proposition ‘Prussia and Austria quarrelled’. The situation would not change even if the proposition is negated – Prussia and Austria did not quarrel, as in $\neg \exists tQ(p, a, t)$ – since T is still ill-defined.

Based on the relationship between definiteness and presupposition presented above and the fact that aspect can encode definiteness as established in section 4.1, I propose that the definite aspects are not compatible with standard negation involving *méi(yǒu)*, *mou5* or *mau5*⁶ due to the presupposition effect they produce on the predicate. Precisely, since aspect temporally binds the event variable, if a definite aspect is present, it presupposes the existence of the situation described. Thus, when the sentence is negated (especially by negators indicating non-existence of the situation), there will be a clash between the presupposed existence of the situation brought by the definite aspect and the denial of its existence by the standard negation. I suggest that when perfective Asp is present in the structure, the definiteness it encodes imposes a presupposed existence over the event variable it binds, which cannot be cancelled under negation, resulting in a failure in negating the proposition and clash between negation and the definite aspect. Take the event of ‘running’ as an example. On the one hand, the presence of a perfective marker asserts a specific, unique time point within the event time frame and by such assertion the ‘running’ event is presupposed to exist. Negation with Mandarin *méi(yǒu)*, HKC *mou5* or GZC *mau5*, on the other hand, denies the very existence of the ‘running’ event, i.e., no running has taken place. Therefore, when a perfective sentence is negated by these negators, its literal meaning would be: there is a unique reference time for the event of ‘running’ (presumably the final endpoint of the event) which is one of the time moments in the temporal trace function of the event, but the event does not exist. The sentence is evidently anomalous, and hence the structure where negation and perfective aspect (and definite aspect in general) co-occur is necessarily ill-formed.

Experiential aspect presents the opposite case. as. I have argued in section 5.3.3 that Being

6 Perfective aspect is also incompatible with negation by Mandarin *bù* and HKC *m4*, but this would go beyond the scope of this paper and have to be reserved for further discussion.

an indefinite aspect, experiential aspect is the only aspect marker fully compatible with negation by *méiyǒu*, *mou5* and *mau5*. This can be accounted for by the absence of presupposition effect on the event/predicate that it temporally anchors, and hence there is no clash between experiential aspect and negation. The time variable introduced by Asp is existentially quantified, indicating that the time variable anchors the event variable to a time moment within the event time frame but the time moment is arbitrary, unspecified, except that whichever time moment it may be, it must be prior to the speech time (note that this is not the same as having a past tense predicate).

5. Conclusion

To conclude, this paper has presented new empirical data from the under-documented variety, Gaozhou Cantonese, which contain only one standard negator *mau5* ‘not’. The fact that Gaozhou Cantonese negation displays the same aspectual restriction as well-observed in Mandarin varieties and Hong Kong Cantonese – Chinese varieties with two standard negators – justifies the need for a new formal analysis of Chinese negation, one that does not attribute negation-aspect compatibility to division of labour between the negators of the system. The paper first put forward evidence to support the analysis of *yǒu/jau5* ‘have’ as an existential auxiliary rather than a perfective auxiliary, and that negators such as Mandarin *méiyǒu*, HKC *mou5* and *mau5* are also negators associated with non-existence of the situation. Following Ramchand (2008a, b), the paper proposed that, in Chinese, definiteness is encoded in the verbal domain through aspect-marking. Particularly, among the two realisations of perfectivity in Chinese, perfective aspect (Mandarin *le*, HKC *zo2* and GZC *de6*) is a definite aspect which anchors the reference time to a unique timepoint within the event time frame, while experiential aspect (Mandarin *guo*, HKC and GZC *gwo3*) is indefinite and only asserts that at least one instance of the kind of situation describe has taken place in the past. The presence and absence of presupposition effect generated by (in)definite aspect thus accounts for their compatibility with negation, especially negation which signals non-existence of the situation.

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How to Label via Feature-Sharing: Case of Nominal Structures in Chinese

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1. Background

When two syntactic objects are merged, the label of the resulting structure needs to be determined, which is necessary for the interpretation of such a structure at the Conceptual-Intentional system. In order to eliminate Phrase Structure Grammar, the so-called projection should be reduced to Labeling Algorithm. Given the principle of economy, the labeling algorithm is subject to the minimal search (Chomsky 2008). Concretely, when a head is merged with a phrase, it is always the head that projects the label of the resulting structure. However, regarding the merge of two phrases, minimal search seems to encounter difficulties in that both phrases will have an equal chance to project the label. Chomsky (2013) proposes two solutions to this problem: either one of the phrases moves away, and the one remaining in-situ determines the label, or, the prominent features shared by both phrases become the label of the structure.¹ For the labeling by shared-features between the two phrases, the relevant features must be matched in the first place. Only matched features can undergo feature-sharing, and as a result the shared features become the label of the resulting structure.

2. Main proposal

A feature contains an Attribute-Value pair. It has been obvious that the attribute of a feature participates into the labeling process. In the case of merging two phrases, the attribute of a shared feature can label the resulting structure. The main question to which we want to answer in this paper is whether the value of a shared feature is also a part of the label of the resulting structure.

Given that a label is a bunch of features and that the value is crucial for the C-I system to correctly interpret a structure, we propose that the precondition on the labeling by feature-sharing is not only feature matching, but actually feature-identity (i.e., identical attributes and identical values). The similar idea is mentioned in Chomsky (2001): feature-sharing requires agree. Under agree, the values of matched features can be identical. Under our analysis, one additional case involving ‘uninterpretable (unvalued) feature’-sharing can be accounted for. Note that in this paper, we adopt the assumption from Chomsky (2000) on the equivalence between the interpretability of features and feature-valuation. Interpretable features are valued, uninterpretable features are unvalued inherently.

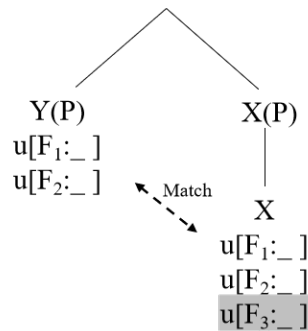
¹ Rizzi (2015) also points out that in the case of phrase-phrase merge, the minimal search is not working, as there is no closest head that can project.

3. Abstract illustration on uninterpretable shared-feature labeling

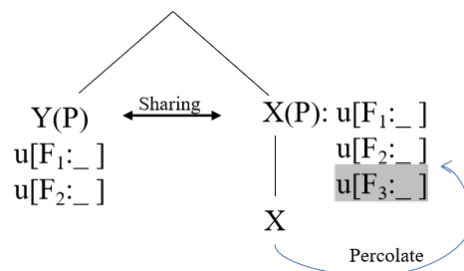
In this section, we will demonstrate the case only involving uninterpretable features in feature-matching, and will see how uninterpretable/unvalued features are shared when two phrases are merged together.

Imagine a situation involving merging two phrases $\{XP, YP\}$, where XP bears uninterpretable/unvalued features $u[F_1: _]$, $u[F_2: _]$ and $u[F_3: _]$, and, YP bears uninterpretable features $u[F_1: _]$ and $u[F_2: _]$. Traditionally, it is always the features on a head (i.e., probe) that match and agree with the features on a phrase (i.e., goal). For instance, in (1), matching happens between X and YP , and after which, X will percolate its features up to XP , so that feature-sharing for labeling purpose can take place in the next step. Note that there is no agree relation established between X and YP , because the matched features are all unvalued. Importantly, we assume that unvalued features can be considered as possessing an identical “null” value. In this way, feature-identity is satisfied, and feature-sharing can actually happen despite uninterpretable (unvalued) features. In this way, feature-sharing takes place between $u[F_1]$ & $u[F_2]$ on $X(P)$ and $Y(P)$, as shown in (2).

(1)

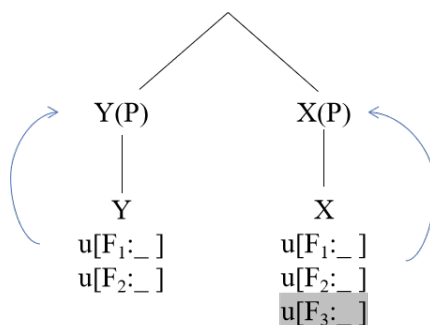


(2)

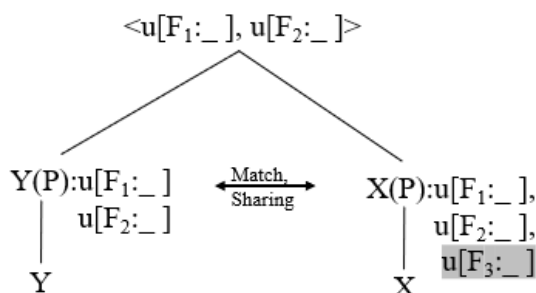


However, this traditional view actually brings up redundant technical operations. In our analysis, we simply assume that feature-percolation from a head to the phrase that this head projects should happen at the same time as the resulting phrase is labeled, i.e., $X(P)$ and $Y(P)$ illustrated in (3). We do not assume that there is feature matching between YP and the head X as a first step; instead, we propose that feature-matching and agree can directly happen between the features respectively attached to the two phrases, XP and YP . Then, as shown in (4), the matched identical features are shared between $X(P)$ and $Y(P)$, and as a result, the merged phrase $\{XP, YP\}$ is labeled by the shared features: $\langle u[F_1: _], u[F_2: _] \rangle$.

(3)



(4)



One potential question is how uninterpretable/unvalued features can be deleted as they are not valued. We adopt the idea from Chomsky (2001) and Pan (2016) that the matched uninterpretable features will get deleted right before transfer. Chomsky (2001) puts forward a solution according to which, a matched uninterpretable feature can be deleted, in order to check the features on expletives. For instance, the subject expletive in (5a) agrees with T, and the uninterpretable person feature on *there* can then be deleted. For the object expletive in (5b), *v* in the matrix clause can check and delete the uninterpretable person feature on *there*.

- (5) a. There is likely to arrive a man.
 b. We expect there to arrive a man

Pan (2016) takes a similar solution to the deletion of the uninterpretable/unvalued features on resumptive pronouns in Chinese; and importantly, only matched unvalued features can be deleted at the final phase cycle.

Let us go back to the labeling process in (4). The uninterpretable/unvalued features, i.e., $[F_1]$ & $[F_2]$, on $X(P)$ and $Y(P)$ can eventually be deleted as they are matched features and they can be mutually deleted. For the shared uninterpretable/unvalued features present in a label, their deletion may resort to a higher probe, for example a higher C or T.²

In the following sections, we will illustrate how our proposal applies with the help from Chinese nominal phrases. We will show the labeling process of feature-sharing inside nominal phrases.

² The deletion of $u[F_3]$ should resort to another goal or probe as well.

4. Sorting feature and Number feature

Before going into the details of the derivation, we will examine formal features related to Chinese nominal phrases in this section.

First, we argue for the existence of a sorting feature [SORTING] on both nouns and classifiers. This feature is responsible for the key semantic function specified by classifiers in languages like Chinese, which sets the counting unit of a noun. It is in particular linked to the count-mass distinction in Chinese (see Senft 2000 for a similar idea of feature [Sortal]). In addition, we assume that [SORTING] has two values: IND(IVIDUALIZATION) and MASS(IFICATION), corresponding to individual classifiers and massive classifiers respectively.

For a canonical nominal structure [Num + Cl + N] in Chinese, we assume that nouns bear a categorial feature [N], a sorting feature [SORTING] and a number feature [NUMBER], while classifiers bear a sorting feature [SORTING], and, numerals bear a number feature [NUMBER]. As pointed out by Chierchia (1998), Chinese bare nouns are all massive and denote kinds. As a result, bare nouns do not inherently possess any counting unit and are thus uncountable.

Second, regarding the interpretability of these features, we claim that nouns take an uninterpretable u [SOR(TING):_], an uninterpretable u [NUM(BER):_], and the categorial feature [N], whereas classifiers take an interpretable i [SORT:VAL] and numerals take an interpretable i [NUM:VAL]. Take *yī-běn shū* (one-Cl book) ‘one book’ as an example; the relevant features are illustrated as in (6).

(6)	<i>yī</i>	<i>běn</i>	<i>shū</i>
	Num	Cl	N
	i [NUM:SG]	i [SORT:IND]	u [NUM:_] u [SORT:_] [N]

5. Labeling of nominal phrases

In this section, we will go into the details of the labeling process of three canonical nominal structures and an impossible nominal structure in Chinese. Case ① is: [Numeral + Classifier + Noun]; Case ② is [Modifier + Noun]; Case ③ is: [Numeral + Classifier + Modifier + Noun]; Case ④ is *[Numeral + Classifier + Modifier + Noun]. Given the modifiers are often involved in the nominal phrases, we will first make further clarification on them.

5.1 Two Types of Modifiers

Based on Oseki (2015), we make a distinction between two types of nominal modifiers in terms of their syntactic structures. One is in the form of bare adjectives; the other is in the form of *de*P. For example, a noun can take a bare adjective as its modifier, such as *hóng píngguǒ* ‘red apple’ and *yōuxiù xuéshēng* ‘excellent students’; a noun can take a *de*P as its modifier as well, such as *hóng(sè)-de píngguǒ* (red(color)-DE apple, ‘red apple’) and *yōuxiù-de xuéshēng* (excellent-DE student, ‘excellent student’). In the traditional grammar, Li & Thompson (1989) and Zhu (1993) treat *de* as a ‘nominalizer’. Under the generative framework, Simpson (2002) treat *de* as a D(eterminer), which heads the phrase. We agree that *de* heads its own functional projection, and the head *de* takes either a noun as its complement, as in *hóng(sè)-de* (red(color)-DE) or an adjective as its complement, as in *yōuxiù-de* (excellent-DE). The entire *de*P then

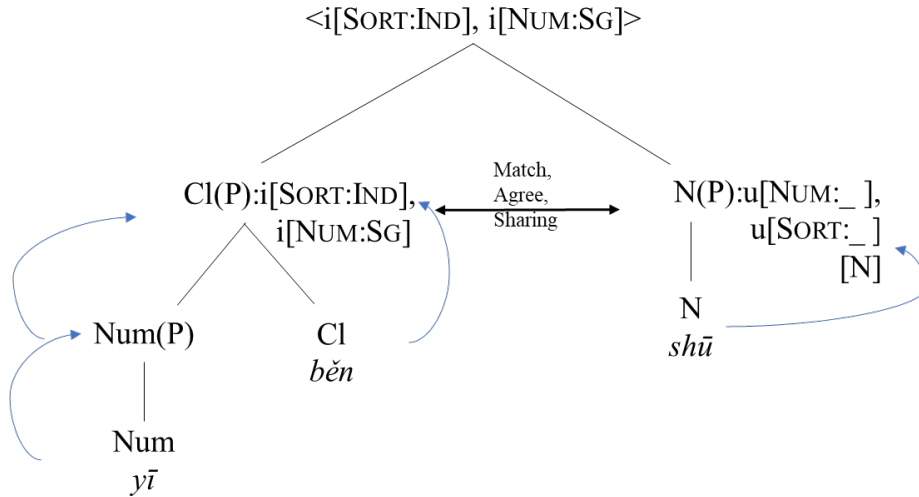
functions as a modifier of a noun, such as in *hóng(sè)-de píngguǒ* (red(color)-DE apple) and *yōuxiù-de xuéshēng* (excellent-DE student).

In this paper, we propose that the bare-adjective modifier is a real case of adjunction, which forms an unlabeled structure, and that the *de*P modifier is not adjunction, rather, it is set-merged in a labeled structure. The detailed discussion will be shown in section 6.1. As a result, we assume that resembling nouns, *de* actually bears [N], u[NUM], and u[Sort]. This analysis can account for the reason why *de*P can set-merge with nouns in a labeled structure, as will be detailed in this section.

5.2 Case①: Labeling [[Numeral + Classifier] + Noun]

We take *yī-běn shū* (one-Cl book) ‘one book’ as an example to illustrate the labeling of the structure [[Numeral + Classifier] + Noun]. In favor of the views of Cheng & Sybesma (1999), Simpson (2001) and Hsieh (2005), we hold that the classifier and the numeral should first be merged together, and the classifier head-projects its label.³ Cross-linguistically, a classifier forms a constituent with a numeral, rather than with a noun. For example, in other classifier languages such as Vietnamese, the canonical word order of a nominal phrase (without modifiers) is ‘Noun + Numeral + Classifier’ (Simpson & Ngo 2018).⁴ The numeral is inserted between the noun and the classifier, which shows that the classifier cannot merge first with the noun. Along this line, the syntactic object {_? Num(P)-*yī* ‘one’, Cl-*běn*} is labeled as Cl(P), and at the same time, the Cl head *běn* percolates its [Sort] up to Cl(P), as illustrated in (7).

(7)



In addition, we adopt the idea, which used to account for the pied-piping of *wh*-phrases, that the non-head element can also percolate its features up (see Jessica Coon 2009 for further discussion). Note that Num(P) bears i[Number] from the head, and then the number feature is kept percolating up to Cl(P). As a result, Cl(P)-*yī běn* (one-Cl) now bears i[Sort:IND] and i[NUM:SG].

³ A similar idea can be found in Cinque (to appear) related the linearization issue.

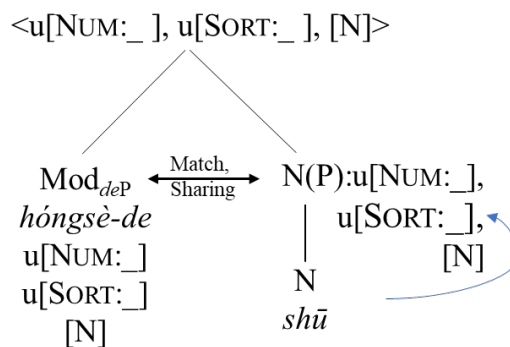
⁴ The same word order can be observed in Korean as well. Furthermore, the numeral and the classifier can float away from the antecedent (noun) in Korean (cf. Kim 2013).

Then the noun *shū* ‘book’ is merged. As noted, the noun percolates its feature up as head-projection. Therefore, N(P) will also bear u[*SORT*], u[*NUM*], and [N]. Since the syntactic object $\{? \{_{\text{ClP}} \text{Num(P)-yī ‘one’, Cl-běn}\}, \text{NP-shū ‘book’}\}$ cannot be labeled by head-projection, it has to resort to feature-sharing. As Cl(P) and N(P) both bear a sorting feature and a number feature, feature-matching can happen between Cl(P) and N(P). Given that the two features on Cl(P) are valued and the two on N(P) are unvalued, agree/valuation happens. Under agree, feature-identity is achieved and the sharing between [*SORT*] and [*NUM*] on Cl(P) and on N(P) happens. As a result, the syntactic object $\{? \{_{\text{ClP}} \text{Num(P)-yī ‘one’, Cl-běn}\}, \text{NP-shū ‘book’}\}$ is labeled as $\langle i[\text{*SORT*:IND}], i[\text{*NUM*:SG}] \rangle$ as in (7). Finally, the uninterpretable features on N(P) will be deleted as they have been agreed/valued.

5.3 Case②: Labeling [*Modifier*_{deP} + *Noun*]

Let us turn to nominal phrases involving modifiers. As mentioned, we make a distinction between two types of modifiers, and we only concentrate on *deP* modifiers in this section. Take *hóngsè-de shū* (red.color-DE book) ‘red book’ as an example. First, the head *de* merges with its complement *hóngsè* ‘red color’, and the resulting structure is labelled by *de* as $\{_{\text{deP}} \text{AdjP-hóngsè, de}\}$.⁵ As mentioned, *de* bears [N], u[*NUM*], and u[*SORT*], which can percolate up onto *deP*, as shown in (8).

(8)



Then, *deP* is merged with the NP-*shū* ‘book’, and feature-matching can happen between the relevant features: [N], u[*NUM*], and u[*SORT*]. With the identical null value, matched features undergo feature-sharing, and then the shared features $\langle [N], u[*NUM*: _], u[*SORT*: _] \rangle$ become the label of the resulting structure, as in $\{ \langle [N], u[*NUM*: _], u[*SORT*: _] \rangle \{_{\text{deP}} \text{AdjP-hóngsè, de}\}, \text{NP-shū ‘book’} \}$. Note that the categorial feature can also participate in the labeling process via shared-feature, which is in accordance with the general principle of ‘maximize matching effect’ (Chomsky 2001).⁶ Importantly, the uninterpretable features on *Mod*_{deP} and those on N(P) can be deleted before transfer as they have already been mutually matched. Concerning the uninterpretable features in the label of the resulting phrase, their deletion and matching can only resort to a higher probe as mentioned.

⁵ *Hóngsè* (red.color) could be regarded as an NP, but this does not affect the derivation. No matter which category *hóngsè* belongs to, *deP* will always bear [N], u[*NUM*], and u[*SORT*].

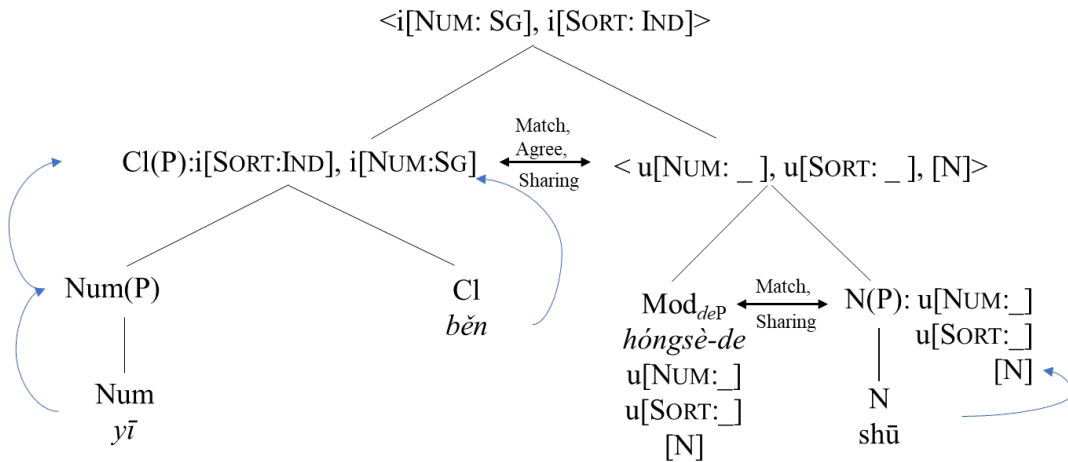
⁶ Prominent features that participate in labeling are also called ‘criterial features’ in the sense of Rizzi (1991, 1997), which include categorial features as well.

5.4 Case③: Labeling [[Numeral + Classifier] + [Modifier_{deP} + Noun]]

We take *yī-běn hóngsè-de shū* (one-Cl red.color-DE book) ‘one red book’ as an example for illustration. As mentioned, the classifier *běn* will first merge with numeral *yī* ‘one’, and the resulting structure {*yī*, *běn*} is labeled as Cl(P), which bears *i*[SORT] and *i*[NUM], as {_{CIP} Num(P)-*yī* ‘one’, Cl-*běn*}. On the other hand, the Mod_{deP} *hóngsè-de* (red.color-DE) merges with the N(P) *shū* ‘book’. Since Mod_{deP} and N(P) both bears [N], *u*[SORT], and *u*[NUM], the matched features with null value are identical and can then be shared. These shared features will become the label of the resulting structure, as {<[N], *u*[NUM: _], *u*[SORT: _]> {_{deP} AdjP-*hóngsè*, *de*}, NP-*shū* ‘book’}. At this stage, we have {_{CIP} NumP, Cl} and {<*u*[NUM: _], *u*[SORT: _], [N]> Mod_{deP}, N(P)}. Next, Cl(P) merges with {<*u*[NUM: _], *u*[SORT: _], [N]> Mod_{deP}, N(P)}. Feature-matching and agree happen between [SORT] and [NUM] on Cl(P) and on the phrase labelled as <*u*[NUM: _], *u*[SORT: _], [N]>. Under agree, the feature-identity is satisfied and the shared features become the label of the whole structure, which is <*i*[NUM: SG], *i*[SORT: IND]>, as in {<*i*[NUM: SG], *i*[SORT: IND]> {_{CIP} Num(P)-*yī* ‘one’, Cl-*běn*}, {<[N], *u*[NUM: _], *u*[SORT: _]> {_{deP} AdjP-*hóngsè*, *de*}, NP-*shū* ‘book’}}.

Finally, the uninterpretable features on Mod_{deP} and on N(P) can be deleted before transfer, as they have been mutually matched. In the same way, the uninterpretable features in the label of the structure {Mod_{deP}, N(P)}, i.e., <*u*[NUM: _], *u*[SORT: _], [N]>, can be deleted before transfer as well.

(9)



5.5 Case④: unlabelable structure: *[Numeral + Modifier_{deP} + Classifier + Noun]

An impossible sequence in Chinese is [Numeral + *deP* + Classifier + Noun], such as **yī hóngsè-de běn shū* (one red-DE Cl book). Under our analysis, there are three potentially possible derivations. With the first possibility, the classifier *běn* will be merged with Modifier_{deP} (*hóngsè-de*) ‘red-DE’, and then [Modifier_{deP} + classifier] (*hóngsè-de běn* ‘red-DE Cl’) will be merged with the numeral *yī* ‘one’. The three merged elements form a unit [[Numeral + Modifier_{deP}] + classifier] (*yī hóngsè-de běn* ‘one red-DE Cl’), which will modify the noun *shū* ‘book’. With the second possibility, the numeral and the modifier *deP* will be merged first. Then, the classifier *běn* will be merged with [Numeral + Modifier_{deP}] (*yī hóngsè-de* ‘one red-DE’), and then [[Numeral + Modifier_{deP}] + classifier] (*yī hóngsè-de běn* ‘one red-DE Cl’) will

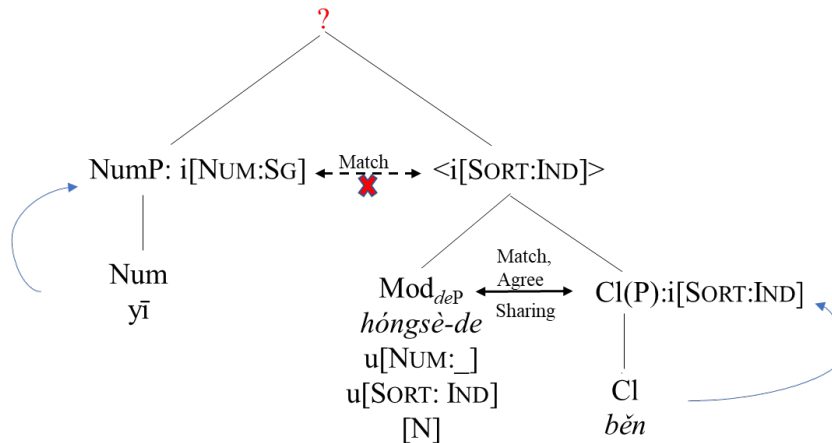
modify the noun *shū* ‘book’. With the third possibility, the noun *shū* ‘book’ first merges with the classifier *běn*, and then with [Numeral + Modifier_{deP}] (*yī hóngsè-de* ‘one red-DE’). As the reader will see, these derivations will lead to unlabelable structures at a certain stage.

5.5.1 Derivation I: [[Numeral + [Modifier_{deP} + Classifier]] + Noun]

As mentioned, the numeral, the Mod_{deP}, and the classifier will first merge together. The first step is for the classifier to be merged with Mod_{deP}. Given the classifier only head-projects its label in merging with a numeral, the labeling of {? Mod_{deP}, Cl(P)} should resort to feature-sharing. Since the classifier only bears i[SORT], the feature-matching and agree can only happen between [SORT] on Mod_{deP} and Cl. Under agree, the feature-identity is satisfied. The shared feature as label is <i[SORT:IND]> as in {<i[SORT:IND]> Mod_{deP}, Cl(P)} (*hóngsè-de běn* ‘red-DE Cl’).⁷

Then the numeral is merged and the derivation will crash at this stage as shown in (10). Given that Num(P) has only i[NUM] and that {<i[SORT:IND]> Mod_{deP}, Cl(P)} on the right bears only i[SORT], there is no matched feature between these two phrases. The structure is unlabeled before the noun is merged.

(10)

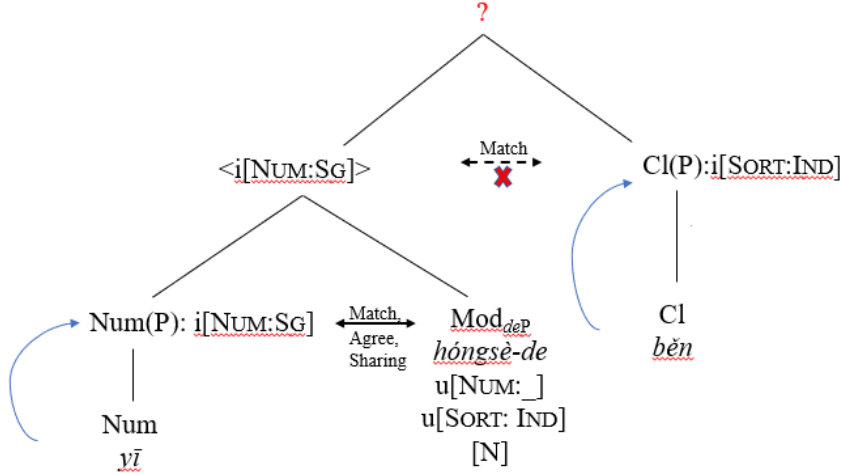


5.5.2 Derivation II: [[[Numeral + Modifier_{deP}] + Classifier]] + Noun]

Likewise, the same problem arises when the numeral first merges with Mod_{deP}. After merging the numeral with the modifier, the matched feature undergoes agree and is shared as label, i.e., {<i[NUM:SG]> Num(P), Mod_{deP}} (*yī hóngsè-de* ‘one red-DE’). Next, the classifier is merged and the labeling fails at this stage as there is no matched feature between these two phrases. The resulting structure is unlabelled, as shown in (11).

⁷ The uninterpretable number feature on Mod_{deP} is not matched or checked, so it may not be deleted before transfer. This is another reason why the structure is illegitimate.

(11)



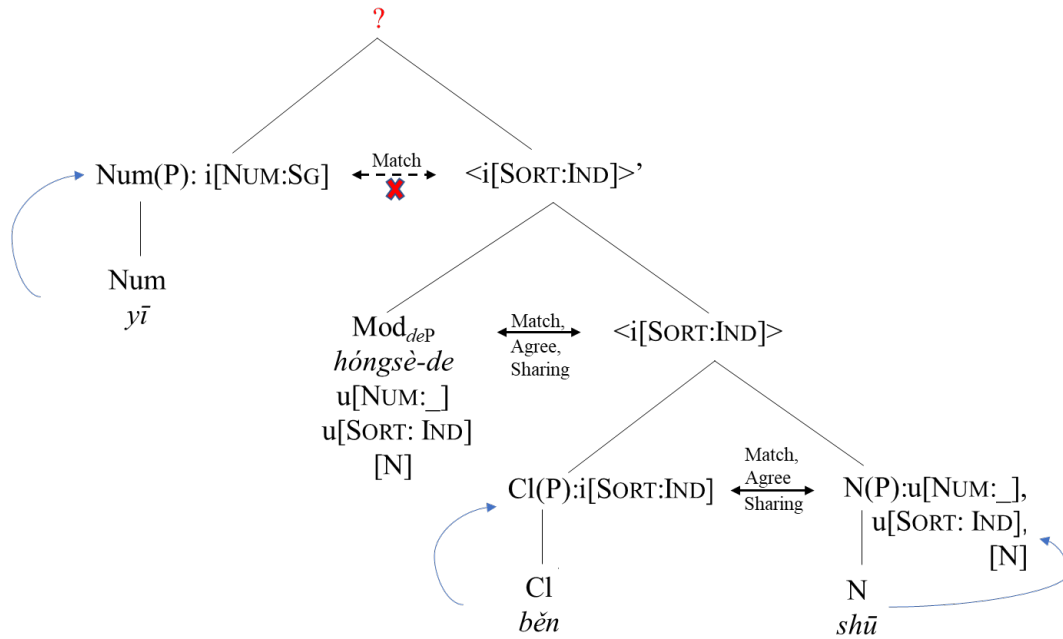
5.5.3 Derivation III: [Numeral, [Modifier_{deP}, [Classifier, Noun]]]

Following Zhang (2007) and Bale & Coon (2014), given that there is no selection relation between classifier and NP, in the merging of [Classifier, Noun], classifier cannot be treated as a head and cannot take an NP as its complement. Rather, classifier here should be treated as a phrase. As a result, the relevant restructure is not $\ast\{_{\text{CIP}} \text{Cl}, \text{NP}\}$, but $\{_{??} \text{CIP}, \text{NP}\}$. The label of $\{_{??} \text{CIP}, \text{NP}\}$ will rely on feature-sharing. Given that Cl(P) bears only i[Sort], the matched feature between Cl(P) and N(P) is only [Sort]. Under agree, the feature-identity can be achieved and the shared-feature becomes the label, i.e., $\langle i[\text{Sort:IND}] \rangle$, as in $\{\langle i[\text{Sort:IND}] \rangle \text{CIP}, \text{NP}\}$ (*běn shū* ‘Cl book’).

Next, Mod_{deP} is merged. Although Mod_{deP} bears u[Num], u[Sort], and [N], $\{\langle i[\text{Sort:IND}] \rangle \text{Cl(P)}, \text{N(P)}\}$ bears only i[Sort]. Therefore, the matched feature is only [Sort]. Under agree, the feature-identity can be satisfied and feature-sharing takes place. The shared feature as label is $\langle i[\text{Sort:IND}] \rangle$ as well, as in $\{\langle i[\text{Sort:IND}] \rangle \text{Mod}_{deP}, \{\langle i[\text{Sort:IND}] \rangle \text{Cl(P)}, \text{N(P)}\}\}$ (*hóngsè-de běn shū* ‘one red-DE Cl book’).

Finally, the numeral *yī* ‘one’ is merged. However, there is again no matched feature between Num(P) and $\{\langle i[\text{Sort:IND}] \rangle \text{Mod}_{deP}, \{\langle i[\text{Sort:IND}] \rangle \text{Cl(P)}, \text{N(P)}\}\}$. As a result, the structure becomes unlabeled and the derivation crashes as in (12).

(12)



6. Discussion

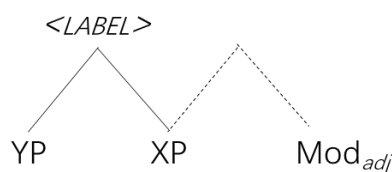
6.1 Evidence for two types of modifiers

As pointed out in section 4, we argue for two types of nominal modifiers in Chinese, which differ one from the other in their syntactic structures. One is in the form of bare adjectives, whereas the other is with the form of *deP*.

We adopt Hornstein's (2009) version of the Label Accessibility Condition that only the label of a syntactic object is accessible to merge. Since bare adjectives are analyzed as adjuncts to NP, the resulting adjunction structure cannot be labeled. Therefore, it becomes invisible and is no longer subject to further operation. As shown in (13), when a bare adjective is merged with an XP (e.g., an NP), the structure is unlabeled. When another element, say YP, is set-merged, it will directly be merged with XP, but not the unlabeled syntactic object $\langle \text{XP}, \text{Mod}_{adj} \rangle$. Therefore, it is predicted that the internal structure $\langle \text{XP}, \text{Mod}_{adj} \rangle$ cannot be modified, and the bare adjective should always adjoin to XP, and importantly, XP cannot be moved away by stranding the bare adjective in-situ.

By contrast, a *deP* modifier is set-merged with the noun (NP). According to our approach to labeling, *deP* and the noun can share a bunch of features: [SORTING], [NUMBER], [N]. As a result, the structure $\{deP, NP\}$ here can be properly labeled via feature-sharing.

(13)



6.1.1 Topicalization

The first argument in support of our analysis comes from the topicalization case. Try to topicalize the noun phrase in a sentence such as in (14a), where the modifier *cháng* ‘long’ is a bare adjective. When the noun *qiānbǐ* ‘pencil’ in the object undergoes topicalization, it cannot be moved alone by stranding the adjective as in (14b). The bare adjective modifier has to be moved together with the noun, as show in (14c).

- (14) a. Tā zhǎo-dào-le yī-zhī cháng qiānbǐ.
 he find-Perf one-Cl long pencil
 ‘He found a long pencil.’
- b. *Qiānbǐ_i, tā zhǎo-dào-le yī-zhī cháng t_i.
 pencil, he find-Perf one-Cl long
 (‘As for pencils, he found a long one.’)
- c. Cháng qiānbǐ_i, tā zhǎo-dào-le yī-zhī t_i.
 long pencil he find-Perf one-Cl
 ‘As for long pencils, he found one.’

However, when the relevant NP modifier is a *deP*, both constructions (cf. 15b, c) are grammatical. When the noun *qiānbǐ* ‘pencil’ is topicalized to the sentence-initial position, the *deP* modifier *cháng-de* ‘long-DE’ can either stay in-situ as in (15b) or be fronted together with the noun as in (15c). This is because, in our analysis, *deP* is set-merged in a well labeled structure, and its internal structure can be modified. Importantly, a subpart of the object can undergo topicalization.

- (15) a. Tā zhǎo-dào-le yī-zhī cháng-de qiānbǐ.
 he find-Perf one-Cl long-DE pencil
 ‘He found a long pencil.’
- b. Qiānbǐ_i, tā zhǎo-dào-le yī-zhī cháng-de t_i.
 pencil, he find-Perf one-Cl long-DE
 ‘As for pencils, he found a long one.’
- c. Cháng-de qiānbǐ_i, tā zhǎo-dào-le yī-zhī t_i.
 long-DE pencil he find-Perf one-Cl
 ‘As for long pencils, he found one.’

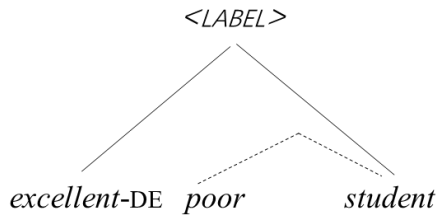
6.1.2 Multiple modifiers

Another piece of evidence comes from the compatibility of multiple modifiers. For a noun such as *xuéshēng* ‘student’, it can be merged either with a bare-adjective modifier such as *yōuxiù* ‘excellent’, or with a *deP* modifier such as *yōuxiù-de* ‘excellent-DE’. When a noun merges with two modifiers, there are generally three possibilities: both modifiers are *deP*, both modifiers are bare-adjectives, and, one is *deP* and the other is a bare-adjective.

In (16), the noun *xuéshēng* ‘student’ can be merged with the bare-adjective modifier *pínkùn*

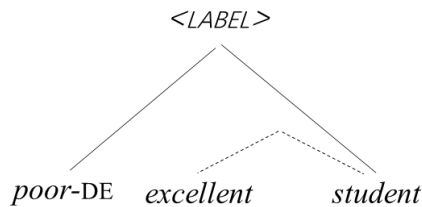
‘poor’ and the *de*P modifier *yōuxiù-de* ‘excellent-DE’. The resulting structure is grammatical as shown in (16).

(16)



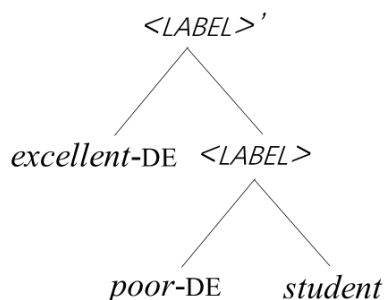
Likewise, for the bare adjective *yōuxiù* ‘excellent’ and the *de*P *pínkùn-de* ‘poor- DE’, the noun *xuéshēng* ‘student’ can be successfully merged with them as well, and the structure is shown in (17).

(17)



When two *de*P modifiers are merged with a noun, the nominal phrase is also grammatical. For instance, the noun *xuéshēng* ‘student’ can be firstly merged with *yōuxiù-de* ‘excellent-DE’, and then with *pínkùn-de* ‘poor- DE’. At first, *pínkùn-de* ‘poor-DE’ is merged with the noun *xuéshēng* ‘student’, and the shared features become the label. Then, *yōuxiù-de* ‘excellent-DE’ is merged with this labeled resulting structure {*pínkùn-de* ‘poor-DE’, *xuéshēng* ‘student’}, and the same shared features become the label of the final structure {*yōuxiù-de* ‘excellent-DE’, {*pínkùn-de* ‘poor-DE’, *xuéshēng* ‘student’}} as well. The relevant structure is shown in (18).

(18)



However, if two bare-adjective modifiers are merged with a noun, the resulting structure becomes ungrammatical. We take the merging of the noun *xuéshēng* ‘student’ with the bare-adjective modifiers *yōuxiù* ‘excellent’ and *pínkùn* ‘poor’ as an example. Given that merging a bare-adjective modifier will result in an unlabelable structure, the two bare-adjective modifiers can only adjoin to the noun directly. The relevant structure is shown in (19). After the merging of the two modifiers, both of them are contained within unlabeled structures. As a result, the hierarchy between *yōuxiù* ‘excellent’ and *pínkùn* ‘poor’ cannot be determined, since they are

merged with the same node in exactly the same way.



6.2 General Number Phenomenon

Concerning the uninterpretable features on nouns, the phenomenon concerning “general number” supports our claim in that general number involves an unvalued number feature on nouns. Following Corbett (2000) and Rullmann & You (2006), bare nouns in Chinese involve a general number, which is not ambiguous between singular or plural but is with a ‘neutral’ reading. For instance, in (20), the equivalent translation of the bare noun *shū* ‘book’ should be *one or more books*, rather than *one book* or *books*.

- (20) Zuó tiān, wǒ mǎi le shū. [Mandarin]
 yesterday I buy Asp book
 ‘Yesterday, I bought one or more books.’ (cited from Rullmann & You)

The evidence in support of this analysis comes from cases of object ellipsis, as shown in (21). In the sentence, the number of apples bought by *Zhangsan* and the number of apples bought by *Lisi* are not determined. For instance, a possible scenario is that *Zhangsan* bought one apple but *Lisi* bought a plural number of apples, such as three apples. This convincingly shows that the bare noun *píngguo* ‘apple’ cannot have a specific number as the value of its number feature.

- (21) Zhāngsān zuótiān mǎi le píngguǒ lǐsì yě mǎi le [Mandarin]
 zhangsan yesterday buy Asp apple, Lisi also buy Asp
 ‘Zhangsan bought one or more apples yesterday, Lisi did too.’

By contrast, English does not show the same effects. For the similar sentence with object ellipsis as in (22a), *John* and *Tom* bought each a plural number of apples. If *Tom* bought only one apple, the sentence becomes infelicitous. In addition, if the object in plural form *apples* is replaced by *an apple* in singular as in (22b), the sentence can only describe the scenario in which *John* bought one apple and *Tom* bought one apple as well.

- (22) a. John bought apples, and Tom did so.

- b. John bought an apple, and Tom did so.

In addition to Mandarin Chinese, the phenomenon of general number is also widely observed in languages such as Korean, Turkish and Hungarian.

7. Conclusion

In this paper, we mainly propose that labeling via feature-sharing actually requires feature-identity (i.e., identical attributes and identical value). Feature sharing between unvalued features is possible, since they can be considered identical with a null value. The labeling process of nominal phrases in Chinese supports our proposal. Concerning nominal phrases in Chinese, we first argue for the existence of a sorting feature. Nouns contain uninterpretable [Sort] and [Num]. Second, we classify the nominal modifiers into two types in terms of their surface form and their syntactic structures. Merging modifiers with the form of bare adjectives constitutes unlabeled structures. By contrast, merging modifiers with the form of *de*P always give rise to labeled structures. To further illustrate the distinction, we have shown different behaviors of bare-adjective modifiers and *de*P modifiers in terms of their topicality and their compatibility with multiple modifiers.

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Nominative Objects in Causative-Potential Constructions in Japanese*

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1. Introduction

The aim of this paper is to argue for a strict locality requirement on Case-licensing by showing new evidence that the Case of the nominative object in Japanese is licensed within the projection headed by the potential affix (Tada 1992; Yatsushiro 1999; Kasai 2018).

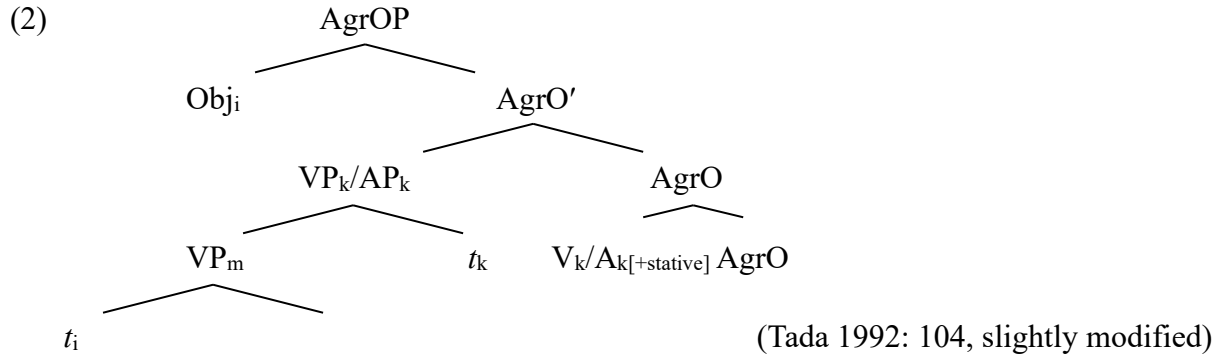
In Japanese, objects are typically marked with the accusative Case, while subjects are marked with the nominative Case. However, when the potential suffix *-rare* (and their morphological variants *-re/e*) attaches to a transitive verb and makes the whole complex predicate stative, the object may be marked as either accusative or nominative, as exemplified in a potential construction (PC) in (1a), yielding so-called nominative objects (NOs). The nominative/accusative alternation also arises when *-rare* follows the causative suffix *-(s)ase* in a causative-potential construction (CPC), as shown in (1b) (Saito 2019).

- (1) a. Haruki-ga melon-o/ga tabe-rare-ru.
 Haruki-NOM melon-ACC/NOM eat-POT-PRES
 ‘Haruki can eat melon.’
 b. Haruki-ga Ken-ni melon-o/ga tabe-sase-rare-ru.
 Haruki-NOM Ken-DAT melon-ACC/NOM eat-CAUS-POT-PRES
 ‘Haruki can make Ken eat melon.’

In previous analyses, based on the assumption that Japanese is a scope-rigid language, where scope possibilities reflect surface hierarchical positions between scope-taking elements, the scope properties of NOs are commonly accepted as an important clue for revealing the Case-licensing position of NOs. For instance, Tada (1992) argues that a potential predicate (including

* Earlier versions of this paper were presented at the 4th Joint Conference of Neo-Grammar Circle and the Fukuoka Linguistic Circle on April 17, 2021, and the 1st seminar of Core-to-Core Program, A. Advanced Research Networks “International Research Network for the Human Language Faculty” on April 24, 2021. We would like to express our sincere gratitude to Hee-Don Ahn, Nobuaki Nishioka, Yoichi Miyamoto, Norimasa Hayashi, Nozomi Moritake, Masao Ochi, Myung-Kwan Park, Hiromu Sakai, Koji Sugisaki, Hideaki Yamashita, and Yongsuk Yoo for their valuable comments. All errors are of course ours. This research is supported in part by JSPS KAKENHI Grant Numbers 18K12412, 21K00586 (PI: Nobuaki Nishioka), 18K00574 (PI: Yoichi Miyamoto), and the JSPS Core-to-Core Program, A. Advanced Research Networks “International Research Network for the Human Language Faculty” (#JPJSCCAJ221702004; PI: Yoichi Miyamoto) given to Masako Maeda, and JSPS KAKENHI Grant Numbers 21K00568 given to Taichi Nakamura and 18K00659 given to Kensuke Takita.

the verbal suffix *-rare/re/e* as well as adjectival ones like *-tai* ‘want’) undergoes head movement to AgrO, and an object undergoes A-movement to Spec, AgrOP to receive the nominative Case from AgrO with the stative feature, as illustrated in (2).



In support of the proposal, Tada observes that NOs take wide scope with respect to the potential affix, while accusative objects (AOs) take narrow scope.

- (3) a. John-ga migime-dake-o tumur-e-ru.
 John-NOM right.eye-only-ACC close-POT-PRES
 ‘John can close only his right eye.’
 (i) can > only (John can close only his right eye)
 (ii) ?*only > can (It is only his right eye that John can close)
 b. John-ga migime-dake-ga tumur-e-ru.
 John-NOM right.eye-only-NOM close-POT-PRES
 ‘John can close only his right eye.’ (*can > only, only > can) (Tada 1992: 94)

Given that Japanese is a scope-rigid language, the contrast in (3) indicates that AOs are located lower than the potential affix, while Nos are located higher than the potential affix.

However, scope and Case licensing are separate phenomena that do not always relate to each other. Specifically, Takahashi (2010) argues that scope interpretations can be induced by quantifier raising (QR) under the phase theory, where QR is phase-bound and whether a constituent forms a phase is regulated by Case-licensing. Hence, it is important to regard scope and Case as related but independent phenomena. We assume that scope interactions can be derived not only from Case-licensing positions, but also by QR (Takahashi 2010), or reconstruction/copy reading (Kasai 2018).

Given this background, we explore the way to determine the overt positions of NOs without recourse to their scope properties, examining the facts related to *v*P-preposing, Condition B effects and negative polarity licensing. The facts suggest the following schematic structures in (4) (only object NPs are represented).

- (4) a. [TP [_vrareP NP₁-ga (= NO) [_vP NP₁-o (= AO) [_{VP} t₁ V] v] v_{rare}] T] (PC)
 b. [TP [_vrareP NP₁-ga (= NO) [_vsaseP [_vP NP₁-o (= AO) [_{VP} t₁ V] v] v_{sase}] v_{rare}] T] (CPC)

What is important for our purpose is that NOs are overtly Merged with the *v*P whose head is

the potential suffix *-rare* ($v_{rare}P$) for nominative Case licensing, and they must not move to TP nor be able to stay in the base-generated position. As for AOs, we propose that they are licensed by being Merged with the transitive vP right above the VP.

This paper is organized as follows. In Section 2, we give supporting evidence for our proposal without recourse to the scope properties of NOs. Specifically, we examine vP -preposing, Binding Condition B, and negative polarity items (NPIs) in causative-potential constructions. In Section 3, we propose a mechanism of Case-licensing that crucially employs Minimal Search but not Probe-Goal Agree, showing that it can accommodate the relevant observations. Section 4 concludes the discussion.

2. Supporting evidence for overt movement

2.1 vP -preposing

The first evidence for the claim that NOs are located in $v_{rare}P$, not TP nor VP, comes from vP -preposing. In Japanese, vP can be fronted to a sentence-initial position when a focus particle such as *-sae* ‘even’ is attached to vP (Yatsushiro 1999; Funakoshi 2020). Yatsushiro (1999) observes that in PC, not only AOs but also NOs can be included in the fronted $v_{rare}P$, as in (5).

- (5) a. Kai-ga [hon-ga yom-e]-sae si-ta.
 Kai-NOM book-NOM read-POT-even do-PAST
 ‘Kai managed even to be able to read a book.’
 b. [Hon-o/ga yom-e]-sae_i Kai-ga t_i si-ta.
 book-ACC/NOM read-POT-even Kai-NOM do-PAST
 ‘Kai managed even to be able to read a book.’ (Yatsushiro 1999: 96)

If NOs must move to TP overtly, as argued by Koizumi (1994, 1998), then it would be expected that the NO could not be a part of the fronted vP , contrary to fact. Therefore, the grammaticality of (5b) indicates that NOs need not overtly move to TP for Case, leaving the possibility that they move to $v_{rare}P$ or remain *in situ*.

On the other hand, the example in (6b) indicates that AOs and NOs do occupy different positions. In (6b), which is an example of CPC, when the most deeply embedded vP is fronted leaving *-sase* and *-rare* behind, NOs cannot be contained in the fronted vP , unlike AOs. This contrast would be unexpected if AOs and NOs were in the same position.¹

¹ Yatsushiro (1999) observes that NOs cannot appear in the embedded vP attached by the focus particle *-sae* ‘even’ in the causative-potential construction, even when the vP is not fronted to the sentence-initial position as in (i), although we do not share the contrast in question (we thank Hideaki Yamashita (p.c.) for pointing this out). The variation in grammatical judgement may be related to the focus properties of *ga*-marked elements, but we leave the variation for future research.

(i) Hitomi-wa Maki-ni [piiman-o/(*)ga tabe]-sae_i t_i s-ase-rare-ru.
 Hitomi-TOP Maki-DAT green.pepper-ACC/(*)NOM eat-even do-CAUS-POT-PRES
 ‘Hitomi can even make Maki eat green pepper.’

- (6) a. Hitomi-wa Maki-ni piiman-o/ga tabe-sase-rare-ru.
 Hitomi-TOP Maki-DAT green.pepper-ACC/NOM eat-CAUS-POT-PRES
 ‘Hitomi can make Maki eat green pepper.’
 b. [Piiman-o/*ga tabe-sae]_i Hitomi-wa Maki-ni *t_i* s-ase-rare-ru.
 green.pepper-ACC/*NOM eat-even Hitomi-TOP Maki-DAT do-CAUS-POT-PRES
 ‘Hitomi can even make Maki eat green pepper.’

The facts in (5) and (6) jointly suggest that NOs need to move out of vP but can stay below TP; the remaining possibility is that they are moved to $v_{rare}P$.

Furthermore, when a $v_{rare}P$ is preposed, the vP -preposing sentence becomes grammatical, as shown in (7) (we thank Koji Sugisaki (p.c.) for pointing this out).

- (7) [Maki-ni piiman-o/ga tabe-sase-rare-sae]_i Hitomi-wa *t_i* su-ru.
 Maki-DAT green.pepper-ACC/NOM eat-CAUS-POT-even Hitomi-TOP do-PRES
 ‘Hitomi can even make Maki eat green pepper.’

This further supports the assumption that NOs satisfy their Case requirement within $v_{rare}P$, not TP or VP.

2.2 Binding Condition B

The claim that AOs and NOs occupy different positions is also supported by examining their behavior with respect to Condition B effects. Inoue (1976) and Miyagawa (1984) show that a pronominal object in the simple causative construction may be coreferential with the matrix subject, as shown in (8).

- (8) Taroo_i-ga Hanako-ni kare_i-o hihans-ase-ta.
 Taroo_i-NOM Hanako-DAT he_i-ACC criticize-CAUS-PAST
 ‘Taroo_i made Hanako criticize him_i.’ (Miyagawa 1984: 200)

The absence of the Condition B effect indicates that the matrix subject and the embedded object are not within the same binding domain: That is, the object stays in a deeply embedded position in the sentence.

In this light, Miyagawa (1984) observes that NOs in the causative-potential construction, unlike AOs, cannot be coreferential with the matrix subject, as shown by the contrast in (9).

- (9) a. Taroo_i-ga Hanako-ni kare_i-o hihans-ase-rare-ta.
 Taroo_i-NOM Hanako-DAT he_i-ACC criticize-CAUS-POT-PAST
 ‘Taroo_i could make Hanako criticize him_i.’
 b. *Taroo_i-ga Hanako-ni kare_i-ga hihans-ase-rare-ta.
 Taroo_i-NOM Hanako-DAT he_i-NOM criticize-CAUS-POT-PAST
 ‘Taroo_i could make Hanako criticize him_i.’ (Miyagawa 1984: 200)

The fact that NOs exhibit Condition B effects indicates that they must move to a position higher

than AOs and close enough to the matrix subject. Under the present proposal, NOs must move to $v_{rare}P$, as shown in (4b). As a result, it is in the same binding domain with the matrix subject in Spec, TP, violating the ban on co-reference.

2.3 Negative Polarity Items in Raising Constructions

The final piece of evidence for our claim has to do with the licensing of negative-polarity items (NPIs) in a raising construction discussed in Kishimoto (2017). Kishimoto argues that a sentence with the aspectual verb *i(-ru)* ‘be’ as in (10) is a raising construction, where the subject, *Ken*, undergoes raising from the position occupied by the trace. The whole sentence will convey either a progressive meaning or a perfective meaning. In (10), it has a progressive meaning.

- (10) Ken-ga_i [t_i hon-o yon-de] i-ru.
 Ken-NOM book-ACC read-GER be-PRES
 ‘Ken is reading books.’ (Kishimoto 2017:115)

According to Kishimoto, the aspectual construction like (10) has a bi-clausal structure, where the verb with the *-te/de*, a non-finite tense marker, is embedded under the aspectual verb *i(-ru)*. As the embedded non-finite TP lacks the ability to license nominative Case, the subject needs to undergo A-movement to Spec, TP in the matrix clause to satisfy the EPP and get marked with nominative Case.

Kishimoto (2017) shows that in the raising construction, negation can appear either in between the embedded verb and *-te/de*, or after the aspectual raising verb *i(-ru)*. Let us consider the examples in (11). In (11a), negation appears after the aspectual raising verb. On the other hand, the example in (11b) shows that it is in between the embedded verb and *-te/de*.

- (11) a. Imadani Mari-ga_i [t_i hon-o yon-de] i-na-i.
 still Mari-NOM book-ACC read-GER be-NEG-PRES
 ‘Still, Mari is not reading the book.’
 b. Imadani Mari-ga_i [t_i hon-o yoma-nai-de] i-ru.
 still Mari-NOM book-ACC read-NEG-GER be-PRES
 ‘Still, Mari has not been reading the book.’ (Kishimoto 2017:115)

Thus, the structures in (12) are given to the examples in (11), where the aspectual verb *i(-ru)* is represented as v_{be} .

- (12) a. [CP [TP Subj_i [NegP [$v_{be}P$ [TP t_i [v_P t_i [v_P Obj V] v] T] v_{be}] Neg] T] C]
 b. [CP [TP Subj_i [$v_{be}P$ [TP t_i [NegP [v_P t_i [v_P Obj V] v] Neg] T] v_{be}] T] C]

Now, let us consider the case where negation is located in the embedded clause, i.e. the case in (12b). Kishimoto (2017) observes that in this case an NPI of the kind *amari ooku-no* is not licensed if it modifies the subject as in (13a), but the same NPI is legitimate when it modifies an object as in (13b).

- (13) a. *Saikin [amari ooku-no hito-ga]_i [_{t_i} hon-o yoma-nai-de] i-ru.
 recently very many-GEN man-NOM book-ACC read-NEG-GER be-PRES
 ‘Recently, very many people have not been reading books.’
 b. Saikin Ken-ga_i [_{t_i} amari ooku-no hon-o yoma-nai-de] i-ru.
 recently Ken-NOM very many-GEN book-ACC read-NEG-GER be-PRES
 ‘Recently, Ken has not been reading very many books.’ (Kishimoto 2017:118)

Assuming that the NPI *amari ooku-no* should be licensed by negation in its surface position, Kishimoto (2017) argues that the contrast in (13) results from the fact that the raised subject falls out of the scope of negation, while the object that remains *in situ* is licensed within its scope.

Now let us consider the case involving the potential affix. When negation is located in the embedded clause, the potential affix may appear either in the embedded clause or in the main clause, as shown in (14a, b), respectively. When the potential affix appears in the embedded clause as in (14a), it occurs between the embedded verb and negation.

- (14) a. Maki-wa_i [_{t_i} hon-o/ga yom-e-nai-de] i-ru.
 Maki-TOP book-ACC/NOM read-POT-NEG-GER be-PRES
 ‘Maki has not been able to read the book.’
 b. Maki-wa [_{t_i} hon-o/ga yoma-nai-de] ir-are-ru.
 Maki-TOP book-ACC/NOM read-NEG-GER be-POT-PRES
 ‘Maki is able to be not reading the book.’

In both cases, the embedded object can participate in the accusative/nominative alternation. Given our assumption that the potential affix is a head of $v_{rare}P$, we take the structures of the raising construction in (14) to be (15).

- (15) a. [CP [TP Subj_i [$v_{be}P$ [TP _{t_i} [NegP [$v_{rare}P$ [vP _{t_i} [VP Obj V] v] v_{rare}] Neg] T] v_{be}] T] C]
 b. [CP [TP Subj_i [$v_{rare}P$ [$v_{be}P$ [TP _{t_i} [NegP [vP _{t_i} [VP Obj V] v] Neg] T] v_{be}] v_{rare}] T] C]

As shown in (15), v_{rare} takes either the transitive vP or the aspectual $v_{be}P$ as its complement.

Now, let us consider the contrast shown in (16), where the NPI *amari ooku-no* modifies the embedded object.

- (16) a. Maki-wa_i [_{t_i} amari ooku-no hon-o/ga yom-e-nai-de] i-ru.
 Maki-TOP very many-GEN book-ACC/NOM read-POT-NEG-GER be-PRES
 ‘Maki has not been able to read very many book.’
 b. Maki-wa_i [_{t_i} amari ooku-no hon-o/*ga yoma-nai-de] ir-are-ru.
 Maki -TOP very many-GEN book-ACC/*NOM read-NEG-GER be-POT-PRES
 ‘Maki could have been not reading very many book.’

When the potential suffix is located in the embedded vP as in (16a), the sentence involving the NO with NPI and its AO counterpart are both grammatical. However, only the AO with NPI is allowed in (16b), where the potential affix appears in the matrix clause. Crucially, its NO

counterpart is ungrammatical.

Under the present proposal, both nominative and accusative Case on the object in (16a) can be licensed within the embedded verbal projection because the NO and its AO counterpart are both in the scope of the embedded negation, as shown in (17a). Thus, the requirements on Case-licensing and NPI-licensing can be simultaneously satisfied.

- (17) a. [CP [TP Subj [_{vbe}P [TP [NegP [_{v_{rare}}P NPI-NO_i [_{vP} NPI-AO_i [_{vP} *t_i* V] *v*] *v_{rare}*] Neg] T] *v_{be}*] T] C]
 b. [CP [TP Subj [_{v_{rare}}P NPI-NO_i [_{vbe}P [TP [NegP [_{vP} NPI-AO_i [_{vP} *t_i* V] *v*] Neg] T] *v_{be}*] *v_{rare}*] T] C]

On the other hand, the NO in (16b) must move to the *v_{rare}*P located in the matrix clause for Case-licensing but it then falls out of the scope of negation within the embedded clause, as shown in (17b). As a result, the NPI *amari ooku-no* fails to be licensed.

The unavailability of the NO with the NPI in (16b) also indicates that nominative Case in question cannot be licensed in a long-distance manner; if it were possible, the NO could stay within the transitive *vP* and would satisfy the NPI-licensing requirement, contrary to fact. Returning to (16a), the availability of the NO then suggests that nominative Case on NOs must be locally licensed by the *v_{rare}* in the embedded clause but not by the matrix T. Moreover, since long-distance Case-licensing is not available, if T were the licenser of the NO, the NO would have to be overtly raised to the matrix T domain in (16a) on a par with the normal nominative subject. Thus, we would fail to predict the contrast between (16a) and (16b) with respect to NPI licensing. Hence, the NPI facts in (16) reinforce the conclusion that NOs need to move to *v_{rare}*P but stay below TP (cf. (4)).

2.4 Summary

We have seen that NOs are locally licensed within the *v_{rare}*P motivated by the following observations: The verbal projection smaller than *v_{rare}*P cannot be moved leaving NOs behind; NOs shows a Condition B violation with the matrix coreferential subject in the causative-potential construction; and NOs with an NPI exhibit a different behavior from their AO counterparts in the aspectual raising construction.

3. Proposals and Analysis

The observations made in the previous section can be captured if NOs are located within the *v_{rare}*P below TP, while they occupy a position higher than AOs, as shown in the schematic structures in (4) (repeated as (18)). The NPI facts suggest that NOs must be in a local relation with *v_{rare}* so that they fail to be c-commanded by the embedded negation at the surface structure, as shown in (17b) (repeated as (19)).

- (18) a. [TP [_{v_{rare}}P NP₁-ga (= NO) [_{vP} NP₁-o (= AO) [_{vP} *t₁* V] *v*] *v_{rare}*] T] (PC)
 b. [TP [_{v_{rare}}P NP₁-ga (= NO) [_{v_{sase}}P [_{vP} NP₁-o (= AO) [_{vP} *t₁* V] *v*] *v_{sase}*] *v_{rare}*] T] (CPC)

- (19) [CP [TP Subj [_{v_{rare}}P NPI-NO_i [_{v_{be}}P [TP [NegP [_vP NPI-AO_i [_{VP} *t_i* V] *v*] Neg] T] *v_{be}*] *v_{rare}*] T] C]

The question is why NOs must be overtly moved to *v_{rare}*P. We propose that Case-licensing cannot be executed via a long-distance manner but requires a strictly local relation between a nominal and a designated head. Hence, NOs must be Merged with the syntactic object (SO) headed by *v_{rare}*.

This apparently “Spec-Head” approach for Case-licensing can now be recast in terms of Minimal Search (MS), in line with Epstein, Kitahara & Seely (2012, 2014, 2022) and Hayashi (2022), who advocate replacing probe-goal Agree with MS. That is, in order for MS to find a suitable pair, NPs should be Merged with the appropriate projection. Extending this idea to other Case-licensing configurations, we propose (20).²

- (20) a. Nominative = being a MS-mate with the SO whose label comes from *v_{rare}*
 b. Dative = being a MS-mate with the SO whose label comes from *v_{sase}*
 c. Accusative = being a MS-mate with the SO whose label comes from *v*

In a nutshell, given the rather traditional idea that a morphological case is a reflex of the relation created in syntax, (20) claims that the relation detected by MS plays an important role.

Let us now apply this idea to some concrete examples. The case of the PC construction in (1a) is repeated below as (21a). The object NP is base-generated as the complement of V, and by assumption it cannot be Case-licensed in that position. When it undergoes Internal Merge with the SO headed by *v* as shown in (21b), it is marked as accusative through MS, given (20c). On the other hand, when it undergoes Internal Merge with the SO headed by *v_{rare}* as in (21c), MS detects it with *v_{rare}*, giving rise to nominative Case-marking. Given that Merge is free, NPs may undergo movement to any Case-licensing position. We claim that this is the reason why the object NP can move across the subject NP, as depicted in (21b-c).

- (21) a. Haruki-ga melon-o/ga tabe-rare-ru.
 Haruki-NOM melon-ACC/NOM eat-POT-PRES
 ‘Haruki can eat melon.’
 b. AO in PC
 c. NO in PC
-

At the same time, we assume that the subject NP must move to the TP-domain so as to get licensed as nominative via MS, detected with T (see footnote 3). But why is it not the case that the subject NP is marked as accusative, given the fact that it is Merged with the SO headed by *v* when it is first introduced to the structure? It follows if there are designated Case positions

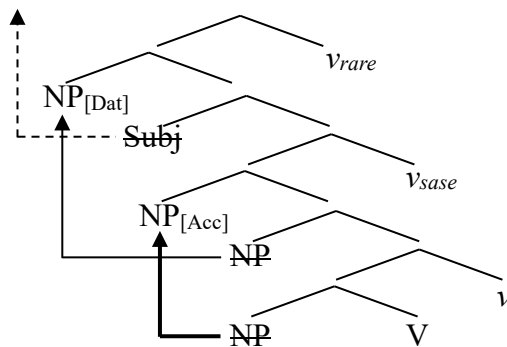
² We also propose that nominative is the reflex of being a MS-mate with the SO whose label comes from T.

that are different from theta positions. We then claim that this dissociation of Case and theta-relations follows from Goto's (2022) One-to-One Principle, which states that a syntactic operation can detect at most one relation per application. That is, if the subject NP stayed in the base-generated position, MS would find it with v . Then, it gives rise to yielding two relations, namely Case and theta, to the NP- v pair, which is properly blocked by the principle in question.

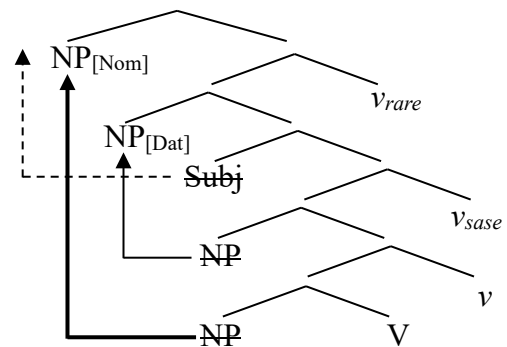
The case of the CPC construction in (1b) is repeated as (22a). As depicted in (22b-c), the object NP is marked either accusative or nominative, depending on which SO it is moved to.

- (22) a. Haruki-ga Ken-ni melon-o/ga tabe-sase-rare-ru.
 Haruki-NOM Ken-DAT melon-ACC/NOM eat-CAUS-POT-PRES
 'Haruki can make Ken eat melon.'

b. AO in CPC



c. NO in CPC



As for the causee NP, which is base-generated as the external argument of the embedded transitive vP , it undergoes Internal Merge with the SO headed by v_{sase} . As a result, it receives dative Case-marking via MS, given the proposal (20b). The causer NP, which is introduced as the external argument of $v_{sase}P$, is moved to the TP-domain for nominative Case-marking.

Finally, let us see how our analysis can accommodate other Case-marking patterns found in the CPC. The relevant example is given in (23). One notable point is that the object can be marked as either nominative or accusative as we have seen so far, but it cannot be marked as dative. That is, although there is nominative/accusative alternation for the objects, there is no dative/accusative alternation. Given free Merge, the proposed system may allow the object NP to be licensed as dative, if it can be Merged with the SO headed by v_{sase} . In order to block this pattern, we postulate that an NP with the theme theta-role is incompatible with the dative Case.

- (23) Haruki-ga Ken-ni/ga/*o melon-o/ga/*ni tabe-sase-rare-ru.
 Haruki-NOM Ken-DAT/NOM/*ACC melon-ACC/NOM/*DAT eat-CAUS-POT-PRES
 'Haruki can make Ken eat melon.'

On the other hand, the fact that the causee NP (*Ken* in the case of (23)) may appear as in nominative in addition to dative but not as in accusative follows without any further stipulation. This is because given the structures in (22b-c), the causee NP is base-generated in the position where MS detects it with the transitive v , which assigns a theta-role to the NP. The One-to-One Principle blocks the causee NP to enter the Case-relation with the transitive v , and there is no

such transitive *v* higher in the structure depicted in (22b-c). Therefore, it can never be marked as accusative. If the causee NP undergoes movement to the TP-domain, however, it can be marked as nominative, which is in fact possible as shown in (23).

4. Conclusion

To conclude, it is observed that there are three pieces of evidence showing that the nominative objects must be moved to “Spec, *v_{rare}*P” for its nominative Case to be licensed: i) the observations concerning *v*P-preposing indicate that the nominative objects are not necessarily moved to the TP-domain but can stay below; ii) the ones concerning the Condition B effects show that the nominative objects are located higher than their accusative counterparts; and iii) the NPI facts suggest that nominative objects must enter a strictly local relation with *v_{rare}*. In order to capture these observations, it is claimed that Minimal Search, but not long-distance, probe-goal Agree, is responsible for Case-licensing. In this way, this paper not only clarifies the overt positioning of nominative objects based on novel evidence other than scope properties but also offers an empirical support for the attempts that try to reduce operations that yield syntactic relations to the minimum.

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Verb Doubling in Mandarin Chinese as PF-Driven Lower Copy Pronunciation

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1. Introduction

The Copy Theory of movement treats movement dependencies as instances of the same syntactic object being merged at multiple points in a structure (Chomsky, 1995). Using Copy Theory, a *wh*-question like (1a) is analysed as (1b). There are two copies of *what*, but only the higher copy overtly realised. The lower one is not realised or deleted, which we represent with the strike-through notation.

- (1) *The Copy Theory Applied to Wh-Movement in English*
a. What did Puffy eat?
b. [_{CP} What did [_{TP} Puffy [_{VP} eat ~~what~~]]]

A well-known puzzle for Copy Theory is the question of what determines the realisation of the higher copy and the non-realisation of the lower one. In the syntax or post-syntax, there must be some kind of rule system that governs the deletion of copies at PF. A simple rule that might work for (1) is shown below in (2).¹

- (2) *A (Conservative) Copy Deletion Rule*
Delete all but the structurally highest copy.

A range of work following (Nunes, 1995, 2004) has argued that a rule like (2) is too restrictive: in a variety of languages lower copies can in fact be pronounced to some degree. For example, Landau (2006) focuses on examples of ‘predicate clefting’ (3) in modern Hebrew. Landau analyses the phenomenon as an instance of a VP movement dependency where both the higher and lower copies of the verb ‘buy’ are realised. Landau’s argumentation has been elaborated on by others (e.g. Scott, 2021; van Urk, 2018), leading to an emerging view of copy deletion that is sensitive to information at PF, such as the *stray affix filter* and *minimal word requirements*.

- (3) **liknot** et ha-praxim, hi **kanta** Hebrew Predicate Clefting

*Thanks to Coppe van Urk and the audiences of SICOGG24 and LAGB 2022 for helpful comments on earlier versions of this work. With respect to the initial discussions of the phenomenon as well as data, we owe many thanks to a lot of our friends and colleagues, in particular Zhouyi Sun, Xuechun Xiang, and Ka-Fai Yip. All the problems are ours.

¹ I We abstract away from orthogonal issues that also suggest that (2) is too simple, e.g. the issue of distinguishing copies from repetitions (Collins and Groat, 2018).

buy.INF ACC DET-flower.PLU she buy.PST
 ‘As for buying flowers, she bought.’

Landau (2006, ex. 8a)

In this paper we provide data from Mandarin Chinese to further support a view of the copy deletion mechanism with the following features:

- (4) *Properties of Copy Deletion Mechanism*
- a. **PF-sensitivity:** Lower copies can be realised if they would be subject to certain phonological or morphological processes.
 - b. **Partial deletion:** It is possible for only part of the lower copy to be realised.

We support these claims by examining a type of verb copying construction in Mandarin, which we refer to as *long verb doubling* (LVD). As exemplified in (5), the matrix verb *kàn* ‘read’ gets pronounced twice in this structure. The subject *tā* ‘he’ is preceded by one instance of the verb plus the object and followed by the other instance. Crucially, the ‘doubling’ of the verb depends on the presence of a toneless *de*, a morpheme which is commonly found with several kinds of post-verbal modifiers (Huang, 1988). In this paper only the event/manner adverbs, for example *hěn kuài* ‘very quickly’ in (5), are considered.

- (5) [Kàn shū] tā [kàn] de hěn kuài.
 read book he read DE very quickly
 ‘He reads books very quickly.’

Long Verb Doubling (LVD)
 $V_i O S V_i de XP$

We provide evidence that LVD involves VP-movement to the left periphery of the clause, akin to Landau’s analysis of the Hebrew data in (3). The doubling effect is modelled as the result of partial deletion of the lower VP copy, driven by a requirement for *de* to be morphophonologically hosted by the verb that is only satisfiable by *local dislocation* (Embick, 2007; Embick and Noyer, 2001). The derivation of (5) is simply schematised as in (6):

- (6) [CP [VP Kàn shū] [TP tā [VoiceP [VP kàn ~~shū~~] de hěn kuài]]]
- 

The paper is structured as follows. Section 2 offers some background to LVD and modification of *de* in Mandarin Chinese. Section 3 focuses on the derivation of LVD, providing evidence for our phrasal movement analysis. Section 4 outlines the partial copy deletion analysis, arguing for verb doubling as a PF-motivated phenomenon. Section 5 is the conclusion.

2. Background: Verb Doubling and *De* Modification

2.1 Varieties of verb doubling

Mandarin Chinese displays several kinds of verb doubling, namely two instances of a verb within the same clause. In this paper we focus on ‘long’ verb doubling, where the doubled verbs are separated by at least the subject (7a)/(8a). We set aside the more well-known cases of ‘short’ verb doubling, where the doubled verbs both occur in positions following the subject (7b)/(8b) (cf. Cheng, 2007).

(7) *Varieties of Verb Doubling*

- a. Long VD: [CLAUSE $V_i \dots$ Subject $\dots V_i$]
 b. Short VD: [CLAUSE Subject $\dots V_i \dots V_i$]

- (8) a. [Kàn shū] tā [kàn] de hěn kuài. **Long VD**
 read book he read DE very quickly V_i O S V_i de XP
 ‘He reads books very quickly.’
 b. Tā [kàn shū] [kàn] de hěn kuài. **Short VD**
 he read book read DE very quickly S V_i O V_i de XP
 ‘He reads books very quickly.’

Within the class of LVD patterns, we concentrate on ‘descriptive’ post-verbal event/manner modifiers (8a)/(9a). Cases with resultatives, e.g. *yǎn huā* ‘feel dizzy’ (9b), and durational/frequency phrases, e.g. *sān tiān* ‘three days’ (9c), are set aside here. Though this may render our analysis too restrictive at first sight, we suppose that our PF-driven analysis can still be extended to these other cases, which we will leave to future investigation.

- (9) a. [Kàn shū] tā [kàn] de hěn kuài. **‘Descriptive’ LVD**
 read book he read DE very quickly V_i O S V_i de XP
 ‘He reads books very quickly.’
 b. [Kàn shū] tā [kàn] dào yǎn huā. **‘Resultative’ LVD**
 read book he read DAO eye dizzy V_i O S V_i dao XP
 ‘He read books until he felt dizzy.’
 c. [Kàn shū] tā [kàn] le sān tiān. **‘Duration/Frequency’ LVD**
 read book he read LE three day V_i O S V_i le XP
 ‘He has read books for three days.’

2.2 The morphosyntax and morphophonology of ‘descriptive *de*’

Event/manner modifiers, such as *hěn kuài* in our instance, display a toneless morpheme *de* at their edge in certain environments. The presence of *de* introduces a range of constraints.

First, *de* must be adjacent to the verb if it is present. (10a) is ungrammatical because the object *shū* ‘book’ intervenes between the verb *kàn* ‘read’ and *de*. One possibility for circumventing this restriction is to simply omit *de* (10b) - its presence is optional in a range of predicates. Instead of omitting *de*, it is possible to place the object in a post-subject position before the verb (10c).

- (10) a. *Tā kàn shū de hěn kuài. *S V O de XP
 he read book DE very quickly
 ‘He reads books very quickly.’
 b. Tā kàn shū hěn kuài. S V O XP
 he read book very quickly
 ‘He reads books very quickly.’
 c. Tā shū kàn de hěn kuài. S O V de XP
 he book read DE very quickly
 ‘He reads books very quickly.’

Second, *de* cannot co-occur with a post-verbal object, even if it is adjacent to the verb. As exemplified in (11), though *de* being adjacent to the verb *kàn* ‘read’ is satisfied, the co-occurrence of the object *shū* ‘book’ following *de* still makes the sentence ungrammatical.

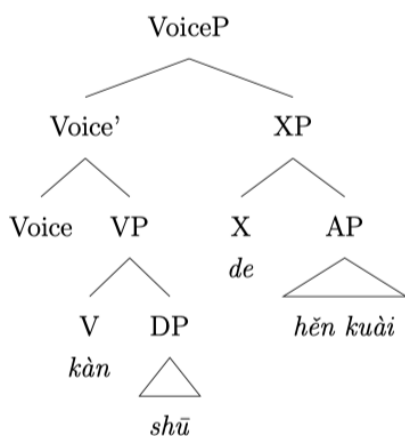
- (11) *Tā *kàn de shū* hěn kuài. *S V *de* O XP
 he read *de* book very quickly
 ‘He reads books very quickly.’

Finally, if the event/manner modifier occurs pre-verbally, *de* must still be verb-adjacent. (12) presents a situation where *de* cannot still occur before the event/manner modifier *hěn kuài* ‘very quickly’. Instead, given that the entire adverb moves pre-verbally, the position of *de* is correspondingly shifted to the one after the adverb, which again follows the first constraint that *de* must be linearly adjacent to the verb.²

- (12) Tā (**de*) hěn kuài *de* *kàn shū*. S (**de*) XP *de* V O
 he DE very quickly DE read book
 ‘He reads books very quickly.’

We assume that *de* realises the head of a phrase which can take e.g. AdvP-complements (Sybesma, 1999), leaving the category of such a phrase unspecified simply as XP. By adopting the assumption that there exists an external structure out of the core VP (Kratzer, 1996), this constituent is assumed to be merged within the VoiceP, as in (13).³

(13)



We treat *de*’s adjacency requirement as reflecting a constraint that the head expounded as *de* must form a complex head with V. Local dislocation (Embick, 2007; Embick and Noyer, 2001), which applies to linearly adjacent elements, is the relevant process at PF that satisfies such a

² Phonologically speaking, the post-verbal *de* and the pre-verbal one are almost identical. But in terms of writing, these two are represented by different characters in Mandarin Chinese. For the purpose of this paper, we leave the problem of different characters aside. But we hold the opinion that these two are in effect the same morpheme, since morphosyntactically both of them are only sensitive to one specific category, i.e. verbs.

³ We abstract away from the exact structural location of XP in VoiceP. For our purposes it is convenient to locate it outside the core VP which will undergo movement to the left periphery.

constraint.⁴ Any material that linearly intervenes between V and *de*, e.g. an object, would block the application of local dislocation. If local dislocation is blocked, *de*'s adjacency constraint is violated. In cases of LVD, the local dislocation process is fed by another PF-operation, *partial copy deletion*, which effectively removes intervening material.

2.3 Conditions on LVD

As seen in the section above, a number of constraints that *de* introduces are related to the co-occurrence of the object. There are several strategies that resolve the competition between *de* and the object. For example, the object can simply be placed in a pre-verbal position. Examples in (14) show respectively that such a position can either precede or follow the subject.

- (14) a. Shū tā kàn *de* hěn kuài. O S V *de* XP
 book he read DE very quickly
 ‘He reads books very quickly.’
 b. Tā shū kàn *de* hěn kuài. S O V *de* XP
 he book read DE very quickly
 ‘He reads books very quickly.’

LVD is another such strategy. Notice though that LVD is not possible with event/manner modifiers unless *de* is present (15) (cf. (8a)/(9a)).⁵

- (15) *Kàn shū tā kàn hěn kuài. *V_i O S V_i XP
 read book he read very quickly
 ‘He reads books very quickly.’

In terms of information structure, LVD seems to be particularly associated with expressing contrast. As shown in (16), the long-phrasal movement of the VP *kàn bàozhǐ* ‘read newspaper’ highlights the distinction between Piet’s behaviour of reading papers and that of reading newspapers. We have yet to investigate this in detail.

- (16) Piet_i kàn lùnwén hěn kuài. Kàn bàozhǐ tā_i què kàn *de* hěn màn.
 Piet read papers very quickly read newspaper he but read DE very slowly
 ‘Piet_i reads papers very quickly. In terms of reading newspapers, however, he_i reads them very slowly.’

To sum up, the variety of long verb doubling we focus on is only possible in the presence of a clitic-like element *de*. We treat *de*'s distribution as resulting from the need to be locally dislocated to V.

⁴ Head-movement or lowering would predict an invariable linear order of V and *de*. But as demonstrated in (12) and other data above, the relative position of *de* regarding V is changeable. So any prediction that results in an invariable V-*de* order is contrary to the fact.

⁵ All of our consultants agree with our judgment that in general the occurrence of *de* is obligatory in LVD. But some of them also agree with us that in colloquial Mandarin, the absence of *de* as exemplified in (15) is also acceptable to some extent. Two reasons might account for this. One is due to the dialectal variation; the other is due to the toneless property of *de*, which licenses to omit the pronunciation of *de* in certain contexts. In this paper we will not make commitment to neither of them, and will stick to the canonical case that *de* must be involved necessarily in the structure.

3. The Role of Predicate Movement

3.1 Evidence for phrasal movement

In this section we argue for a phrasal movement analysis of LVD. Bartos (2019), building on Tang (1990), claims that the fronted verb phrases in what we are terming ‘long verb doubling’ are in fact always base-generated adverbials. However, we show in (17) that LVD is not possible across a range of island contexts (cf. Huang et al., 2009). This is unexpected if the pre-subject VO constituents are adjuncts base-generated in the left periphery.

(17) *Island Effects with LVD*

- a. *[Kàn shū]_i wǒ xiǎng zhīdào [shénme shíhou tā kàn_i de hěn kuài].
 read book I want know what time he read DE very quickly
 ‘I wonder when he reads books very quickly.’ Wh-Island
- b. *[Kàn shū]_i wǒ jùjué [tā kàn_i de hěn kuài de shuōfǎ].
 read book I reject he read DE very quickly DE claim
 ‘I reject the claim that he reads books very quickly.’ Complex NP Island
- c. *[Kàn shū]_i [tā kàn_i de hěn kuài] ràng wǒ fēicháng jīngyà.
 read book he read DE very quickly make me very surprised
 ‘That he reads books very quickly makes me so surprised.’ Subject Island
- d. *[Kàn shū]_i wǒ chóngbài tā [yīnwèi tā kàn_i de hěn kuài].
 read book I worship him because he read DE very quickly
 ‘I worship him because he reads books very quickly.’ Adjunct Island

The dependency in LVD can cross non-island clause boundaries, as shown in (18).

- (18) [Kàn shū]_i wǒ xiāngxìn [tā kàn_i de hěn kuài].
 read book I believe he read DE very quickly
 ‘I believe that he reads books very quickly.’ Long-Distance Dependency

LVD also displays reconstruction effects. For example, the anaphor *tāzìjǐ* ‘himself’ in (19b) is controlled by the following subject, exactly as if it were obeying Principle A like (19a).

(19) *Principle A Reconstruction*

- a. Tā_i [huà tāzìjǐ_{i/*j} de xiàoxiàng] hěn kuài. No LVD
 he draw himself DE portrait very quickly
 ‘He_i draws the portrait of himself_{i/*j} very quickly.’
- b. [Huà tāzìjǐ_{i/*j} de xiàoxiàng] tā_i huà de hěn kuài. LVD
 draw himself DE portrait he draw DE very quickly
 ‘He_i draws the portrait of himself_{i/*j} very quickly.’

Likewise the referential object *Piet* in (20b) cannot be coreferential with the following subject. It behaves as if it were following the subject as in (20a), demonstrating the Principle C effect.

(20) *Principle C Reconstruction*

- a. *Tā_i [huà Piet_i de xiàoxiàng] hěn kuài. No LVD
 he draw Piet DE portrait very quickly

- *‘He_i draws the portrait of Piet_i very quickly.’
 b.*[Huà Piet_i de xiàoxiàng] tā_i huà de hěn kuài. LVD
 draw Piet DE portrait he draw DE very quickly
 *‘He_i draws the portrait of Piet_i very quickly.’

It is of course possible to create a base generated structure reminiscent of LVD, as demonstrated in (21). Nonetheless, these differ from (17) crucially in requiring PP/nominal structures and being insensitive to islands.

(21) *Base-Generated Adverbials*

- a. [Zài kàn shū zhè fāngmiàn] tā kàn de hěn kuài.
 at read book this aspect he read DE very quickly
 ‘In terms of reading books, he reads very quickly.’
 b. [Zài kàn shū zhè fāngmiàn] wǒ hàoqí shifǒu tā kàn de hěn kuài.
 at read book this aspect I curious whether he read DE very quickly
 ‘In terms of reading books, I wonder whether he reads very quickly.’
Wh-Island, c.f. (17a)
 c. [Zài kàn shū zhè fāngmiàn] wǒ jùjué tā kàn de hěn kuài de shuōfǎ.
 at read book this aspect I reject he read DE very quickly DE claim
 ‘In terms of reading books, I reject the claim that he reads very quickly.’
Complex NP Island, c.f. (17b)

To conclude this subsection, there is evidence that long verb doubling involves phrasal movement instead of base generation of the verb phrase.

3.2 What is phrasally moving in LVD?

We propose that long verb doubling involves a constituent containing the lexical verb and the object, which undergoes movement to some position above the subject.⁶ Given that the thematic domain/extended VP is thought to be highly structured (Kratzer, 1996), one crucial problem is the possible size of the moving constituent.

We can at least say that the moving constituent is not always a minimal VP of a verb and an object. The double object and dative object ditransitive VPs can, for example, appear in LVD contexts. In (22a), the verb *jiào* ‘teach’ moves with both the indirect object *Wassily* and the direct object *yǔyánxué* ‘linguistics’ to the position preceding the subject *Piet*. In (22b), the verb *jì* ‘send’ again moves to the left periphery of the clause, but this time with the direct object *zhīpiào* ‘check’ and the dative indirect object (*gěi*) *Wassily* ‘(to) Wassily’. The size of the moving constituent is thus variable, the fine-grained possibilities depending on greater understanding of Mandarin argument structure.

(22) *LVD with More Complex VPs*

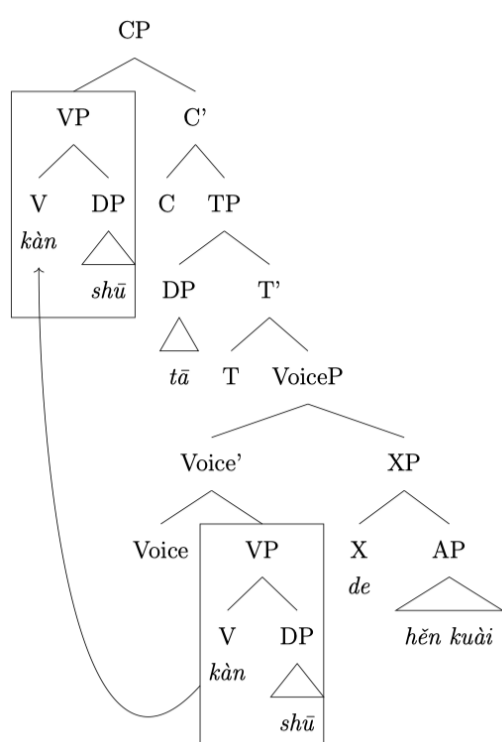
- a. [Jiào Wassily yǔyánxué] Piet [jiào] de hěn kuài.
 teach Wassily linguistics Piet teach DE very quickly

⁶ An analysis with phrasal movement could take different shapes, e.g. LVD as object topicalisation with obligatory V to C movement. LVD appears to differ from object topicalisation in allowing non-referential objects, e.g. ‘every/no book’, before the subject. These disparities with object topicalisation make the VP movement derivation a more attractive option.

- ‘Piet teaches Wassily linguistics very quickly.’ Fronted Double Object VP
 b. [Gěi Wassily jì zhīpiào] Piet [jì] de hěn kuài.
 to Wassily send check Piet send DE very quickly
 ‘Piet sent the check to Wassily very quickly.’ Fronted Dative Object VP

The kind of phrasal movement analysis of LVD we assume is shown below in (23).^{7 8} As mentioned in Section 2.2, the core VP *kàn shū* ‘read book’ is part of a more structured VoiceP, in which the post-verbal modifying phrase headed by *de* is contained. LVD involves a copy of the core VP being merged in the clausal left periphery.

(23) *LVD as VP Movement*



This VP-movement analysis needs to be augmented by greater attention to the copy deletion mechanism. (23) shows the analysis that addresses the hallmarks of movement discussed in 3.1, but not the connection to the ‘doubling’ property. We address this issue in the next section.

⁷ We assume that the subject in SpecTP is base generated in VoiceP.

⁸ We believe that VP fronting derivations like in (15) are required where V O constituent before the subject, independently of VD constructions. The contrast in (i) is understandable if (ib) involves VP fronting over the TP-level items (*Piet* the subject, *jīntiān* ‘yesterday’).

- (i) a. Piet jīntiān [kàn le nà běn shū]. S X V O
 Piet today read LE that CL book
 ‘Piet read that book today.’
 b. [Kàn le nà běn shū] Piet jīntiān. V O S X
 read LE that CL book Piet today
 ‘Read that book, Piet did today.’

4. PF-Motivated Partial Copy Deletion

4.1 The problem for PF-insensitive copy deletion

So far we have seen that (i) the presence of *de* triggers local dislocation to V, (ii) linearly intervening material blocks this process, leading to ungrammaticality, and (iii) there is evidence for a VP fronting derivation in Mandarin. What we have left unaddressed is how the realisation of the VP copies interacts with *de* to yield verb doubling.

Suppose we took a ‘conservative’ approach to copy deletion like (2) to try and handle this problem. The lower copy would be fully deleted, meaning that local dislocation between V and *de* cannot apply. This would lead to a violation of *de*’s hosting requirement. We would therefore expect, contrary to fact, that VP movement is illicit in the context of a VoiceP containing a *de*-phrase.

In fact, deletion of the lower VP copy seems to ‘factor in’ *de*’s hosting requirement. VP movement is licit, but only if (part) of the lower copy is realised. This is expected if the copy deletion mechanism is subject to competing constraints: to delete as much copy material as possible, and yet, to realise PF content associated with copies.

4.2 Ingredients for PF-sensitive lower copy deletion

We assume that there is deletion operation at PF which is triggered by the presence of copies. Crucially, deletion cannot freely apply. For explicitness we employ Landau (2006)’s constraints on copy deletion, adapted in (24). By the way these constraints have been defined, the constraint preserving ‘phonetic’ (i.e. PF) content (PR) is effectively more highly ranked than the constraint driving deletion of copy material (EP). This provides a general pressure against fully unpronounced chains.⁹ Ideally one would want to have the constraints in (24) follow from how the deletion operation works, and fits into a wider PF architecture. We leave fleshing out such a system for future work.¹⁰

(24) a. **P-Recoverability (PR)**

Copies associated with PF content must be pronounced.

b. **Economy of Pronunciation (EP)**

Delete all copies not associated with PF content.

⁹ We set aside how these constraints interact in detail with the higher copy pronunciation. The problem is that by themselves they seem to overgenerate copy deletion possibilities. In e.g. simple *wh*-movement cases in English, it seems the constraints could equally prefer deleting the higher copy instead of the lower one, contrary to fact. One possibility might be that the top of these dependencies comes with its own kind of PF requirement, as in Richards (2016). One could also imagine extragrammatical constraints on learning/processing against positing vacuous movement when a base-generation parse is available.

¹⁰ One issue with Landau’s system and recent implementations is the lack of clarity in how copy deletion actually ‘sees’/is sensitive to particular PF content. The way the system is set up has a ‘look-ahead’ (or anti-modular) flavour: rather than letting e.g. the stray affix filter rule out VP fronting, copy deletion goes out of its way to accommodate this requirement. One way to get this outcome without looking ahead would be to make copy deletion as part of overall system of ordered rules that constitute PF. The particular ‘PF content’ that copy deletion is sensitive to is simply the output of derivationally prior rules. One could then reinterpret PR as a kind of economy constraint saying ‘Don’t undo what PF has already done’.

Let us have a look at the application of these two constraints in more detail in the aforementioned case of Hebrew predicate clefting (25) (adapted from (3)). What is crucial in this instance of VP fronting is that the leftmost verb, part of moved constituent, is not inflected for tense/agreement. Only the instance of the verb following the subject bears this inflection.

- (25) [CP [VP **liknot** et ha-praxim], [TP hi [VoiceP **kanta**]]]
 buy.INF ACC DET-flower.PLU she buy.PST
 ‘As for buying flowers, she bought.’ Landau (2006, ex. 8a)

To handle the doubling effect and the morphological asymmetries, Landau (2006) proposes that PF can be associated with structural positions, independently of what happens to occupy them. The presence of such ‘position-based’ PF content triggers copy pronunciation by PR. In (25) it is assumed that tense/agreement inflection at T is generally subject to the stray affix filter, namely that the bound tense/agreement morpheme cannot be pronounced on its own. In other words, such a morpheme must be hosted, which correspondingly supplies PF content to its host. As a result VP fronting is possible in Hebrew, but V survives copy deletion to facilitate some implementation of V-to-T movement. The rest of the lower VP copy not associated with PF-content is deleted in accordance with EP.

To facilitate the PF-sensitive copy deletion mechanism outlined above, one final theoretical patch we assume is that partial deletion is possible (cf. Scott, 2021; van Urk, 2018). That is, if only part of a copy is associated with phonetic content, then just that part escapes deletion. Phrases are definitionally not atomic, so there is no obvious reason why deletion/realisation has to treat them as having no parts. The partial nature of the deletion operation is clearer with more complex kinds of fronted VPs, such as the ditransitive VP in (26) (adapted from (22b)). Here the higher VP copy is pronounced entirely, whereas it is not possible to pronounce the lower direct object *zhīpiào* ‘check’, or crucially, the pre-verbal goal *gěi Wassily* ‘to Wassily’. We regard this situation as the result of partial deletion, by which only the V-head *jì* ‘send’ that is associated with PF content is preserved.

- (26) [Gěi Wassily jì zhīpiào] Piet [(**gěi Wassily*) jì (**zhīpiào*)] de hěn kuài.
 to Wassily send check Piet send DE very quickly
 ‘As for sending the check to Wassily, Piet sent it very quickly.’

Having now introduced the remaining components of our analysis, in the next sub-section we put all the pieces together.

4.3 Putting the whole account together

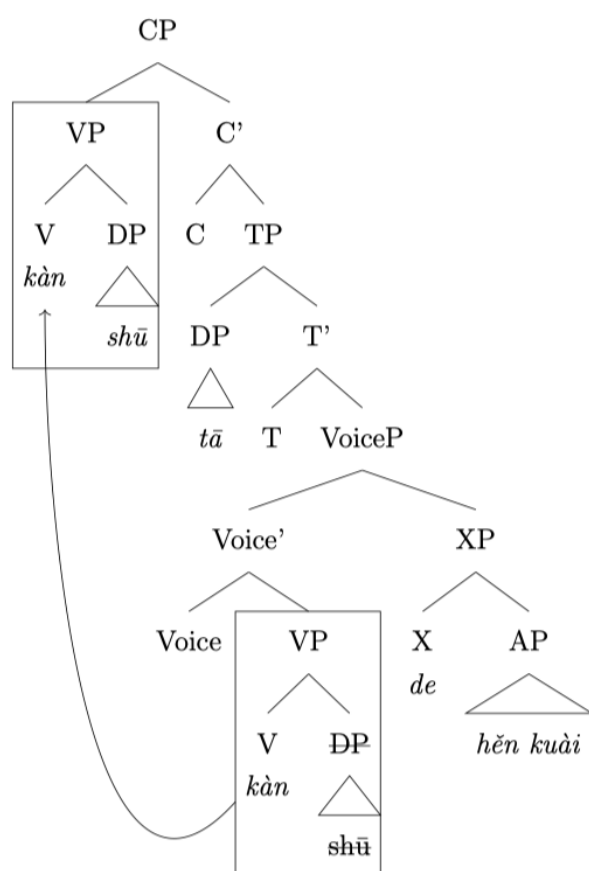
Our analysis of Long Verb Doubling patterns like (27a) has three components.

The syntactic component: Event/manner modifiers have an external shell of structure, the head of which is realised as *de*. The *de*-phrase is an adjunct within VoiceP, outside of the core VP. Long verb doubling is treated as an instance of VP-movement to the left periphery. The core syntactic assumptions are represented below in (27b).

The morphosyntax of *de*: The head of the external shell of event/manner modifiers must form a complex head. The only process available to satisfy this constraint is local dislocation, which requires two heads to be linearly adjacent. The presence of material intervening between V and *de* blocks the application of local dislocation.

The workings of copy deletion: The presence of copies triggers a deletion mechanism, subject to the constraints PR and EP. Focusing on how this applies to the lower copy - the relevant factor is the hosting requirement of *de*, which supplies a kind of PF content to the lower copy. The PR constraint prioritizes deletion that preserves this content - i.e. by allowing the V to escape deletion, thereby feeding local dislocation of *de*. The EP constraint ensures that any material that is not required to preserve PF content is deleted.

- (27) a. [Kàn shū] tā [kàn] de hěn kuài.
 read book he read DE very quickly
 ‘He reads books very quickly.’
 b.



5. Conclusion

We have argued that instances of ‘long verb doubling’ result from the interaction of (i) movement of VP to SpecCP, (ii) a hosting requirement and local dislocation associated with the morpheme *de*, and (iii) a mechanism sensitive to PF information that allows partial deletion of copies. Our analysis relies on a novel type of trigger for the lower copy pronunciation, elements which have clitic-like hosting requirements at PF.

We would like to investigate a broader range of elements in Mandarin Chinese which seem to trigger verb doubling, such as *dào* (28a) and *le* (28b). These particles are likewise used in the modification of the VP, but they are associated with distinct semantic properties. We interpret such data to indicate that the hosting requirement is not unique to *de*. This potentially

points away from it being a lexical peculiarity, and towards it being the outcome of heads being in a particular structural context.

- (28) a. [Kàn shū] tā [kàn] dào yǎn huā. **‘Resultative’ LVD**
 read book he read DAO eye dizzy
 ‘He read books until he felt dizzy.’ V_i O S V_i dao XP
- b. [Kàn shū] tā [kàn] le sān tiān. **‘Duration/Frequency’ LVD**
 read book he read LE three day
 ‘He has read books for three days.’ V_i O S V_i le XP

Our analysis also offers a new direction for the cross-linguistic investigation of the copy pronunciation. Even in languages, like Mandarin, where verbs are not inflected for tense/agreement etc. and thus there is no stray affix filter, there may be a range of ‘dependent’ morphemes associated with verbs/verb phrases. If they are sufficiently local to a VP copy, we expect to find doubling of the verb.

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Indefinites and Polar Disjoint Interrogatives

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1. Introduction

The current study is an exploration of indefinites in the specific environment of polar disjoint questions in two Indo-Aryan languages, Bangla and Hindi. Interrogatives in Indo-Aryan languages have notably been a matter of great interest in previous scholarship. With their numerous question particles, intriguing intonational patterns, and presence of both overt and covert scrambling, the subject of interrogatives makes for a complicated picture to paint. The current study, however, focuses solely on disjunction in interrogatives which refers to two kinds of interrogative constructions – the polar disjoint interrogative and the alternative question in Hindi-Urdu and Bangla.

Our observations suggest that indefinites are only licensed in disjoint polar questions (henceforth, disjoint PolQs) in both Bangla and Hindi. Alternate Questions (henceforth, AltQs) do not permit indefinites within the disjunction. In contrast, universals are ungrammatical across both disjoint PolQs and AltQs in the concerned languages. We account for the claims by focusing on the narrow scope requirements of the disjunction operator. The study posits that the syntactic requirements of the logical disjunction require the $[u\exists]$ feature to be checked by an existential operator in the narrow scope bearing reading. While indefinites like '*kuch*', '*kichu*' (some) fulfil these requirements, universals like '*sab*', '*shob*' (all) fail to do so and therefore, are ungrammatical in disjoint interrogatives.

The study is divided into six sections, with the introduction as the first. In order to provide a comprehensive account of our claims, we begin with a brief review of interrogatives in Indo-Aryan Hindi-Urdu and Bangla, which forms the second section. The third section contains empirical data regarding indefinites and universals in interrogatives in both languages. Our syntactic-semantic proposal forms the fourth section of the study, followed by the fifth section which cites the future prospects of the study. The sixth section concludes the paper.

2. Background

To begin with, the following sub-sections provide an overview of both interrogative disjunctions and disjunctions in PolQs in Hindi-Urdu and Bangla.

2.1. Hindi-Urdu

Hindi-Urdu employs the interrogative particle, '*kya:*' across all kinds of questions even though it is not mandatorily present in any. It functions as both the Q-operator, and Polar Question Particle (PQP) and also lends a thematic reading based on the question in the language (Bhatt & Dayal 2020). Polar Questions are characteristically marked with rising intonation on the verbal complex, whereas Alternate Questions feature a rise-fall, in addition to the emphasis on the alternates as in English. Examples (1) and (2) feature a basic PolQ and an AltQ in Hindi-Urdu.

- (1) (kya:) Meetu=ne Richa=ko chitthi [di:]↑?
 PQP Meetu=ERG Richa=ACC letter.F give.PFV.F
'Did Meetu give a/the letter to Richa?' [Y/N question: ↑]

- (2) (Kya:) Meetu=ne [Richa=ko]_F chitthi di: ya [Riya=ko]_F?
 PQP Meetu=ERG Richa=ACC letter.F give.PFV.F or Riya=ACC
'Did Meetu give the letter to Richa or Riya?'

When it comes to disjunction in interrogatives, the disjoint PolQs and AltQs appear to be quite similar in structure. On a closer look, the two are distinguished through (i) choice of the disjunction operator and (ii) intonation. Hindi-Urdu employs two distinct lexical items for disjunction in interrogatives: '*ya:*' and '*ki*'. The particle '*ki*' is exclusive to AltQs (3). The disjoint particle '*ya:*' is permitted in both PolQs (4) and AltQs (3) (Bhatt & Dayal, 2020), and in declaratives (5).

Additionally, the two readings differ in terms of their intonational patterns (Bartels 1997, Romero 1998). The disjoint PolQ, in addition to the already established rising tone at the verbal complex carries neutral intonation on the disjunctive phrase (4). The AltQ, on the other hand, stresses each disjunct, as in (3).

(3) (✓AltQ, ✗PolQ)

- (kya:) tum [ca:i]_F pi-yoge ya:/ki [coffee?]_F
 PQP you tea drink-FUT.2MPL OR coffee
'Will you drink tea or_{alt} coffee?' (Bhatt & Dayal, 2020)

(4) (✗AltQ, ✓PolQ)

- (kya:) tum ca:i ya: coffee pi-yoge?
 PQP you tea or coffee drink-FUT.2MPL
'Will you drink tea or coffee?'
(ibid)

(5) (Disjoint Declarative)

- Ravi ca:i ya: coffee pi-yega.
 Ravi tea or coffee drink-FUT.3MSG

'Ravi will drink either tea or coffee.'

2.2. Bangla

Bangla (aka Bengali, IA) has two different types of disjunctions in its Polar (PolQ) and Alternative (AltQ) questions (Bhadra 2017). The boolean disjunction 'ba' (or) is exclusively reserved for PolQ (7) whereas we have 'kina' 'whether'¹ as the underlying disjunction structure for AltQ (6) (cf. Bhadra, 2017).

(6) (✓AltQ, ✗PolQ)

Rishi	ki	cha	khabe	na	coffee?
Rishi	KI	tea	eat.FUT.3S	NA	coffee?

'Will Rishi drink tea or (will Rishi drink) coffee?'

(7) (✗AltQ, ✓PolQ)

Rishi	ki	cha	ba	coffee	khabe?
Rishi	PQP	tea	or	coffee	eat.FUT.3S

'Is it the case that Rishi will drink tea or coffee?'

Alike Hindi, Bangla also is an intonational language, and a rising tone on the verbal complex is required to signify intonation in a Question. The 'ki' particle in Bangla is the overt realization of the PolQ particle (Bhadra. 2017) (8).

(8) Ram ki cha khabe?
 Ram PQP tea eat.FUT.3S

'Will Ram drink tea?'

As attested by the native speakers the 'ki' in AltQs is optional. Though there is no structural dependency between the polar disjoint operator 'ba' and the PQP 'ki', in disjoint PolQs the 'ki' is mandatory (cf. Bhadra, 2017).

Following the same pattern as Hindi-Urdu, Bangla disjoint declaratives also use the PolQ disjoint particle 'ba' as the disjunction operator (9).

(9) (Disjoint Declaratives)

Anur	baba	ba	kaka	phone	korechilo
Anu.GEN			father	or	uncle phone do.PRF.PST.3

'Anu's father or uncle called'.

¹ The disjunction particle in Bangla AltQs resembles 'whether'. Bhadra (2017) refers to 'whether' as a Complex head-Q-Disj(unction) i.e., 'whether' = kina = ki (Q) + na ('or').

3. Observations

The current section details some of our observations regarding indefinites in interrogatives in the two languages. In Bangla and Hindi, non-specific existential indefinites such as *'kichu'* and *'kuch'* some(thing), *'keu'* and *'koi'* some(one) occur perfectly in disjoint PolQs constructions.

- (10) Rishi ki cha ba coffee kichu khabe? [Bangla]
 Rishi PQP tea or coffee some(thing) eat. FUT.3
'Will Rishi drink tea or coffee?'

- (11) (kya:) Ram ca:i ya: coffee kuch pi-yega:? [Hindi]
 PQP Ram tea or coffee some(thing) drink- FUT.3MSG
'Will Ram drink tea or coffee?'

- (12) Tomake ki Ravi ba Anu keu dakche? [Bangla]
 you.ACC PQP Ravi or Anu some(one) call.PROG.PRS.3
'Are you being called by Ravi or Anu?'

- (13) (Kya:) tum-ko Riya ya: Ravi koi lene aae-gaa? [Hindi]
 PQP you- ACC Riya or Ravi some(one) take come- FUT.3MSG
'Will Riya or Ravi come to pick you up?'

This behavior is not replicated in AltQs. Existential Indefinites are ungrammatical in AltQs across both languages, as evidenced below.

- (14) Rishi ki cha na coffee *kichu khabe? [Bangla]
 Rishi KI tea NA coffee some(thing) eat. FUT.3
 Int: *'Will Rishi drink tea or (will Rishi drink) coffee?'*

- (15) (kya:) Ram ca:i ki coffee *kuch pi-yega? [Hindi]
 PQP Ram tea or coffee some(thing) drink- FUT.3MSG
 Int: *'Will Ram drink tea or (will Ram drink) coffee?'*

While existential indefinites go hand in hand with PolQs, universal indefinites like *'sab'* and *'shob'*, all are prohibited in such constructions across the two languages.

- (16) Rishi ki cha ba coffee *shob khabe? [Bangla]
 Rishi PQP tea or coffee all eat. FUT.3
 Int: *'Will Rishi drink tea or coffee?'*

- (17) (kya:) Ram ca:i ya: coffee *sab pi-yega:? [Hindi]

PQP Ram tea or coffee all drink- FUT.3MSG
 Int: ‘Will Ram drink tea or coffee?’

4. Proposal

As is evident from the empirical data presented in the previous section, existential indefinites can only occur within disjoint PolQ constructions and not in AltQs. We aim to present an adequate account of the licensing of existential indefinites in disjoint PolQs in the two languages at the syntax-semantics interface. Additionally, we elaborate on why existential indefinites are ungrammatical in AltQs across both languages.

While accounting for the existential indefinites in disjoint PolQs, we strengthen our analysis by demonstrating the unacceptability of universal indefinites in the same. We frame our analysis in two parts. The first part of our analysis deals with the syntax where we focus on the size of the disjunct and the syntactic scope of the disjunction operator. In the second part, we compositionally build up the semantics for our analysis as a whole.

4.1. Syntax

We begin this section by outlining why existential indefinites are not permissible with AltQ constructions as in (14, 15) repeated here as in (18, 19). We believe that the disparity observed in the ungrammaticality of non-specific indefinites in interrogatives with disjunction lies in the size of the disjunct and the scope-taking behavior of the disjunction operator. The crucial idea presented in this study is that non-specific indefinites take narrow scope (over the disjoint set) and mandatorily have to be licensed by some existential operator (Partee, 2005).

(18) Rishi ki cha na coffee *kichu khabe? [Bangla]
 Rishi KI tea NA coffee some(thing) eat. FUT.3SG
 Int: ‘Will Rishi drink tea or (will Rishi drink) coffee?’

(19) (kya:) Ram ca:i ki coffee *kuch pi-yega? [Hindi]
 PQP Ram tea or coffee some(thing) drink- FUT.3MSG
 Int: ‘Will Ram drink tea or (will Ram drink) coffee?’

We will first take up the case of Bangla AltQs, where the disjunctive complementizer, *ki-na* takes only clausal structures, *i.e.*, disjunct TPs as arguments, and therefore always has wide scope in the construction (20) (cf. Bhadra, 2017). The following bracketed tree is a syntactic representation of a basic Bangla AltQ (6).

(20) [_{ForceP} Rishi_j [_{Force} ki_i] [_{CP} [_{TP} *t_j* cha khabe][_{C'} [_C *t_i- na*] [_{TP} *t_j* coffee khabe]]]]]

As per Bhadra (2017), *ki* moves to Force⁰ to mark the scope of disjunction, thereby leaving *na* as the surface disjunct connective, which disjoins two TPs, ‘*cha khabe*’ and ‘*coffee khabe*’. This is

similar to the account proposed in Bhatt & Dayal (2020) for Hindi AltQs, where AltQs are shown to be derived from the explicit disjunction of two PolQs, or two CPs, with the disjunction operator taking wide scope over the construction.

- (21) Kya: tum chai pi-yoge ya: (kya: tum) coffee (pi-yoge)?
 PQP you tea drink.FUT.2MSG OR PQP you coffee drink.FUT.2MSG
'Will you drink tea or (will you drink) coffee?'

- (22) [_{ForceP} kya: [_{CP} [_{TP} tum chai pi-yoge][_{C'} [_C ya:] [_{TP} (kya: tum) coffee (pi-yoge)]]]]

In both cases, the narrow scope taking indefinite becomes incompatible with the wide scope taking disjunction operator, leading to a licensing failure at LF, with AltQs being ungrammatical with non-specific indefinites in both Bangla and Hindi-Urdu.

The question that now arises considers the differing nature of disjoint PolQs and AltQs. The PolQ disjunction operators, 'ba' in Bangla and 'ya:' in Hindi, differ greatly from their AltQ counterparts in terms of their scope-taking properties. Taking up the Bangla disjoint operator 'ba' first, we observe that while 'ki-na', the AltQ operator, disjoins only clauses and consequently can license wide scope alone, 'ba' can disjoin both clausal and sub-clausal structures, and therefore allows licensing of wide scope (23) as well as narrow scope (7) (Bhadra, 2017).

- (23) Rishi cha (khabe) ba coffee khabe ki?
 Rishi tea eat.FUT.3 or coffee eat. FUT.3 PQP
'Will Rishi drink tea or coffee?'

The Hindi disjunction operator 'ya:' on the other hand, behaves rather differently from Bangla 'ba' in disjoint PolQs. As evidenced earlier, 'ba' licenses both wide scope and narrow scope, the Disjoint PolQ operator 'ya:' in Hindi-Urdu does not follow the same pattern. It can only license narrow scope readings in a disjoint PolQ construction.

(24) (✓AltQ, XPolQ)

- (Kya:) Ravi chai pi-yega ya: coffee pi-yega?
 PQP Ravi tea drink- FUT.3MSG or coffee drink- FUT.3MSG
'Will Ravi drink tea or (will Ravi) drink coffee?'

(24) has a wide scope reading, with its disjunction of two VPs and can only be understood as an AltQs with the disjunction operator 'ya:' yielding an AltQ interpretation and NOT a PolQ interpretation. The Hindi-Urdu operator 'ya:', therefore, only licenses narrow scope in disjoint PolQ constructions.

As per our claim, existential indefinites occur only within the narrow scope readings of the 'ba' and the 'ya:' operator in disjoint PolQs. Example (25), which depicts an indefinite alongside a Bangla disjoint PolQ with a wide scope reading, is provided in support of our hypothesis.

- (25) ?Rishi cha khabe ba coffee kichu khabe ki?
 Rishi tea eat.FUT.3 or coffee some(thing) eat.FUT.3 PQP
 Int: 'Will Rishi drink tea or coffee?'

Additionally, whenever indefinites themselves appear to have a sentential scope, the resulting structures are ungrammatical.

- (26) Rishi ki (*kichu) cha ba coffee khabe? [Bangla]
 Rishi PQP some(thing) tea or coffee eat.FUT.3
 Int: 'Is it the case that Rishi will drink tea or coffee?'

- (27) (kya:) (*kuch) Ram ca:i ya: coffee pi-yega:? [Hindi]
 PQP some(thing) Ram tea or coffee drink- FUT.3MSG
 Int: 'Is it the case that Ram will drink tea or coffee?'

The final piece of supporting evidence comes from the ungrammaticality of universals in disjoint PolQs. Recall examples (16) and (17), repeated here in (28) and (29).

- (28) Rishi ki cha ba coffee *shob khabe? [Bangla]
 Rishi PQP tea or coffee all eat.FUT.3
 Int: 'Will Rishi drink tea or coffee?'

- (29) (kya:) Ram ca:i ya: coffee *sab pi-yega:? [Hindi]
 PQP Ram tea or coffee all drink- FUT.3MSG
 Int: 'Will Ram drink tea or coffee?'

To account for the ungrammaticality of universals in disjoint PolQs, we argue for a $[u\exists]$ feature (see also Mandarin *hu'ozhe* (Erlewine, 2017)); one that requires a local $\exists$ operator in the narrow scope reading. This local $\exists$ operator may or may not be phonologically overt. Consequently, the $[u\exists]$ feature on the logical disjunction needs to get checked locally in the narrow scope reading. Since universals lack the $[u\exists]$ feature, a construction with disjoint PolQs becomes unfeasible.

Therefore, we arrive at the following syntactic structure for narrow scope carrying disjoint PolQs to represent the grammaticality of indefinites with PolQs (and PolQs alone). The lower $\exists$ denotes the slot for indefinites like 'kichu', 'kuch' some etc.

- (30) $[_{\text{ForceP}} \text{Rishij } [_{\text{Force0}} \text{ki}] [_{\text{CP}} \exists [_{\text{TP}} j [_{\text{VP}} [_{\text{Disj(DP)}} \text{cha ba coffee}] \exists] [_{\text{v}} \text{khabe}]]]]]$ [Bangla]

- (31) $[_{\text{ForceP}} (\text{Kya:}) [_{\text{CP}} \exists [_{\text{TP}} \text{Rishi } [_{\text{VP}} [_{\text{Disj(DP)}} \text{cai: ya: coffee}] \exists] [_{\text{v}} \text{piye-ga}]]]]]$ [Hindi]

Following the syntactic outline of the polar disjoint interrogative constructions, as presented above, we

depict the semantics of the same in the subsequent section.

4.2. Semantics

To build up the semantics, we follow the widely accepted view on PolQs *i.e.*, PolQs denote two alternative propositions where one denotes a positive prejacent and the other is the negation of it (cf. Hamblin, 1973; Dayal, 2016) (32).

(32) Hamblin (1973): 52

- a. $[[Q[POL] \alpha]] = \{\lambda w. A(w), \neg \lambda w. A(w)\}$
 b. where $[[\alpha]] = \{A\}$ (the prejacent proposition)

Our semantics for disjoint PolQs is based on the above schematization. Following insights from Partee & Rooth (1983); Von Stechow (1991); Aloni (2003); Simons (2005); Alonso-Ovalle (2006), the logical disjunction ‘*ba*’ and ‘*ya*’ in (10, 11) gives us the set of focus alternatives (cf. Bhadra, 2017), which is $\{\text{tea, coffee}\}$ in this case. While accounting for the effect of the narrow scope taking $\exists$ on the set of focus alternatives, we follow Erlewine (2017)’s extensionalized version of Uegaki (2016)’s cross-categorical rule (33).

(33) $\exists - [[\exists \alpha]]^{\text{alt}} = [[\alpha]]^{\text{alt}}$ where α is of any type τ .

Therefore, applying the rule in (33) with respect to (10, 11) we derive the following:

(34) $[[\exists \text{ chaba/ya: coffee}]]^{\circ} = \lambda P_{\langle e, t \rangle}. P(\text{tea}) \vee P(\text{coffee})$

The propositional $\exists$ operator now takes the set of focus alternatives (35a) and yields an ordinary singleton set containing the proposition (35b).

- (35) a. $\exists \{\lambda w. \text{drink}_w(\text{Rishi, tea}), \lambda w. \text{drink}_w(\text{Rishi, coffee})\}$
 b. $\{\lambda w'. \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi, tea}), \lambda w. \text{drink}_w(\text{Rishi, coffee})\} : p(w') = 1\}$

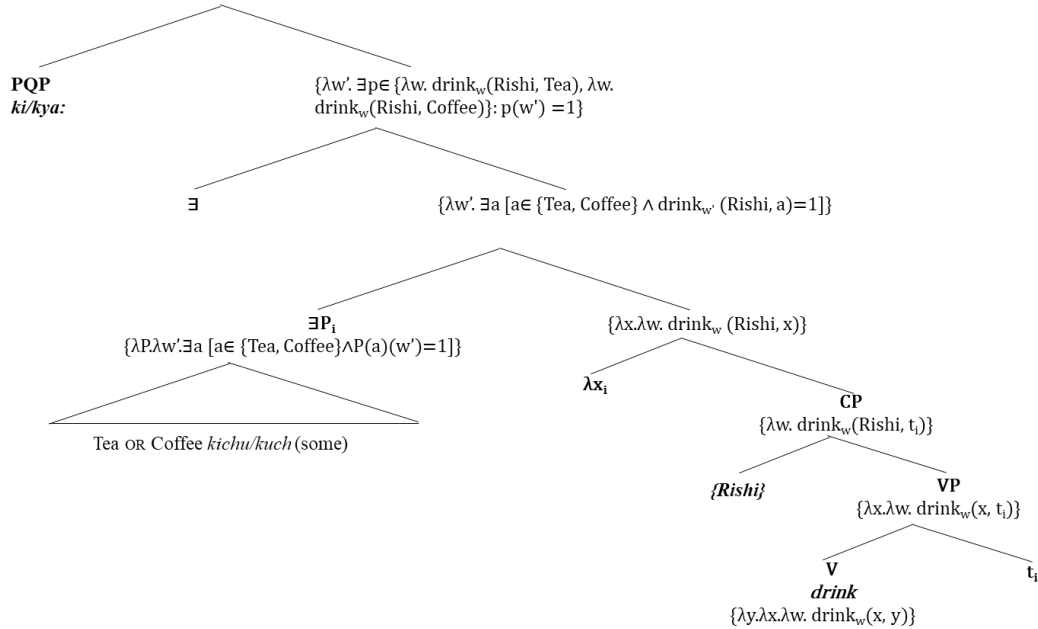
Now we argue that the PQP ‘*ki*’ and ‘*kya*’ in Hindi and Bangla, act on this set and give us the following denotation in (36b), where one is the question nucleus and the other is the negation (Hamblin 1973).

- (36) a. $ki/kya: [\{\lambda w'. \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi, tea}), \lambda w. \text{drink}_w(\text{Rishi, coffee})\} : p(w') = 1\}]$
 b. $\{\lambda w'. \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi, tea}), \lambda w. \text{drink}_w(\text{Rishi, coffee})\} : p(w') = 1,$
 $\lambda w'. \neg \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi, tea}), \lambda w. \text{drink}_w(\text{Rishi, coffee})\} : p(w') = 1\}$

The LF in (37) shows the compositional build-up of our analysis.

(37)

$\{\lambda w'. \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi}, \text{Tea}), \lambda w. \text{drink}_w(\text{Rishi}, \text{Coffee})\}: p(w') = 1, \\ \lambda w'. \neg \exists p \in \{\lambda w. \text{drink}_w(\text{Rishi}, \text{Tea}), \lambda w. \text{drink}_w(\text{Rishi}, \text{Coffee})\}: p(w') = 1\}$



An account for the ungrammaticality of (14, 15) follows the simple resolution that interrogative disjunction, which doesn't have to be licensed by an $\exists$ operator, always takes wide scope but the lower-level indefinites are never propositional.

5. Future Thoughts

In the near future, we plan to look at another intriguing property of indefinites in disjoint interrogatives, that of existential indefinites occurring as the second disjunct (38, 40), but not as the first (39, 41) in disjoint PolQs in Hindi and in Bangla.

(38) Rajiv ki soup ba kichu khabe? [Bangla]
 Rajiv PQP soup or some(thing) eat.FUT.3
 'Will Rajiv eat soup or something?'

(39) *Rajiv ki kichu ba soup khabe? [Bangla]
 Rajiv PQP some(thing) or soup eat.FUT.3
 Int: 'Will Rajiv eat soup or something?'

(40) (Kya:) Rajiv ca:i ya: kuch pi-yega? [Hindi]
 PQP Rajiv tea or some(thing) drink.FUT.3SG
 'Will Rajiv drink tea or something?'

(41) *(Kya:) Rajiv kuch ya: cai: pi-yega? [Hindi]

PQP Rajiv some(thing) or tea drink.FUT.3MSG
 Int: 'Will Rajiv drink tea or something?'

We also plan to analyse disjoint declarative sentences that show a similar pattern with indefinites, *i.e.*, indefinites within constructions where both the disjoint particle 'ba' and 'ya:' have narrow (42, 44) and wide scope (43, 45) readings. Like their behavior in interrogatives, existential indefinites only occur with the narrow scope (42, 44) readings of the disjoint particles even in declaratives.

(42) Riya naach ba gaan (kichu) korbe [Bangla]
 Riya dance or sing (something) do.FUT.3
 'Riya will dance or sing.'

(43) Riya naach korbe ba gaan (*kichu) korbe [Bangla]
 Riya dance do.FUT.3 or sing (something) do.FUT.3
 'Riya will dance or (Riya will) sing.'

(44) Riya ca:i ya: coffee (kuch) pi-yegi:. [Hindi]
 Riya tea or coffee (something) drink- FUT.3FSG
 'Riya will drink tea or coffee.'

(45) Riya ca:i pi-yegi ya: coffee (*kuch) pi-yegi. [Hindi]
 Riya tea drink- FUT.3FSG or coffee (something) drink- FUT.3FSG
 'Riya will drink tea or (Riya will) drink coffee.'

With these future ventures, we hope to strengthen our original claim that was presented in this study.

6. Conclusion

The current study put forth observations regarding indefinites within polar disjoint questions and alternative questions in two Indo-Aryan languages, Bangla and Hindi. It was observed that existential indefinites are perfectly grammatical with disjoint PolQs but are not permitted in AltQs. Additionally, universal indefinites were found to be ungrammatical across the two languages. The crucial idea presented in the study was that non-specific indefinites are non-sentential and can only take narrow scope (over the disjoint set). The study provided syntactic and semantic evidence in favor of our claim by demonstrating that the narrow scopal requirements of the indefinites match the ones of the disjoint PolQ operators, 'ba' and 'ya:' and thereby, prove grammatical in disjoint PolQ constructions. In AltQs however, the narrow scope taking indefinite becomes incompatible with the wide scope taking disjunction operator, leading to a licensing failure at LF. We also argue in favor of the $[u\exists]$ feature of the narrow scope bearing reading of the logical disjunction.

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When VP-Ellipsis Meets TP-Ellipsis: Implications for Neg Raising, Sluicing, and PF-Deletion

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1. Introduction ¹

In this paper, I document and analyze a hitherto unnoticed interaction between VP-ellipsis (VPE) and sluicing (TP-ellipsis/TPE) as shown in (1).

- (1) Although Sally still does [_{VP} Ø], I definitely don't think Trump will run for office again, and I know exactly why [_{TP} Ø].

As shown above, this example exhibits a polarity reversal between the VPE and TPE sites; the sluice denotes a negative proposition that Trump will not run for office again whereas the subordinate clause introduced by *although* means that Sally still believes that Trump will run for office again, which contains the positive TP (i.e., Trump will run for office again).

I will show that the observed ellipsis conspiracy in (1) provides novel support for a pragma-semantic approach to the so-called Neg-Raised (NR) interpretation (Bartsch 1976; Horn 1978, 1989; Horn and Bayer 1984; Gajewski 2005, 2007; Romoli 2013; Homer 2015; Kroll 2019, among others) over the syntactic NEG raising approach (Fillmore 1963; Lakoff 1969; Collins and Postal 2014, 2018, among others). More precisely, I will develop an analysis of the mismatched-polarity ellipsis in (1) within a dynamic interpretation approach recently developed by Kroll (2019) for reversed polarity sluicing in English.

This paper is structured as follows. In section 2, I will demonstrate that the mismatched-polarity reading in (1) is problematic for the standard/static version of the Syntactic NEG Raising approach advocated by Collins and Postal (2014, 2018). In section 3, I will argue that the pragma-semantic approach to sluicing recently developed by Kroll (2019) has just a right formal architecture to correctly predict the mismatched-polarity ellipsis pattern. In section 4, I will examine an alternative analysis of the data within a more dynamic version of the Syntactic NEG Raising approach and argue against it on the ground that the reversed-polarity reading is still acceptable with complex predicates such as *I am of the opinion that* (Collins and Postal 2018) which are known to be non-neg raisers but nonetheless permit the NR reading. In section 5, I will discuss more broader implicatures of my analytical

¹ This project is supported by the Grant-in-Aid for Scientific Research (C) of the Japan Society for the Promotion of Science (#19K00560). I benefited greatly from discussions with Klaus Abels, Rio Asahi, Mike Barrie, Yoshi Dobashi, Natsumi Fukuda, Jason Ginsburg, Seungwan Ha, Hideki Kishimoto, Heejeong Ko, Idan Landau, Si Kai Lee, Taichi Nakamura, Yoshiki Ogawa, Hajime Ono, Victor Junnan Pan, Myung-Kwan Park, Yuta Sakamoto, Ken Takita, Yuta Tatsumi, Dwi Hesti Yuliani, and, particularly, Yusuke Yagi. Special thanks to all the students and participants in my research seminars at Tsuda University (Term 1, AY2022) and the Tsuda Syntax Reading Group for their feedback on the ideas discussed here. All errors are due to unbearable heat stroke in Tokyo and my rather overheated head.

result for the nature of neg-raising, sluicing and ellipsis, more generally, and conclude with an outline of a hybrid theory of ellipsis which integrates structural and non-structural pragmatic considerations (Kroll and Rudin 2019).

2. When VP-Ellipsis and Sluicing Meet: New Evidence against the Syntactic NEG Raising

There is a class of clause-embedding predicates in English and other languages which, when negated, imply a corresponding sentence in which the matrix negation behaves as if it took the embedded scope. Thus, (2a) (with matrix negation) is typically understood to express (2b) (embedded negation).

- (2) a. I don't think it will rain today.
b. I think it will not rain today.

The Syntactic NEG Raising approach (Fillmore 1963; Lakoff 1969; Collins and Postal 2014, 2018) proposes that the embedded negation reading of (2a) is due to a syntactic movement operation that raises the negation from the embedded position where it is interpreted to the matrix position where it is pronounced. As first noted by Lakoff (1969), this analysis is (held to be) supported by the exceptional ability of neg-raising predicates like *think* to lift the otherwise active tautoclausal requirement on strict NPIs such as (punctual) *until XP*. Consider (3a, b):

- (3) a. * Calvin did not claim [_{CP} that Mona would move in until June].
b. Calvin did not think [_{CP} that Mona would move in until June].
(Collins and Postal 2014:6)

The example in (3a) is ungrammatical because the strict NPI *until June* does not have any negative licenser within the subordinate clause. Given this, the grammaticality of the example in (3b) is accounted for if the negation starts its life in the embedded clause to license the NPI before it undergoes movement to the matrix clause for pronunciation.²

Note that the Syntactic NEG Raising approach assumes that negation is interpreted in the embedded clause before it moves to the matrix clause. In fact, this assumption is also supported by the fact that adding another NPI to the matrix clause in (3b) results in ungrammaticality, as shown in (4b). Here, the negation must be interpreted downstairs before it undergoes the syntactic NEG raising so it cannot move to license another matrix NPI *ever*.

- (4) a. John didn't think [_{CP} it would snow until tomorrow].
b. * John didn't ever think [_{CP} it would snow until tomorrow].
(Crowley 2019:6, 10)

Having reviewed the Syntactic NEG Raising approach and its central analytical premise, let us now come back to the example in (1), repeated here as (5). Recall that the VPE and TPE sites contrast in terms of polarity values.

2 See Gajewski (2005, 2007) for an alternative semantic account of the contrast between (3a) and (3b) in terms of the anti-additivity requirement (Zwart 1998) on strict NPIs. This analysis removes one of the central arguments for the Syntactic NEG Raising approach.

- (5) Although Sally still does $[_{VP} \emptyset]$, I definitely don't think Trump will run for office again, and I know exactly why $[_{TP} \emptyset]$. (= (1))

$[[TP]] = [[\text{Trump will not run for office again}]]$ (negative TP)

$[_{VP}] = [[\text{think Trump will run for office again}]]$ (positive TP)

Within the Syntactic NEG Raising approach, the positive TP denotation within the VPE site would require the single negation to be interpreted in the post-movement position/the matrix clause whereas the negative TP denotation would require it to be interpreted in the pre-movement/the embedded clause. However, this mixture of interpretation is impossible to obtain under the relevant approach, according to which the negation must be interpreted in the embedded clause before it undergoes neg-raising to the matrix pronounced position.

The moral of the example in (5) is two-fold. First, the “duality” of the negation interpretation as shown in (5) is problematic for any static version of the Syntactic NEG Raising approach of the kind proposed by Collins and Postal (2014, 2018), whereby there is only one designated syntactic position available for negation to be semantically interpreted (i.e., the pre-movement position). Second, the ultimate analysis of the data in question must be so designed as to capture the simultaneous availability of a single negation *either* in the high *or* in the low (but not both) positions in a more dynamic fashion so that the two ellipsis sites – VPE and TPE – may pick and choose two different sub-constituents to yield the mismatched-polarity interpretation. In the next two sections, I will develop two different analyses of the relevant construction which have this required formal architecture – the dynamicity of neg interpretation.

3. A Dynamic Pragma-Semantic Analysis of the Polarity-Mismatched Ellipsis

In this section, I develop an analysis of the polarity-mismatched ellipsis shown in (5) modeled after Kroll's (2019) recent approach to reversed polarity sluicing in English framed within a dynamic interpretation system (Heim 1983a, b).

In this system, context does not need to be updated only at the end of a whole clause, but instead can be evaluated on the basis of a current discourse so that incoming semantic content can progressively update the ongoing local context. In other words, the system utilizes the distinction between global and local contexts (Karttunen 1973). Context update in this system is defined as shown in (6a, b). Here a context c and a proposition p are defined as sets of worlds so that entailment between the two is expressed by the subset relation; if c entails p , then $c \subseteq p$.

- (6) a. If c entails the presuppositions of p , then $c + p = c \cap p$.
 b. If c does not entail the presuppositions of p , then c is undefined.

(Kroll 2019:12)

I propose, following Kroll's (2009) dynamic pragma-semantic approach to sluicing (see also Yagi 2021), that VPE and TPE are subject to the identity condition stated in (7), which crucially allows local contextual entailment to yield a new antecedent for these ellipsis sites.

- (7) An XP_E can undergo VP-ellipsis/TP-ellipsis iff there is a constituent YP such that for a context c , $c + YP$ would create a local context c_L that entails $ExC_{lo} ([[XP_E]]^s)$.

Below, I indicate the step-by-step derivation of the reversed polarity reading of the sluice in (5). Here, $\text{DOX}(s)(w)$ stands for the set of worlds compatible with the doxastic state of the speaker/attitude holder; c_{LE} denotes the local context for ellipsis; a and e stand for the antecedent and the ellipsis site, respectively.

- (8) a. $\llbracket a \rrbracket^g = \lambda w'. \neg \forall w [w \in \text{DOX}(s)(w') \sqcap \text{will_run_for_office_again}(t)(w)]$
 b. $\lambda w'. [\forall w [w \in \text{DOX}(s)(w') \sqcap \text{will_run_for_office_again}(t)(w)] \vee \forall w [w \in \text{DOX}(s)(w') \sqcap \neg \text{will_run_for_office_again}(t)(w)]]$
 c. $\lambda w'. \forall w [w \in \text{DOX}(s)(w') \sqcap \neg \text{will_run_for_office_again}(t)(w)]$
 d. $W \cap C(\lambda w. \neg \text{will_run_for_office_again}(t)(w))$
 $= W \cap \{w: \neg \text{will_run_for_office_again}(t)(w)\} = c_{\text{LE}}$
 e. $\text{ExClo}(\llbracket e \rrbracket^g) = \{w: \neg \text{will_run_for_office_again}(t)(w)\}$
 f. $c_{\text{LE}} \subseteq \{w: \neg \text{will_run_for_office_again}(t)(w)\}$

(8a) states that the antecedent clause means that it is not the case that the speaker thinks that Trump will run for office again. (8b) implements the so-called Excluded Middle assumption (Bartsch 1976; Horn 1978, 1989; Horn and Bayer 1984; Gajewski 2005, 2007; Romoli 2013; Homer 2015; Mirazzi and Zeijlstra 2021a, b). According to this view, neg-raising predicates such as *think p* come along with the assumption in some way or another that the attitude holder thinks either p or $\neg p$.³ Accordingly, (8b) states that the speaker thinks either that Trump will run for office again or that Trump will not run for office again. Note that the literal meaning of (8a) negates the first disjunct of the EM presupposition. This gives rise to (8c), which means that the speaker thinks that Trump will not run for office again.

It is well-known that certain verbs like *think*, *see*, and *believe* may assert their propositional complement as true or as the main point of utterance in a local context independently of the matrix clause content (Higginbotham 1975; Simons 2007, 2013). Given this, (8c) gives rise to the local context c_L in which the worlds under consideration are restricted to those worlds in which Trump will not run for office again. The result of this calculation is shown in (8d). Now, the existential closure of the TPE site is set up as shown in (8e). Crucially, the $\text{ExClo}(\llbracket e \rrbracket^g)$ is entailed by the c_{LE} in (8d), as indicated in (8f), the reversed polarity interpretation of the TPE is licensed as per (7), as desired.

On the other hand, the derivation of the polarity-matched reading for the VPE site is rather straightforward, for the denotation of the positive VP is simply identical (syntactically and hence semantically) to, and consequently, entails that of the positive elided VP.

Note that my current analysis crucially depends on whether a matrix verb allows for the EM presupposition to yield the NR interpretation in a dynamic interpretation system. The verb *hope*, for example, is known to not validate the NR inference/the EM presupposition (Horn 1989). Thus, my analysis predicts that the mismatched-polarity reading in (5) should be blocked when matrix *think* there is replaced with *hope*. This prediction is borne out. (9) does not allow the relevant interpretation that the speaker knows exactly why Trump will not run for office again.

³ In this paper, I remain agnostic as to the exact technical implementation of what I call the EM assumption here triggered by neg-raising predicates. For instance, Gajewski's (2005, 2007) theory of the EM assumption as a soft-trigger presupposition is called into question by subsequent works including Romoli (2013), Homer (2015), and Mirazzi and Zeijlstra (2021a, b).

- (9) Although Sally still does [_{VP} Ø], I definitely don't hope Trump will run for office again, and I know exactly why [_{TP} Ø].

Int 1: ✓ 'Although Sally still hopes that Trump will run for office again, I definitely don't hope he will do so, and I know exactly why I don't hope he will do so.'

Int 2: * 'Although Sally still hopes that Trump will run for office again, I definitely don't hope he will do so, and I know exactly why he won't do so.'

4. An Argument against the Dynamic Version of the Syntactic NEG Raising Approach

Some devil's advocates among us might say that all that the example in (5) requires is that the two positions associated with a single negation under the Syntactic NEG Raising approach cannot be simultaneously triggered for the purposes of negation interpretation, but nothing actually prevents a single negation from being interpreted in either one of the two positions, as the structure is built incrementally. They might then rightly counter that the example in question can be accounted for under the dynamic (as opposed to the static) version of the same approach under which negation, in principle, could be interpreted in the higher or lower syntactic positions as long as no independent syntactic condition is violated.⁴ To see how this revision works to yield the mismatched-polarity interpretation in (5), consider (10):

- (10) Although Sally still does [_{VP} Ø], I definitely don't think Trump will run for office again, and I know exactly why [_{TP} Ø].

Derivational Step 1: I definitely think Trump will neg run for office again □ [[TP]]

Derivational Step 2: I definitely neg think Trump will run for office again □ [[VP]]

Here, the structural antecedent for the TPE site is fixed at the point of the syntactic derivation where the single negation is still within the embedded clause. This option gives rise to the reversed-polarity interpretation. When the negation subsequently moves to the matrix clause position where it is pronounced, the derivation now allows a newly created structural antecedent (with the negation upstairs) for the VPE site, thereby yielding the positive VP denotation. Importantly, this revised version of the Syntactic NEG Raising Approach has now the right architectural property – the dynamicity of negation interpretation – to accommodate the interaction of the ellipsis conspiracy with NR interpretations in much the same way as does the dynamic pragma-semantic analysis.

In the rest of this section, I will present one novel argument that the dynamic version of the Syntactic NEG Raising approach is still difficult to maintain, and conclude that the pragma-semantic approach I advocated is to be adopted.

Collins and Postal (2018) observe that complex predicates such as *I am not of the opinion that* allow the NR inference, so (11a) (with matrix negation), for instance, may express (11b) (with embedded negation).

- (11) a. I am not of the opinion that Mars can be colonized.
b. I am of the opinion that Mars cannot be colonized.

(Collins and Postal 2018:14)

⁴ See Cann et al. (2005), for instance, for a detailed introduction to the framework of Dynamic Syntax, which allows for a straightforward implementation of the dynamicity of context-based syntactic computation/processing.

Interestingly, however, they also observe that this particular predicate exhibits none of the hallmarks of syntactic NEG Raising, such as long-distance strict NPI licensing (recall (3b) and (4a)) and so-called *Horn clauses* (Horn 1975:283; see also McCawley 1998:598), i.e., negative inversion in an embedded clause. This observation is illustrated in (12a–d). The examples in (12a, b) show that the genuine neg-raising predicate *believe* can license the strict NPI until Friday across a finite clause boundary and may trigger the Horn clause within the embedded clause selected by the predicate. Given this, the ungrammaticality of the examples in (12b, d) show that the complex predicate *I am not of the opinion that* is not a neg-raising predicate.

- (12) a. I don't believe [_{CP} that he arrived until Friday].
 b.* I am not of the opinion [_{CP} that he arrived until Friday].
 c. I don't believe [_{CP} that at any time did he commit perjury].
 d.* I am not of the opinion [_{CP} that at any time did he commit perjury].
 ((12b–d) from Collins and Postal 2018:13–14)

So far, we have confirmed that the NR inference triggered by the predicate *I am not of the opinion* is not due to the Syntactic NEG raising but instead to the EM assumption. Given this observation, we can tease apart the empirical predictions of the two competing approaches outlined above as follows. Since this predicate independently blocks the syntactic movement option to yield the NR reading, the dynamic version of the Syntactic NEG Raising approach predicts that the mismatched-polarity reading in (5) should no longer be available with this predicate substituting the matrix verb *think*. The dynamic pragma-semantic approach, on the other hand, predicts that such a reading should still be available in the same environment. Now, the availability of the relevant reading in (13) shows that the latter approach is to be adopted.

- (13) Although Sally still is [_{VP} Ø], I am definitely not of the opinion that Trump will run for office again, and I know exactly why [_{TP} Ø].⁵
 [[TP]] = [[Trump will not run for office again]] (negative TP)
 [[VP]] = [[of the opinion that Trump will run for office again]] (positive TP)

The example in (13) thus indicates that a polarity-reversed interpretation is still accessible to the sluice/TPE site despite the non-neg-raising status of the complex predicate under investigation. This result, in turn, lends support to the dynamic pragma-semantic approach advocated here over the structural alternative.

5. Concluding Remarks

In this paper, I have investigated a previously unexplored interaction between VPE and sluicing (TPE) which gives rise to what I have called a mismatched-polarity interpretation between the two ellipsis sites. The ultimate analysis of the interaction must be designed in a dynamic fashion so that either the high or low positions (but not both) associated with a single negation can be triggered for negation interpretation. I have compared two analyses of the interaction which have this required architectural design: the dynamic version of the Syntactic

⁵ Thanks to Mike Barrie, Jason Ginsburg and Si Kai Lee for acceptability judgments on this example.

NEG Raising approach and the dynamic pragma-semantic approach recently proposed by Kroll (2019). I have demonstrated that the availability of the mismatched-polarity reading even in those sentences where the syntactic neg-raising movement is blocked by the complex predicate *I am not of the opinion that* provides evidence for the pragma-semantic approach over the syntactic alternative.

The novel data introduced here support a non-structural approach to so-called NR interpretations over the syntactic alternative in that only the former is endowed with a right architectural property – dynamic contextual interpretation of negation – to accommodate the simultaneous availability of the high/lower negation interpretations from what appears to be a single structural antecedent with and, more importantly, without syntactic neg-raisers. The success of my analysis then invites further reorientation toward a more semantics-oriented theory of sluicing and hence opens a new avenue of research whereby sluicing is, at least in part, an ellipsis phenomenon licensed through incremental pragmatic contextual entailment.

Though sluicing can be licensed through pragmatic mechanisms such as contextual entailment, as suggested here, this result in no way means that syntax does not matter at all. We have documented evidence for the crucial role of syntactic identity conditions on sluicing as related to Case, argument structure, voice, and other form-identity effects (Merchant 2001, 2008, 2013a, b, Chung 2013, Rudin 2019, among many others). To the extent that my proposed analysis is tenable, what we need then is a hybrid theory of ellipsis licensing which can meaningfully integrate independently documented formal identity conditions on antecedent-ellipsis pairs with linguistically significant pragma-semantic factors that define the set of contextually available local contexts to license ellipsis; see Kroll and Rudin (2019) for suggestions along the same lines. What does such a theory look like? That is going to be the million-dollar question for ellipsists in years to come.

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Where is the retained object in indirect passives, and what is its Case? Evidence from object fronting phenomena in Wu Chinese*

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1. Introduction

This paper brings novel object fronting data from Wu Chinese to tackle issues related to indirect passives. The most prominent characteristic of indirect passive sentences is that they all contain a “retained/unpromoted” object (usually the patient/theme), which otherwise undergoes passivization to become a structural subject (cf. C.-T. J. Huang, 1999, 2014; C.-T. J. Huang et al., 2009; N. Liu & Huang, 2016; H. Pan & Han, 2008; H. Pan & Hu, 2021; Shi, 1997). The following indirect passive (1) is from Mandarin Chinese, with the passive marker *bei* indicating its passive voice and the patient/theme-bearing object *fuqin* ‘father’ in the postverbal position. The subject *Zhangsan* is not the patient/theme of verbal predicates; instead, it is affected by the event or the predicate and thus construed as an affectee/experiencer (C.-T. J. Huang, 1999; H. Pan, 1997; H. Pan & Han, 2008; Shi, 1997).

- (1) 張三被強盜殺了父親。 (Mandarin)
Zhangsan bei qiangdao sha-le fuqin
Zhangsan PASS bandit kill-PERF father
Lit. ‘Zhangsan was affected by a bandit killing (his) father.’

- (2) *John was killed his father by a bandit.

As is generally assumed, the passivized verb does not assign Case to the object because of Case absorption. The English counterpart in (2) is ungrammatical due to Case Filter. Also, unlike in Japanese and Korean, there is no overt Case marking in Chinese. Then, two major issues arise from indirect passives in Chinese: the syntactic position of the patient/theme-bearing object, and its Case.

Recall that Chinese is an SVO language, one reason why the syntactic position of the retained object remains unclear is that in Mandarin it is always postverbal. It leads to at least two possibilities: (a) the base position, the object remaining in-situ (Han & Pan, 2016; Pan, 1997; J. Xu, 2004), (b) the extraposed position, the object moving TP-externally (Pan & Han, 2008; Pan & Hu, 2021). On the other hand, there are two possible ways of Case-licensing: (a)

* I thank Victor Pan, Haihua Pan, Susi Wurmbrand, Iva Kovač, and Magdalena Lohninger for their comments, discussions, and criticisms. Special thanks go to Victor Pan for his supervision of my undergraduate thesis, from which this paper is mainly developed. I also thank the anonymous reviewers and the audience of the SICOGG-24 for their comments and suggestions. I shall take credit for all the remaining errors.

Accusative Case by *v* (H. Pan, 1997), (b) Nominative Case by *T* (Han & Pan, 2016; H. Pan & Han, 2008; H. Pan & Hu, 2021).

This calls for the need to find a Chinese language in which the retained object shows higher syntactic flexibility. Linhai Wu, a variant of the Wu Chinese family, is one of them. It not only shares the passivization pattern with Mandarin but also has a rather flexible word order for the object, including the retained object (see D. Liu, 2001).

Linhai Wu shares its way of denoting passive voice with Mandarin, with the agent demoted as the complement of a preposition (Pan & Hu, 2021), and the patient/theme promoted to the subject position and checked Nominative Case—like English, the transitive verb loses its ability to check Accusative Case feature (Baker et al., 1989). See (3).

- (3) ɛiətɛiã dzæ (ɛiətʰə) tã jəʔ.¹ (Linhai Wu)
 Little.Zhang PASS thief hit SFP²
 Lit. ‘Little Zhang was hit by a thief.’

The agent-bearing argument immediately follows *bei* (the passive marker PASS, spelled-out as *bei*₅₁ in Mandarin, *hoo* in Min (C.-T. J. Huang, 1999), *bei*₂₄ in Cantonese, and *dzæ* in Linhai Wu³, each originated from different cognates (Hu & Yang, 2015)). For some speakers, the agent argument in Linhai Wu can be silent.

More importantly, Linhai Wu also has indirect passives. Compare (4) and (5). The real patient/theme object is located sentence-finally; however, only the one in Linhai Wu can be preceded by the agent PP:

- (4) ɛiətɛiã dzæ ɛiətʰə {jɪʔ-pu ɕiəuci} tʰə-ləʔ {jɪʔ-pu ɕiəuci}. (Linhai Wu)
 Little.Zhang PASS thief one-CL phone steal-PERF one-CL phone
 Lit. ‘Little Zhang was affected by a thief stealing a phone.’
 (cf. Little Zhang’s phone was stolen by a thief.)

- (5) 張三被小偷偷了一部手機。 (Mandarin)
 Zhangsan bei xiaotou {yi-bu shouji} tou-le {yi-bu shouji}
 Zhangsan PASS thief one-CL phone steal-PERF one-CL phone
 Lit. ‘Zhangsan was affected by a thief stealing a phone.’

In this paper, given the empirical evidence from object fronting in Linhai Wu indirect passives, I propose that the retained object stays in situ and receives its Case directly from the passivized verb, and the structural subject is also an argument selected by the predicate—one way of achieving this is to assume that the passivized verb undergoes the general Maleficiary

¹ The Linhai Wu data are created by me (a native speaker) and attested by at least three native speakers. With are no systematic written Chinese characters available for glossing, I use IPA to represent all the sentences word by word segmented by spacing, excluding tones. I also refer to X. Huang (2007) for its phonology.

² Abbreviations used in this paper: PASS = passive marker, CL = Classifier, DE = *de* or its equivalence in other Chinese variants, adjective/adverbial modifier head, DOU = *dou*, ‘all’ as its approximate English translation, NEG = Negation, PERF = perfect aspect particle, SFP = sentence-final particle.

³ Linhai Wu also has the identical of Mandarin *bei* 被 as the passive marker, spelled out as *bi*, and the agent can be silent. Another passive marker is *niǎ/ziǎ*, corresponding to *rang* 讓 in Mandarin. All are used frequently.

Role Insertion (MRI) (Pan, 1997)—and subsequently, moves to Spec,TP. The paper is organized as follows: Section 0 briefs the properties of object fronting in Linhai Wu, showing that it can target the vP domain via A-type Focalization. Section 0 discusses three competing analyses, among which only the MRI analysis accounts for both Mandarin and Linhai Wu. In Section 0, I argue against the possessor raising analysis for Chinese. Section 0 concludes.

2. Properties of object fronting in Linhai Wu

In Linhai Wu, a variant of Wu Chinese, one of the prominent typological features is its salient object fronting process, which derives an SOV pattern from the canonical SVO word order. See example (6), in which the object undergoes movement to the preverbal position.

- (6) a. $\epsilon i \partial t e i \tilde{a}$ $z \partial ? n \tilde{i}$ $j a l \partial$ { $k a . m$ } $t \epsilon ^h o ?$ { $k a . m$ } $j \partial ? ?$
 Little.Zhang yesterday night what eat what SFP
 ‘What did Little Zhang eat last night?’
 b. $g e$ { $v \epsilon$ } $t \epsilon ^h o ?$ { $v \epsilon$ } $j \partial ?$.
 he rice eat rice SFP
 ‘He ate rice.’

Both subjects and verbs are identical with or without object fronting, implying that the object has been Case-licensed when moving. Thus, I claim the movement is not Case-related.

2.1 A-movement

Similar to A-scrambling observed in Hindi, Japanese, and Korean (cf. Cho, 1994a, 1994b for Korean; Mahajan, 1990 for Hindi; Miyagawa, 1997, 2001; Saito, 1992 for Japanese), object fronting in Linhai Wu shows A-properties. Indeed, the so-called “object preposing” in Mandarin Chinese also instantiates similar properties (Qu, 1994; Shyu, 1995, 2001). Evidence comes from the observations that the movement is (a) clause-bounded, (b) insensitive to weak crossover effects (WCO), and (c) inert to reconstruction effects.

2.1.1 Clause-boundedness

First, A-movement is assumed to be sensitive to clause boundaries, while long-distance cross-clausal dependency is one characteristic of $\bar{A}$ -movement. That is, an A-moved element cannot cross a finite clause boundary. Assume that the verb $k \tilde{o}$ ‘say’ selects for a (nonreduced) CP complement, the ungrammaticality of (7) is borne out.

- (7) $*\epsilon i \partial t e i \tilde{a}$ **$d i e n \partial_i$** $k \tilde{o}$ [_{CP} $\epsilon i \partial h \tilde{o}$ $k ^h o j i$ $p \tilde{o}$ $z \eta t e i$ $\epsilon i \partial u - h \partial$ t_i].
 Little.Zhang computer say Little.Huang can help self fix-good
Intended: ‘Little Zhang said Little Huang could help himself fix up the computer.’

On the other hand, the fronted object in Linhai Wu does have the ability to cross a controlled complement. In the following example (8), the verb $p i ?$ ‘force’ takes a complement

in which a PRO is controlled by the matrix object. In the meantime, it is legit to move the object *kɛ-pəŋ ɛy* ‘that book’ to the matrix clause.

- (8) ɛiətɛiã [kɛ-pəŋ ɛy]_i pɪʔ ɛiəɦĩĩ [PRO_j mĩ-wø t_i]
 Little.Zhang that-CL book force Little.Huang read-finish
 ‘Little Zhang forces Little Huang to finish reading that book.’

Compare (7) and (8), the *say-force* asymmetry can be well accounted for if one assumes that the complement taken by a control verb as in (8) is smaller than CP (see Ernst & Wang, 1995; N. Huang, 2018, among others). As such, the clause-bounded A-dependency of object fronting can be well established via restructuring (Wurmbrand, 2001, 2004, 2015).

2.1.2 Insensitivity to weak crossover effects

Second, object fronting in Linhai Wu is not subject to weak crossover effects (WCO), a property well observed in $\bar{A}$ -dependencies (Lasnik & Stowell, 1991). This is illustrated in (9), where the movement of the object *mekəʔnĩ* ‘everyone’ crossing a possessive pronoun in the matrix object feeds the binding relation.

- (9) a. ləɦĩĩ tɛiə ge_{i/*j/k} niã [_{VP} tɛɪʔ-ləʔ mekəʔnĩ_j]]
 Old.Huang ask his/her mother pick.up-PERF everyone
 ‘Old Huang_i asked his/her_{i/*j/k} mother to pick up everyone_j’
 b. ləɦĩĩ mekəʔnĩ_j toʔ tɛiə ge_{i/j/k} niã [_{VP} tɛɪʔ-ləʔ t_i]].
 Old.Huang everyone DOU ask his mother pick.up-PERF
 i. ‘Old Huang_i, for every *x*, asked *x*’s mother to pick up *x*.’
 ii. ‘Old Huang_i, for everyone_j, ask his/her_{i/k} mother to pick them_j up.’

In (9)a, the object *mekəʔnĩ* ‘everyone’ cannot coindex with the possessive pronoun *ge*. In (9)b, the interpretation (i) indicates that the object can bind the possessor pronoun. It would be unexpected under an $\bar{A}$ -movement analysis. Alternatively, if the object undergoes A-movement, then it can easily bind the possessive pronoun.

2.1.3 Anti-reconstruction effects

Thirdly, the fronting of anaphoric elements in Linhai Wu resists reconstruction. Generally, $\bar{A}$ -movement gives rise to reconstruction effects (see Barss, 1986; Chomsky, 1995; Fox, 1999). While some A-movement types also have such effects, those insensitive to reconstruction effects are better construed as A-movement. Now consider the Linhai Wu example involving anaphor fronting in an object control construction. In example (10)a, the index of the reflexive *gezɿtei* ‘himself’ shows that it must be locally bound. In (10)b, *gezɿtei* ‘himself’ fails to co-index with *ɛiəɦĩĩ* ‘Little Huang,’ showing that the anaphor does not reconstruct to its base position.

- (10) a. ɛiətɛiã pɪʔ ɛiəɦĩĩ tã gezɿtei_{i/*j} jəʔ.

- Little.Zhang force Little.Huang beat him/herself SFP
 ‘Little Zhang forced Little Huang_i to beat him/herself_{i/*j}.’
 b. *ɛiətɛiǎ **gezɿtɛi** pɪʔ ɛiəhĩĩ tǎ t_i jəʔ.
 Little.Zhang him/herself force Little.Huang beat SFP
 Intended: ‘Little Zhang forced Little Huang_i to beat him/herself_i.’
 (*him/herself* cannot reconstruct)

Therefore, I conclude that object fronting in Linhai Wu is an A-movement.

2.2 Movement to the vP-extended domain

Unlike A-scrambling, which targets the inflectional domain, one type of object fronting in Linhai Wu resembles object shift observed in double object constructions in Korean and Japanese in that it targets some vP-peripheral position, which appears to be structurally lower than the Mandarin fronted objects. The following Linhai Wu object fronting data will be coupled with the Mandarin counterpart to show the comparison.

2.2.1 Manner adverbs

It is arguably universal that manner adverbs are within the verbal domain due to their nature of modifying verbs (Ernst, 2014) and being subcategorized by them (Sportiche, 1988). Sentences in (11) show that manner adverbs in Mandarin cannot precede fronted objects.

- (11) a. 張三{書}慢慢地放好{書}了。
 Zhangsan {**shu**} manmande fang-hao {shu} le.
 Zhangsan book slow DE place-finish book SFP
 ‘Zhangsan has placed the book slowly.’
 b. *張三慢慢地書放好了。
 Zhangsan [_{vP} manmande **shu** fang-hao] le.
 Zhangsan slow DE book place-finish SFP

In Linhai Wu, on the contrary, the following sentences are grammatical. See (12) (cf. (11)b). This can be accounted for if only the fronted objects in Linhai Wu can target a vP.

- (12) a. ɛiətɛiǎ {**ɕy**} mɛmɛ ke k^hĩ-hĩ {ɕy} jəʔ.
 Little.Zhang book slow DE place-finish book SFP
 ‘Little Zhang has placed the book slowly.’
 b. ɛiətɛiǎ [_{vP} mɛmɛ ke **ɕy** k^hĩ-hĩ] jəʔ.
 Little.Zhang slow DE book place-finish SFP
 ‘Little Zhang has placed the book slowly.’

2.2.2 Movement inside a nonfinite clause

Let us first contrast (13) in Mandarin and (14) in Linhai Wu. Both (a)-examples involve dynamic modals and both (b)-examples object control verbs.

- (13) a. 小蘭{那本書}不肯/願意/樂意/敢/想{*那本書}看完。 (Mandarin)

Xiaolan {[na-ben shu]_i} bu ken/yuanyi/leyi/gan/xiang
 Xiaolan that-CL book NEG willing/willing/willing/dare/want
 {[*na-ben shu]_i} kan-wan *t_i*.
 that-CL book read-finish

‘Xiaolan is not willing to/does not dare/does not want to finish reading that book.’

- b. 張三{那本小說}逼/讓/要求李四{*那本小說}讀完。

Zhangsan {[na-ben xiaoshuo]_i} bi/rang/yaoqiu Lisi
 Zhangsan that-CL novel force/ask/require Lisi
 {[*na-ben xiaoshuo]_i} du-wan *t_i*.
 that-CL novel read-finish

‘Zhangsan forced Lisi to finish reading that novel.’

(Modified from Ernst & Wang, 1995: 242, 245)

- (14) a. ɕiətɕiã {[kə-ŋɛ ti]_i} (fəʔ) kʰəŋ/ŋyɔʝi/ɕiã (Linhai Wu)

Little.Zhang this-CL shop NEG willing/willing/want
 {[kə-ŋɛ ti]_i} ma-loʔle *t_i*.
 this-CL shop buy-down

‘Little Zhang is (not) willing to/(does not) want to buy this shop.’

- b. ɕiətɕiã {[kɛ-pəŋ ɕy]_i} pɪʔ/niã/jədʒiu ɕiəɦɔ̃

Little.Zhang that-CL book force/ask/require Little.Huang
 {[kɛ-pəŋ ɕy]_i} mɔ̃-wø *t_i*.
 that-CL book read-finish

‘Little Zhang forces/asks/requires Little Huang to finish reading that book.’

Objects can easily move to cross the complement clauses headed by dynamic modals or control verbs in both Mandarin and Linhai Wu (cf. (13) and (14)); the difference lies in the fact that only the latter allows movement inside those embedded clauses. Plausibly, both dynamic modals and control verbs in (13) and (14) are restructuring predicates (i.e., they select for reduced clausal complements) because they are transparent to A-dependencies.⁴

Thus, the contrast in (13) and (14) can be accounted for if object fronting in Linhai Wu targets the verbal domain, while the counterpart in Mandarin targets higher positions, which are not necessarily inside the verbal domain (*pace* Ernst & Wang, 1995; see also Paul, 2002, 2005; Qu, 1994; Shyu, 2001).

⁴ For arguments favoring object preposing in Mandarin to be analyzed as A-movement, see Qu (1994), Shyu (2001), Badan & Gobbo (2015). However, N. Huang (2018) demonstrates $\bar{A}$ -properties of object fronting in Mandarin (he calls it “Inner Topicalization”) that the fronted object licenses parasitic gaps. This is also shown in Japanese/Korean that some clause-internal scrambling has mixed A/ $\bar{A}$ -properties. One may assume that the subject in Chinese can be Topicalized to the left periphery; the fronted object thus can enter the operator domain, showing $\bar{A}$ -properties.

One remaining problem is the size of reduced complements. *Force*-type verbs in Chinese are assumed to take a nonfinite complement (C.-T. J. Huang, 2017, 2022), and the fact that the complement clause denotes a situation that is future and irrealis suggests that there is a tense projection TP or *WollP* (Wurmbrand, 2014); however, it would be unexpected because a full TP would be able to host the fronted object in Mandarin. Indeed, the acceptability of clause-internal object fronting in Mandarin patterns with the existence of tense anchoring devices like conjunction, temporal adverbials, or modals (Ernst & Wang, 1995; C.-T. J. Huang, 2017; Tsai, 2008). Therefore, I will tentatively assume the bare complements in (13) and (14) to all be *v*Ps. Whether there is a defective TP layer will not affect our analysis here.

2.2.3 Indefinite fronting

Unlike Mandarin, Linhai Wu accepts (nonspecific) indefinites to undergo object fronting. In Chinese, numeral nominals [Num(eral)-Cl(assifier)-N(oun)] are indefinites (Aoun & Li, 1989; Li & Thompson, 1981, among others; this pattern is attested in four variations of Chinese, Cheng & Sybesma, 2005). Contrast the Linhai Wu data in (15) with Mandarin in (16), where numeral phrases move to the preverbal domain.

- (15) Q: *ɕiətɕiã* *tʰĩniã* *ɕiã* {*ka.m*} *ma* {*ka.m*} *ləʔʔ*
 Little.Zhang tomorrow want what buy what PERF
 ‘What does Little Zhang want to buy tomorrow?’
 A: *ge* *ɕiã* *jiʔ-tsəʔ* *kə* *ma-ləʔ*, (*tɕzɿ* *ge* *wɛ* *vəŋ* *tʰəŋ-hə*
 He want one-CL dog buy-PERF, but he yet NEG think-finish
 ma *no-tsəʔ* *pʰĩtɕiʔ*)
 buy which-CL breed
 ‘He wants to buy a dog but hasn’t yet decided which breed to buy.’
- (16) 我一本書已經看完了。
 Wo yi-ben shu yijing kan-wan-le
 I one-CL book already read-finish-PERF
 i. ‘The number of books that I have finished reading is one.’ (cardinal reading)
 ii. *‘There is a book that I have finished reading.’ (existential reading)
 (Qu, 1994:99)

Here, nonspecific indefinites fail to move only in Mandarin. Following Diesing’s (1992) proposal that only when an indefinite NP is beyond the *v*P domain can it leave the existential closure and thus obtain a specific reading, (15) and (16) further corroborate that object fronting in Linhai Wu targets the verbal domain, whereas the counterpart in Mandarin targets the higher (inflectional) domain.

2.3 *v*P-peripheral Focalization: The interpretive properties and freezing effects

The discussion above shows that object fronting in Linhai Wu is an instance of A-movement that targets the *v*P domain. In this section, I will demonstrate the semantic properties of the

movement and argue that the object fronted is in focus. Two pieces of evidence are available for a Focalization analysis.

First, the fronted object is compatible with new information, as illustrated in the question-answer pairs in (17):

- (17) a. Q: t^hiniã ɕiətɕiã təʔ ma ka.ŋ le? (mizə wezəʔ bi)
 tomorrow Little.Zhang go buy what SFP (bed or quilt)
 ‘What is Little Zhang going to buy tomorrow? (a bed or a quilt)’
 A1: *[mizə]_i^F (a), t^hiniã ge təʔ ma t_i. (Topicalized object)
 bed TOP tomorrow s/he go buy
 A2: t^hiniã ge təʔ [mizə]_i^F ma-ləʔ t_i. (Fronted object)
 tomorrow s/he go bed buy-PERF
 ‘S/he is going to buy a bed.’
 A3: t^hiniã ge təʔ ma [mizə]_i^F. (In-situ object)
 tomorrow s/he go buy bed
 ‘S/he is going to buy a bed.’
 b. Q: zəʔja ka.nĩ tɕiʔ-ləʔ ɕiəhĩʔ (lɔdzĩ wezəʔ lɔkə)
 last.night who pick.up-PERF Little.Huang (Old.Chen or Old.Gao)
 ‘Who picked up Little Huang last night, Old Chen or Old Gao?’
 A1: ɕiəhĩʔ_i (a), [lɔdzĩ]_i^F tɕiʔ-ləʔ t_i. (Topicalized object)
 Little.Huang TOP Old.Chen pick.up-PERF
 ‘As for Little Huang, Old Chen pick him/her up.’
 A2: *[lɔdzĩ]_i^F ɕiəhĩʔ_i tɕiʔ-ləʔ t_i. (Fronted object)
 Old Chen Little.Huang pick.up-PERF
 A3: [lɔdzĩ]_i^F tɕiʔ-ləʔ ɕiəhĩʔ_i. (In-situ object)
 Old Chen pick.up-PERF Little.Huang
 ‘Old Chen picked Little Huang up.’

There are two sets of questions. The objects in (17)a and (17)b denote new and given information, respectively. For each pair, the object in (A1) is located at the topic position, the one in (A2) at the fronted position, and the one in (A3) at the canonical position. In general, arguments in Chinese can be Focalized in situ (e.g., Kuo, 2009). That both sentences in (A3) are grammatical is expected. Importantly, the object in (17)a-A1 is in a topic position, conflicting with its focus nature, whereas in (17)a-A2, the sentence survives. If object fronting involves new information Focalization, the ungrammaticality of (17)b-A2 can then be accounted for as the object is given information.

Second, as argued in section 0, indefinites can be fronted in Linhai Wu. In (15), that the corresponding answer *jiʔ-tsəʔ kə* ‘a dog’ can have a nonspecific reading illustrates the contrasting behavior of object fronting from normal Topicalization.

Therefore, I will assume that a functional projection Foc(us)P exists in the vP extended domain hosting the fronted object in Linhai Wu, which is lower than the (Sub)TopicP in the Mandarin low TP area.

Recall that this type of movement is clause-bounded. Following Wurmbrand’s (2015) proposal, I assume that object fronting in Linhai Wu gives rise to criterial freezing (Rizzi, 2006,

2010).⁵ The clause-boundedness is thus translated into the freezing effects that if the complement clause is a full CP, the element should have been frozen in place inside the complement clause in which Agree has been established via the closest Probe-Goal relation, hence inert to further syntactic operations, for example, movement crossing a finite CP.

2.4 Summary

Section 0 briefly introduces the syntactic and interpretive properties of object fronting in Linhai Wu. It shares many A-properties with A-scrambling crosslinguistically, and importantly, It can target the ν P-extended domain and is compatible with (new information) Focalization. Given its clause-boundedness, I follow Wurmbrand's (2015) proposal and claim that object fronting gives rise to criterial freezing effects.

3. Indirect passives and object fronting

Recall that different analyses differ mainly in Case licensing and the syntactic position of the retained object, there are four logical possibilities as shown in (18). Taking Linhai Wu object fronting data into consideration, I will argue for the so-called "MRI analysis" to be most plausible. That is, the retained object gets the Accusative Case in situ and stays in situ. This section is organized as follows. In Section 0-0, I briefly introduce the three competing analyses. Section 0 illustrates how the MRI analysis can best account for (long-distance) indirect passives in Linhai Wu, and that the other two alternatives fail. Section 0 shows how such a long-distance indirect passive is derived under the best analysis.

(18) *Four logical possibilities and corresponding analyses*

Retained object	Nominative Case	Accusative Case
Spec,FocP	The End-focus analysis	mixed ⁶
Comp,VP	The Agree analysis	The MRI analysis

3.1 End-focus analysis (Pan & Han, 2008; Pan & Hu, 2021)

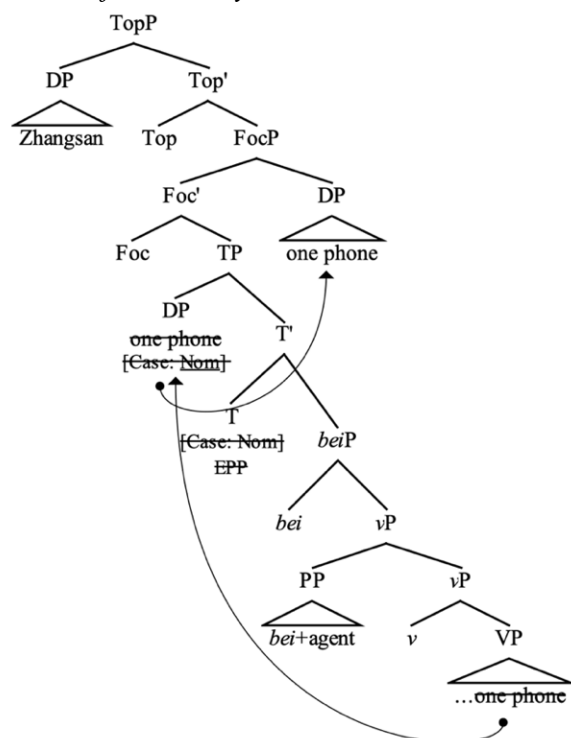
The end-focus analysis proposes that the sentence-final object is structurally higher than TP; it is a focus derived via (i) A-movement to Spec,TP, and (ii) rightward Focalization (extraposition) to Spec,Foc(us)P. The first step is triggered by the EPP feature on T and Case Filter, and the second step is for the focus configuration because the sentence-final object always denotes new information. Note that the second step is also theory-internally necessary to preserve the word order for the retained object, as the first step has moved the object to Spec,TP. The sentence-

⁵ Importantly, Wurmbrand's account excludes Topicalization in the left periphery and any other long-distance dependencies *pace* Rizzi (1997, 2010) because these long-distance processes can successive cyclically cross multiple CPs.

⁶ This possibility can be subsumed by the combination of the End-focus analysis and the MRI analysis because the extraposition process is independent of Case-licensing.

initial affectee is a base-generated topic. See (19) for an illustration (I will omit all the agent PPs for simplicity).⁷

(19) *The End-focus analysis*

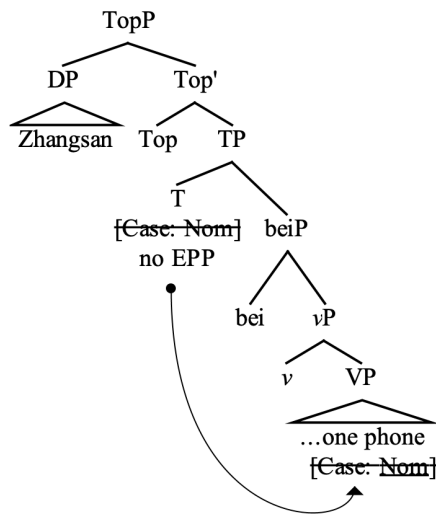


3.2 Agree analysis (Han & Pan, 2016)

The Agree analysis assumes that the object receives its Case in situ from the matrix T via Agree (Chomsky, 2000; see also Wurmbrand, 2006), for there is no EPP on T. Note that this analysis also assumes that the subject is a base-generated topic. See (20) for an illustration.

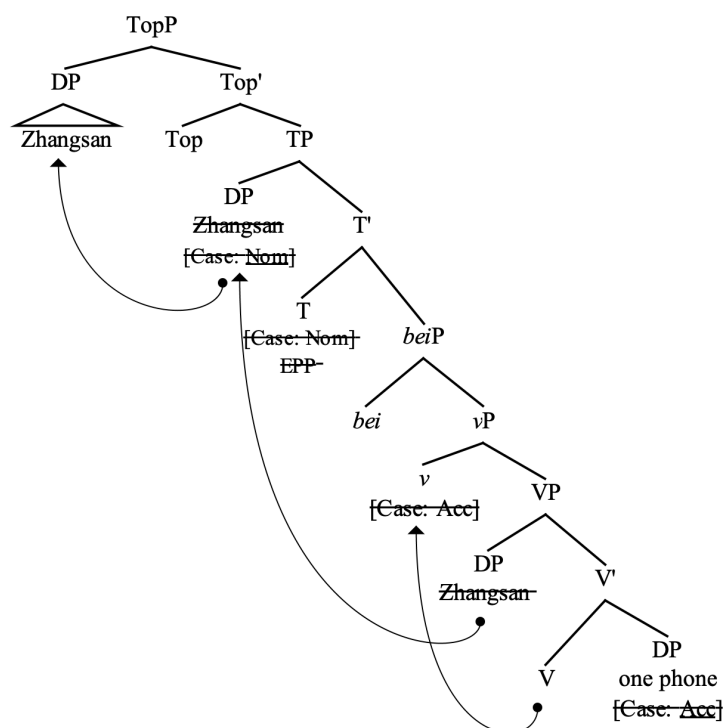
In this approach, Agree and Move are subject to the same locality induced by phases. Little *v* in passive voice does not constitute a phase head and thus does not block Agree.

⁷ I follow the line of research unifying passives with and without an overt agent (Han & Pan, 2016; Pan & Hu, 2008, 2021; Shi & Hu, 2005; cf. C.-T. J. Huang et al., 2009; Liu & Huang, 2016, in which passives with the agent involve null operator (NOP) movement and predication). The agent is demoted as a PP adjoined to the maximal projection selected by the *bei* head. Two adjacent *beis* are assumed to undergo haplology at PF.

(20) *The Agree analysis*

3.3 MRI analysis (H. Pan, 1997)

The third analysis assumes that the verbal predicate in indirect passives undergoes the general Maleficiary Role Insertion (MRI) to become a three-place predicate (see also Villaflor & Li, 2014 for an applicative analysis). H. Pan claims that this general MRI applies in the pre-syntax realm, where a maleficiary role is inserted into the verb. In the syntactic derivation, the corresponding maleficiary-bearing argument (the affectee/experiencer) is selected by the ditransitive verb (consistent with “outer objects” in C.-T. J. Huang, 1999, 2007, 2014; C.-T. J. Huang et al., 2009). The argument later moves to the subject position and checks the Nominative Case by T. It may later undergo Topicalization to Spec,TopP. Since the verb becomes ditransitive after the MRI, it maintains the ability to check the Accusative Case after the passivization. See (21) for an illustration. For ease of exposition, I will tentatively ignore the phasal status of vP here.

(21) *The MRI analysis*

3.4 Indirect passives in Linhai Wu with object fronting

3.4.1 *vP*-peripheral movement of the retained object

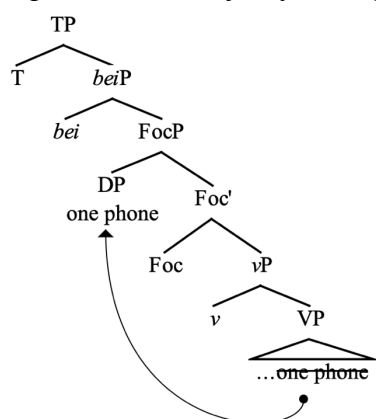
Now compare the Linhai Wu example in (22) with the Mandarin one in (23):

- (22) ɛiətɛiã dzæ ɛiətʰə jɪʔ-pu ɕiəuci tʰə jəʔ. (Linhai Wu)
 Little.Zhang PASS thief one-CL phone steal SFP
 Lit. 'Little Zhang was affected by a thief stealing a phone.'

- (23) *張三被小偷一部手機偷了。 (Mandarin)
 Zhangsan bei xiaotou yi-bu shouji tou-le
 Zhangsan PASS thief one-CL phone steal-PERF

The position of fronted objects in Linhai Wu can be lower than the passive marker, which is predicted if object fronting targets *vP* domain. The contrast reiterates the parametric variations discussed so far. On the other hand, the linear order in (22) has also directly refuted that the object is above TP. (22) thus provided a strong preference for an analysis in which the object does not move to Spec,TP, as depicted below:⁸

⁸ Note that the PP which contains the agent DP here is assumed to be adjoined to the FocP, the maximal projection in the verbal projection domain, which is consistent with what H. Pan and Hu (2021), following Shi and Hu (2005), suggests that the adjunct PP is always adjoined to the maximal projection of the whole passivized domain such that in PF, under haplology, two *beis* are reduced into one.

(24) *Indirect passive with object fronting in Linhai Wu*

This observation contrasts with the End-focus analysis because it assumes that the sentence-final object is indeed TP-external. Immediately, the analysis cannot account for the Linhai Wu data. In addition, the failure of Mandarin object fronting in the domain of *bei*P in (23) implies that the size of the domain may not be as large as a CP or TP, which is also suggested by many others (cf. C.-T. J. Huang, 1999, 2014; C.-T. J. Huang et al., 2009).

3.4.2 Long-distance Agree or Move?

As is discussed in Section 0, control verbs are argued to be restructuring verbs and take vP-like complements, and object fronting in Linhai Wu is possible inside these reduced complements, contra Mandarin. Also, both Linhai Wu and Mandarin allow a complex construction to be passivized as a whole. Combining these facts with object fronting, the following sentence (25) is borne out:

- (25) ɛiətɛiã dzæ lɔsɿ tɛiə ge pã (pɿʔ ge niã)
 Little.Zhang PASS teacher ask his/her father (force his/her mother)
 {ɕiəuci} tɛiə-k^he {ɕiəuci} jəʔ.
 phone seize-go phone SFP
 Lit. ‘Little Zhang was affected by the teacher asking his/her father (to force his/her mother) to confiscate the phone.’

H. Pan (1998) suggests that the passivization domain (i.e., the domain of *bei*P) for Chinese is the whole complex predicate instead of one single verb, although the Case absorption will target a specific verb. C.-T. J. Huang (1999, 2022) also notes that Chinese passives do not allow the passivization domain to have finite clauses (i.e., have any Cs). This size restriction invalidates the argument favoring $\bar{A}$ -movement analysis of long passives (the NOP analysis) because the dependency does not cross Cs and thus need not have $\bar{A}$ -properties (*pace* C.-T. J.

Huang, 1999; C.-T. J. Huang et al., 2009).⁹ This is attested in Linhai Wu, as in (26), where *kʂ* ‘say’ is assumed to take a full CP as its complement.

- (26) **ei*teĩã dzæ lɔŋ kʂ ge pã {*ci*əuci} tɛiə-kʰe {*ci*əuci} jəʔ.
 Little.Zhang PASS teacher say his/her father phone seize-go phone SFP
 Lit. ‘Little Zhang was affected by the teacher saying that his/her father confiscated the phone.’

Therefore, in a legitimate long-distance indirect passive, the syntactic configuration should be as follows in (27), with the object DP undergoing Focalization, if any.

- (27) *Long-distance indirect passive in Linhai Wu*
 T PASS ...(*v*)...(*C)...(*v*)... {DP} [V {DP}]

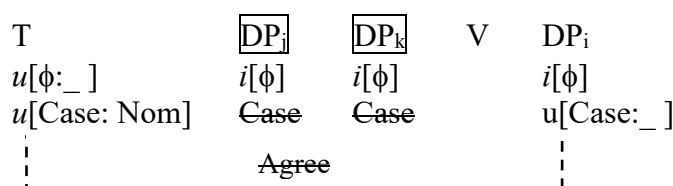
Immediately, there are many problems if assuming the retained object agrees with the matrix T. First, locality problems. The deeply embedded retained object is far away from the matrix T. For Agree to be applicable for the configuration, the embedded object must stay visible when matrix T is merged. Assuming that syntax is derived phase by phase, and both (transitive) *v*P and CP are phases (Chomsky, 2000, 2001, also adopted by Han & Pan, 2016), the embedded object is visible when there are no intermediate transitive *v*s; but it is unclear in (25) because there are control verbs in between. Since these verbs all select two arguments (one object DP, and one clausal complement, in this case, *v*P), they should all be phases. One way to alleviate locality is to assume that such a long-distance Case assignment (LDCA) proceeds through some intermediate positions (cf. Brattico, 2012, 2014; Hiraiwa, 2001 for Multiple Agree; Koopman, 2006; Legate, 2005 for Cyclic Agree, among others). However, whether there *are* such intermediate elements remains an open question, and the control objects are all interveners for agreement, as they also contain interpretable ϕ -features. Therefore, for example, when *v_j* is merged, it finds the control object DP_j as its closest goal and agrees with it. The uninterpretable ϕ -features on the light verb and the Case features on *v_j* and DP_j are subsequently deleted via feature checking because *v*P is a phase. There is no way for the intermediate *v* to match with the matrix T. Moreover, as the intermediate DPs are in A-positions, the configuration would also violate A-Minimality (Rizzi, 1990, 2004). See (28) for illustration:

- (28) a. *No matching feature*

T	<i>v_j</i>	DP _j	<i>v_k</i>	DP _k	V	DP _i
<i>u</i> [ϕ : _]	<i>u</i>[ϕ]	<i>i</i> [ϕ]	<i>u</i>[ϕ]	<i>i</i> [ϕ]		<i>i</i> [ϕ]
<i>u</i> [Case: Nom]	Case	Case	Case	Case		<i>u</i> [Case: _]
	Agree					

- b. *DP_j and DP_k as interveners*

⁹ Admittedly, C.-T. J. Huang (2022) recognizes the fact that in long-distance passives, the most embedded object would undergo successive cyclic A-movement before the final $\bar{A}$ -type operator movement. Liu & Huang (2016) also recognize that some control passives argued by C.-T. J. Huang (1999) may also involve A-movement. I thank Yip Ka-Fai for pointing these out.



Indeed, Case assignment is generally assumed to be local. The empirical observations of LDCA all confirm that the locality is preserved with language-specific characteristics. For example, Bobaljik and Wurmbrand (2005) show that in German and Japanese, long-distance agreement (LDA) between the matrix T and the embedded object of lexical restructuring verbs is only possible when the object moves to the matrix clause, though the movement is not triggered by Case. They argue that it is because the agreement domain (i.e., the domain that Agree can operate) is delineated by the lexical restructuring verb. Keine (2013) further argues that in some Hindi-Urdu dialects, A-scrambling, which can target some positions inside the embedded infinitive clause, is a sufficient and necessary condition for LDA because it feeds local agreement relations. One may postulate that the retained object in, for example, (25) undergoes some covert movement to the matrix clause or somewhere local to the probe. As such, Case assignment can maintain strict locality. However, as I have shown that this DP may undergo Focalization and give rise to criterial freezing, it cannot undergo (covert) movement. More broadly speaking, the purported covert movement approach lacks independent evidence (Bhatt & Keine, 2017).

In terms of the MRI analysis, long-distance movement is tenable. The affectee subject undergoes successive cyclic movement to Spec,TP. One strong piece of empirical evidence comes from long-distance direct passives, as in (29). The patient/theme undergoes long-distance A-movement to become a structural subject just as the affectee does in the MRI analysis.

- (29) (ɕiətɕiã) ɕiəuci dzæ lɔŋ tɕiə ge pã (pɪʔ ge
 Little.Zhang phone PASS teacher ask his/her father (force his/her
 niã) tɕiə-k^he jəʔ.
 mother) seize-go SFP
 ‘As for Little Zhang, the phone was confiscated by the teacher asking his/her father (to force his/her mother).’

Second, the MRI analysis wins over the Agree analysis in its solution to the optionality problem. Here again, compare the long-distance direct passive in (29) with (25):

In fact, the analysis of (29) under both approaches converges.¹⁰ The patient/theme-bearing object *ɕiəuci* ‘phone’ undergoes passivization to Spec,TP and becomes the subject. In this case, it is checked with Nominative Case by T; the sentence-initial affectee is assumed to be a base-generated (dangling) topic denoting what a sentence is about (Pan & Hu, 2008). For the original Agree analysis, whether the patient/theme can become a subject depends on the optional EPP

¹⁰ One reviewer points out that the patient/theme subject in the direct passives like (29) could be the “fronted object” because it is in the inflectional domain and both Mandarin and Linhai Wu allow it. This is a plausible alternative. However, the fatal problem of the Agree analysis lies in cases when the retained patient/theme object stays in situ. Indeed, when it is fronted to be local to T, it can receive Nominative Case with no obstacles.

feature on the matrix T (Han & Pan, 2016). On the other hand, the MRI analysis can deal with the optionality by assuming that the MRI is optional—the verb *teiə-k^{he}* assigns three θ -roles in (25) and two in (29).

Recall that the retained object may undergo Focalization and become inert to further movement by criterial freezing. The Agree analysis would have to stipulate that the matrix T that later enters the derivation is “informed” not to have the EPP feature, for it simply cannot do. For the MRI analysis, no such stipulation is needed, and it is the affectee that satisfies the EPP.

Third, the Agree analysis overgenerates. It fails to explain why the patient/theme cannot stay in situ in direct passives. Note that Agree *does* permit T to probe the internal argument in situ in short-distance passives; however, in the Agree analysis for indirect passives, the EPP on T is assumed to be optional. Without stipulation, this optionality of the EPP should also apply to direct passives (i.e., passives without base-generated topics), contrary to the fact shown in (30), where an implicit affectee is hard to retrieve from the plain context. One may argue that it is out because Chinese is Topic-prominent and a topic is needed for LF interpretation (C. N. Li & Thompson, 1981). However, Topic-prominence is different from Topic-obligatoriness. I maintain that the ungrammaticality of (30) serves as evidence against the treatment of the optional EPP. For the MRI analysis, as there is no implicit affectee serving as a *pro* subject, the sentence is ruled out because of the undeleted EPP on T. This entails that passives also need a structural subject, be it the patient/theme or the affectee.

- (30) *被雨水澆滅了大火。
 bei yushui jiaomie-le dahuo.
 PASS rain douse-PERF fire
 Lit. ‘The fire was doused by rain.’

In sum, the Linhai Wu data suggest that (a) the retained object should remain VP-internal, and (b) the matrix T cannot always probe the retained object. Thus, the MRI analysis or equivalent better accounts for the language facts. Both the Case and the syntactic position of the patient/theme object are settled, and the affectee argument in the event is grammatically captured. In the next section, I will demonstrate the derivation of long-distance indirect passives with the subscription of the MRI hypothesis.

3.5 Deriving indirect passives under the MRI analysis

Let us derive the following sentence (31) (simplified from (25)) assuming that the verb undergoes the general Maleficiary Role Insertion, with the patient/theme object also being fronted. I will omit steps irrelevant to our discussion.

- (31) eiəteiā dzæ lɔŋ tɛiə ge pā ɕiəuci tɛiə-k^{he} jəʔ.
 Little.Zhang PASS teacher ask his/her father phone seize-go SFP
 Lit. ‘L.Z. was affected by the teacher asking his/her father to confiscate the phone.’

With MRI, the passivized verb is ditransitive, which selects three arguments: the agent, the patient/theme, and, most importantly, the affectee.¹¹ Adopting Larson's classic ν P-shell (1988), the patient/theme object is merged to the complement of V, whereas the affectee is merged to the specifier of V, a position higher than the patient/theme argument.¹² The verb root undergoes movement to ν . A PRO controlled by the higher object is merged to the Spec, ν P. The structure is schematized as follows:

- (32) [ν P PRO ν -V [ν P L.Z. $\forall$ phone]]

I adopt the second version of the Phase Impenetrability Condition (PIC) (33). As such, all movement is assumed to proceed through the edge of each phase derivationally before the first dominating phase head is merged.

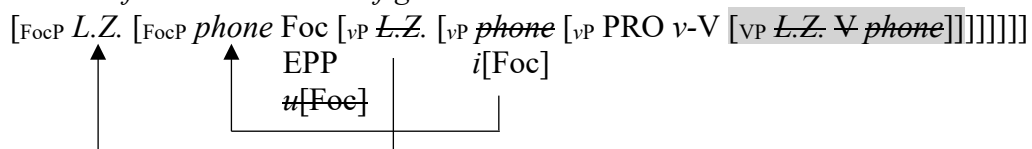
- (33) *Phase Impenetrability Condition* (PIC; Chomsky, 2001:13)

Suppose ZP and HP are phases, and ZP dominates HP, then the complement of H (i.e., YP) is inaccessible to syntactic operations at ZP; only H and its edge (i.e., α) are accessible to such operations.

- [Z_P Z...[H_P α [H YP]]]

I assume Foc head is a phase head because it contains a u [Foc]. Since both the affectee and the theme argument move later, they must proceed to Spec, ν P, given that ν P is a phase. Later, the Foc head enters the structure, and the theme object undergoes Focalization to Spec,FocP. The following structures (34) are borne out:

- (34) a. Move "L.Z." and "phone" to Spec, ν P
 [ν P L.Z. [ν P phone [ν P PRO ν -V [ν P L.Z. $\forall$ phone]]]]
 b. Merge Foc; Transfer VP; Move L.Z. due to cyclicity; Foc probes "phone"; Move "phone" to form a criterial configuration¹³



Merge the control verb 'ask', and then merge the controlling object 'his/her father.' Here I assume that minimally the control verb can take a ν P (cf. Section 0). With object fronting, the ν P-domain is extended to FocP. See (35):

¹¹ The agent demotion takes place on the highest verb, as suggested by H. Pan and Hu (2021). Here the lowest verb loses its Case assigning ability once.

¹² See Villaflor and Li (2014) for the adoption of low applicative construction for the ditransitive construction (Pylkkänen, 2008). See Y.-H. A. Li (2014: ch. 6) for the relevant discussion.

¹³ If one assumes FocP to be a nonphase, then it is not necessary to move 'phone' to Spec, ν P when ν is merged. Also, I do not assume 'phone' to proceed to Spec,VP due to anti-locality (Abels, 2003).

- Merge *v*. Since *v* is a phase head, *V* inherits the *uF* from *v*, including the EPP (Feature Inheritance Hypothesis (FIH), Chomsky, 2008). Note that *v* is the next higher phase head, the domain of the lower phase is Transferred. All the steps in (36) happen simultaneously:

- See (37). Move ‘L.Z.’ to Spec,VP and vP to satisfy the EPP. Note that ‘his/her father’ and ‘L.Z.’ are both the specifiers of the same head, thus equidistant from the higher probes (Chomsky, 1993).¹⁴ Therefore, the movement of ‘L.Z.’ is not blocked by ‘his/her father.’

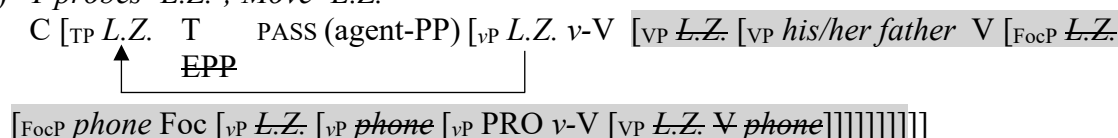
- I omit the part in which the agent-PP and the passive marker are merged into the structure since it is irrelevant to our discussion.

Then, Merge T and C. Since C is a phase head, Transfer VP. By FIH, T inherits the *uF* from C. All the steps in (38) occur at the same time.

- T probes 'L.Z.' Since T has the EPP feature, 'L.Z.' moves to Spec,TP. Also, 'L.Z.' is checked Nominative Case by T via local agreement. See (39):

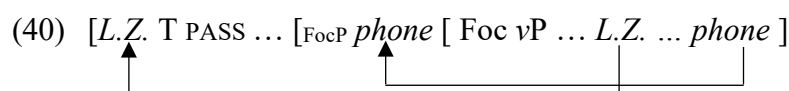
¹⁴ Alternatively, since V-to-v movement is assumed, one may not resort to FIH but assume that the minimal domain is extended to both VP and vP. The specifiers of both heads are then equidistant from higher probes.

(39) *T probes 'L.Z.'; Move 'L.Z.'*



The locality of Case assignment is easily preserved under the MRI analysis. The Case feature of the retained object is checked Accusative by the closest *v* locally. Since the verb is ditransitive, it is assumed to preserve the ability to assign Case after passivization. More importantly, it is the affectee that is checked with Nominative Case by the matrix *T*.

It is worth noting that the fronted object in (34)b does not constitute an intervener to the movement of the affectee, though I have argued that the former also undergoes A-movement. With the assumption that *FocP* is a phase, equidistance in the minimal domain can also resolve the minimality violation. Alternatively, without such an assumption, one may assume that, representationally, only a full chain counts as an intervener for the same type of movement, following Krapova and Cinque's (2008) proposal regarding multiple *wh*-fronting in Bulgarian. Since the patient/theme object in focus is base-generated lower than the affectee, it does not count as an intervener blocking the movement of the affectee. See the configuration (40) below:



4. Against possessor raising

As two reviewers point out, another prominent line accounts for the indirect passives by assuming the affectee undergoes “possessor raising” from the patient/theme DP (cf. J. Xu, 1999, 2004 for Chinese). However, it has faced many empirical and theoretical problems (see Bi, 2015; C.-T. J. Huang et al., 2009; Pan & Han, 2005; Pan & Hu, 2021).

Note that possessor raising assumes Partitive Case assignment to satisfy Case Filter, which is appealing because the retained object tends to be indefinite, and there is a correlation between Partitive Case assignment and indefiniteness as in Finnish (Belletti, 1988). However, Bi (2015: Ch. 2, see the references therein) points out that this correlation does not hold—definite NPs can also be assigned Partitive Case, and Partitive Case in Finnish best indicates that the event denoted by the VP is irresultative/unbound. Since Partitive Case is independent of (or at least not determined by) the property of NPs, it is implausible to postulate that the retained NPs in indirect passives can always secure a Partitive Case.

Second, possessor raising cannot extend to “adversity passives.” See (41) and (42):

(41) a. 我們又被他自摸了一條。 (Mandarin)

Women you bei ta zi-mo-le yitiaoh.
we again PASS he self-draw-PERF bamboo.one

‘we are again affected by him “self-drawing” the bamboo.one [on us].’

(*zi-mo* ‘self-draw’: a case of winning in Mahjong games by drawing the last matching tile by oneself and the rest of the players lose the game; here, the last tile is once again the “bamboo one”, and “we” all lose the game by “him” drawing it)

(C.-T. J. Huang et al., 2009:140 modified)

- b. 王五被壞人下了迷藥。

Wangwu bei huairen xia-le miyao

Wangwu PASS villain case-PERF drug

‘Wangwu was drugged by a villain.’

- (42) tsõlɔŋ dzæ kəʔ ɦəʔsā la-ti-lə kʰɔŋ bītəynfən (Linhai Wu)

Teacher.Zhang PASS this student pull-down-PERF exam average.score

‘Teacher Zhang was affected by the student lowering the average score of this exam [for the whole class that Teacher Zhang is responsible for].’

For all the examples above in (41) and (42), the subjects cannot be interpreted as the possessors of the retained object. However, in the MRI analysis, the possessive relation is not assumed; the analysis in Section 0 can be easily extended to those cases.

In fact, the possessor raising analysis would violate the Left Branching Condition (Ross, 1967). Indeed, Bošković (2018), citing Despić (2011, 2013), suggests that the fact that English does not allow possessor raising while Serbo-Croatian (SC) does is because in English the possessor is not located at the edge of DP (Kayne, 1994); the one in SC is at the edge of the highest nominal projection (SC lacks D). Evidence comes from whether the possessor is confined from c-commanding out of the whole nominal projection. See (43):

- (43) a. His_i latest movie really disappointed Kusturica_i.

- b. Kusturica_i’s latest movie really disappointed him_i.

- c. *Kusturicin_i najnoviji film gai je zaista razočarao.

Kusturica’s latest movie him is really disappointed

- d. *Njegov_i najnoviji film je zaista razočarao Kusturicu_i.

his latest movie is really disappointed Kusturica

(Bošković, 2018: 258-259, citing Despić, 2011:31, 2013:245)

In this respect Chinese in (44) patterns with English, thus should ban possessor raising.

- (44) a. 張三的孩子讓他操碎了心。 (Mandarin)

Zhangsan_i de haizi rang ta_i cao-sui le xin.

Zhangsan DE child let him manage-broken PERF heart

‘Zhangsan’s children have made him very worried.’

- b. 張三/他的孩子讓張三操碎了心。

Zhangsan/Ta_i de haizi rang Zhangsan_i cao-sui le xin.

Zhangsan/he DE child let Zhangsan manage-broken PERF heart

‘Zhangsan’s/His children have made Zhangsan very worried.’

5. Conclusion

This paper investigates three competing analyses of indirect passives in Chinese by inquiring about a variant of Wu Chinese. While the fixed word order of Mandarin leads to four logical

possibilities of the retained object with respect to Case and syntactic position, the Linhai Wu object fronting data provide strong evidence favoring what the MRI analysis has suggested—the retained object receives Accusative Case and remains in situ. I demonstrate that object fronting in Linhai Wu can be A-movement that targets the *v*P-extended domain. The movement is compatible with the Focalization analysis and is subject to criterial freezing. These properties are reflected by the fact that the retained object in Linhai Wu passives can appear below the passive marker *bei*P, which is TP-internal. Comparing three analyses of indirect passives, the End-focus analysis would predict that the object should not remain VP-internal, and the Agree analysis would complicate the optionality of the EPP feature on T. These issues can all be obviated under the MRI analysis. Indeed, the Agree analysis itself has many unsolved puzzles. Considering the long-distance indirect passives, whether the Agree analysis can survive the crosslinguistic Case locality remains an open question due to the potential interveners and the lack of intermediate Agreeing heads. On the other hand, the MRI analysis predicts that the affectee argument undergoes (long-distance) A-movement just as the patient/theme argument does in the direct passives, which thus results in a unified derivational pattern for all types of Chinese passives.

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Event- and type-plurality of the anti-quantifier *-ssik* in Korean

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1. Introduction¹

An ‘anti-quantifier’ (Choe 1987), also known as ‘shifted *each*’ (Postal 1974) or ‘binomial *each*’ (Safir & Stowell 1987), is an occurrence of *each* (or its equivalent) wherein it is displaced from the nominal it appears to quantify. Example (1a) has *each* as a quantifier preceding the sentential subject, while (1b) has the ‘anti-quantifier’ (AQ) *each* shifted to the end of the clause.

- (1) a. **Each** child/**each** of the children bought one balloon.
b. The children bought one balloon **each**.

While the interpretations of (1a) and (1b) are equivalent, they are differently derived. In example (1a), *each* is a traditional quantifier that takes the subject *child* or *of the children* in its scope. In (1b), however, the AQ *each* is a “distributive element” that allots one balloon to each member of the set denoted by *the children*. In (1b), *one balloon* denotes the items shared out (i.e., the distributed share [DSTRSHR]) and *the children* denotes the set of individuals that the items are sorted among (i.e., the sorting key [SRTKY]). According to Choe (1987) and Zimmermann (2002), AQs do not fit into the standard typology of quantifiers (see Hornstein 1984 and Aoun & Hornstein 1985). Further, they are found to have three properties exhibited in (1b): (i) the DSTRSHR *one balloon* must be indefinite, (ii) the SRTKY *the children* must be plural, and (iii) the DSTRSHR and SRTKY must be clause mates.

Zimmerman (2002:(32)) proposes that AQs are compositionally analyzed as quantifiers, even in the face of their special properties. He treats *one balloon each* in (1b) as a DP in which the DSTRSHR has an adjoined PP containing an AQP complement as in (2). The AQ itself has a null complement NP coindexed with the SRTKY, giving (1b) the partial structure shown in (3).

(2) SRTKY₁ ... [DP D [NP [NP DSTRSHR] [PP P [AQP AQ [NP e₁]]]]]

(3) The children₁ ... [DP D [NP [NP one balloon] [PP P [AQP each [NP e₁]]]]]

¹ We are grateful to the organizers of the 24th meeting of SICOOG (Seoul International Conference on Generative Grammar) for allowing us the privilege of presenting this paper, and to the participants for their helpful comments and questions. All errors and shortcomings of this work are nevertheless our own.

In addition to having SRTKY subjects, an AQ can also have (i.e., be coindexed with) a SRTKY that denotes a set of events/occasions (see Cusic 1981: 64-71) or a set of types. Example (4) illustrates these possibilities. In addition to the more usual SRTKY in (4a), we see that *each* can quantify over explicit event or type referring nominals and be understood as ranging over events (4b) or types (4c).²

- (4) a. **The children** bought one balloon *each*. **Subject SRTKY**
 b. I bought one balloon on *each of the times/days*. **Event SRTKY**
 c. I bought one balloon of *each of the colors/sizes*. **Type SRTKY**

Zimmerman's 2002 analysis of AQ structures applied to the Event SRTKY case in (4b) could reasonably be assumed to have the structure shown here in (5), wherein the PP complement of the DSTRSHR is overt (i.e., the preposition *on*) and the complement NP of AQ *each* is an overt NP SRTKY *of the days*, where the NP object of *each* is marked with genitive case *of*. In (5), Zimmerman's general structure is articulated by the phrase *one balloon on each of the days*.

- (5) a. [DP D [NP [NP DSTRSHR] [PP P [AQP AQ [NP SRTKY]]]]]
 b. [DP D [NP [NP one balloon] [PP on [AQP each of-[NP the days]]]]]

A key difference between AQs in English and AQs in Korean is that the former must always have an explicit SRTKY while the latter can have a contextually derived implicit SRTKY interpreted as event plurality. Consider (6).

- (6) a. ai-tul-i phwungsen-ul han-kay-ssik sassta
 child-PL-NOM balloon -ACC one-CL-each bought
 'The children bought a balloon each.'
 b. na-nun phwungsen-ul han-kay-ssik sassta
 I-TOP balloon -ACC one-CL-each bought
 'I bought a balloon each of the days/times.'

Example (6a) is comparable to (4a), where the AQ *ssik* takes *han-kay* 'one-CL' as a DSTRSHR and the plural *ai-tul* 'children' as its SRTKY. In (6b), though, there is no morphologically plural-marked antecedent SRTKY, as the subject *na* 'I' is singular. Choe (1987: 52) claims that plurality in this case is elicited **contextually** and that the antecedent need not be explicit. Here, *ssik* ranges over an **event** SRTKY that is null and taken to mean that 'I bought one balloon each of the days or times.'

In addition to event plurality depicted in the translation of (6b), Song & Dubinsky 2018 shows that *ssik* can also range over **types** as in the interpretation given for (6b) shown in (7).

- (7) na-nun phwungsen-ul han-kay-ssik sassta.

² Note that a non-subject SRTKY need not be plural in English. Accordingly, the event and type phrases in (i) and (ii) can also be singular.

(i) I bought one balloon *each time/day*.
 (ii) I bought one balloon of *each color/size*.

I-TOP balloon-ACC one-CL-each bought
 ‘I bought balloons, one of each of the kinds.’

Here, beside the interpretation wherein I bought a balloon at each store or on each shopping trip, (7) shows a type plurality interpretation wherein I bought (at one time) one of each kind of available balloon. Since both event and type plurality can have a null SRTKY in Korean, we propose that a partially covert expression ~~*yele-conghyu-uy-phwungsen*~~ ‘(various kinds of) balloons’ can be the SRTKY for (7).

This paper investigates whether event and type plurality interpretations, each with their own covert (or partially covert) SRTKY, are available to Korean speakers, and tries to ascertain what it is that conditions these two possible interpretations. To accomplish this, we conducted an experiment to determine whether event and type plurality readings are available when the SRTKY is covert, and how speakers rank the plausibility of each.

2. Research Questions and Hypotheses

Based on the observations above and the questions arising from them, we put forward the following research questions and hypotheses. Interpreting the subject as the SRTKY would preclude both type and event plurality readings, and since the SRTKY must be plural, RQ1 asks whether the presence of an overt plural marker *-tul* on the subject might decrease the acceptability of both type and event plurality interpretations. For objects, we conjectured that the presence of *-tul* might increase the likelihood of a type plurality reading, since that reading requires a plurality of types or kinds, and this is the basis of RQ2. Conversely, we conjectured that the presence of the demonstrative marker *ku* on an object might decrease the likelihood of that nominal serving as a plural SRTKY and result in an event plurality reading becoming more acceptable. This forms the basis for RQ3. Our three research questions and corresponding hypotheses are as follows:³

RQ1: Does the plural marker *-tul* on subjects affect preferences for type or event plurality readings?

H1: Our hypothesis is that the plural marker *-tul* on subjects will lead to increased acceptability for event plurality readings and to decreased acceptability for type plurality readings.

RQ2: Does the plural marker *-tul* on objects affect preferences for type or event plurality readings?

H2: Our hypothesis is that the plural marker *-tul* on objects will lead to increased acceptability for type plurality readings and to decreased acceptability for event plurality readings.

RQ3: Does the determiner *ku* on objects affect preferences for type or event plurality readings?

³ We are grateful to Prof. Myung-Kwan Park for his questions and comments on the presented version of this paper, leading us in the proceedings version to make more explicit and comprehensible the motivations for the conditions manipulated in the experiment. We also acknowledge, as he pointed out, that the plural *-tul* suffix can sometimes be somewhat unnatural in casual speech on common nouns.

H3: Our hypothesis is that the determiner *ku* on objects will lead to decreased acceptability for type plurality readings.

3. Methods

The experiment conducted for this research involved the following methods and materials.

3.1 Participants

Forty-six Korean native speakers participated in the online experiment in Qualtrics. None of the participants had a diagnosed reading disability. All had normal or corrected-to-normal vision.

3.2 Materials

Thirty-two experimental items were used in each experiment. Each target sentence consisted of a subject, an object with a classifier phrase, and the verb *sassta* ‘bought’ in the past tense. All sentential subjects were animate common nouns with a determiner and were presented in two conditions by presence or absence of *-tul*:

- (i) subjects that do not have *-tul*
- (ii) subjects that do have *-tul*.

All sentential objects were common nouns that were potential hypernyms (such that they could be understood as denoting type plurality (e.g., *apples* can denote a plural set of individual apples or a plural set of varieties of apples). Sentential objects were presented in four conditions by presence (+) or absence (–) of the determiner *ku* ‘the’ and plural marker *-tul*:

- | | | | |
|-------|---------------|--------|-----------------|
| (i) | (+) <i>ku</i> | object | (+) <i>-tul</i> |
| (ii) | (+) <i>ku</i> | object | (–) <i>-tul</i> |
| (iii) | (–) <i>ku</i> | object | (+) <i>-tul</i> |
| (iv) | (–) <i>ku</i> | object | (–) <i>-tul</i> |

Thus, each context had 8 (2 x 4) conditions, distributed in a Latin Square design. Each participant read 32 target sentences (4 different contexts x 8 conditions) with 60 filler sentences that were syntactically and semantically unrelated to the experimental items.

Experimental sentences having potential ambiguities, such as (8a), were shown on a screen to participants. Below each of these ambiguous sentences, two expansions of the experimental sentence were provided, such that each expansion resolved the ambiguity into a type plurality or event plurality interpretation, as in (8b) and (8c) respectively. Participants were asked to position a preference indicator (•) for each of the interpretations on a scale from “0” (highly unlikely interpretation) to “6” (highly likely interpretation) – see the rendering of the scale shown in (9).

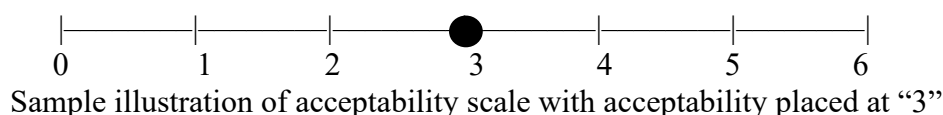
- (8) a. *ku ai-tul-i* *ku phwungsen-tul-ul* *han kay-ssik* *sassta.*
 the child-PL-NOM the balloon-PL-ACC one CL-each bought

‘The children bought balloons, one each.’

- b. ku ai-tul-i **onul** 8 si-ey taiso-eyse ku phwungsen-tul-ul
 the child-PL-NOM today 8 o’clock-at Daiso-at the balloon-PL-ACC
conglyu-pyello **han kay-ssik** sassta.
 kind-each one CL-each bought
 ‘The children **today** at 8 o’clock at Daiso (the store) bought balloons,
one of each kind.’

- c. ku ai-tul-i **mayil** 8 si-ey taiso-eyse
 the child-PL-NOM everyday 8 o’clock-at Daiso-at
kathun **conglyu-uy** ku phwungsen-tul-ul **han kay-ssik** sassta.
 same kind-of the balloon-PL-ACC one CL-each bought
 ‘The children **everyday** at 8 o’clock at Daiso (the store) bought balloons,
all the same kind, one each time.’

(9)



3.3 Procedure

Online acceptability judgement tests were carried out in Qualtrics on a cellphone, PC, or laptop. Forty-six speakers, who self-reported as native speakers of Korean, participated in the online experiment. Prior to the experiment, participants were given instructions along with practice questions. They were instructed to judge the acceptability of 92 items including 32 experimental items and 60 filler sentences on a 7-point scale (0-6). There was no time limit imposed on their responses and no feedback given. The test took subjects approximately 30 minutes on average to complete. Participants were instructed to read each target sentence and rate the acceptability of the two disambiguated expansions of it, provided on the same screen.

3.4 Statistical analysis

Three binary independent variables (IVs), presence or absence of the plural marker *tul* on subjects, presence or absence of *tul* on objects, and presence or absence of the determiner *ku* on objects, were categorized as predictors for the continuous dependent variables (DVs) of type and event plurality readings. A statistical analysis was computed using the function *manova()* from the packages *tidyverse* (Wickham et al. 2019), *ISLR* (Gareth, J., Daniela, W., Trevor, H., & Robert, T. 2013), and *car* (Fox and Weisberg 2019) in the statistical programming language R (R core team 2019) in order to determine the correlation of the aforementioned independent variables in predicting the aforementioned dependent variables.

4. Results

Averages and standard deviations of acceptability scales by eight conditions are given in Table 1.

Table 1. Averages (standard deviation) of acceptability scales by eight conditions

Condition	<i>tul</i> on subjects	<i>ku</i> on objects	<i>tul</i> on objects	Type	Event
A	no	no	no	5.29 (1.18)	3.31 (2.05)
B	no	no	yes	5.41 (0.81)	2.86 (1.96)
C	yes	no	no	5.14 (1.30)	3.24 (2.02)
D	yes	no	yes	5.41 (0.93)	2.74 (1.99)
E	no	yes	no	4.96 (1.35)	3.22 (2.08)
F	no	yes	yes	5.24 (1.01)	2.78 (1.90)
G	yes	yes	no	5.01 (1.38)	3.15 (2.02)
H	yes	yes	yes	5.33 (0.95)	2.85 (1.96)

Table 1 shows that the type plurality reading was rated higher than the event plurality reading in general. The mean acceptability values of type and event plurality are shown in Figure 1.

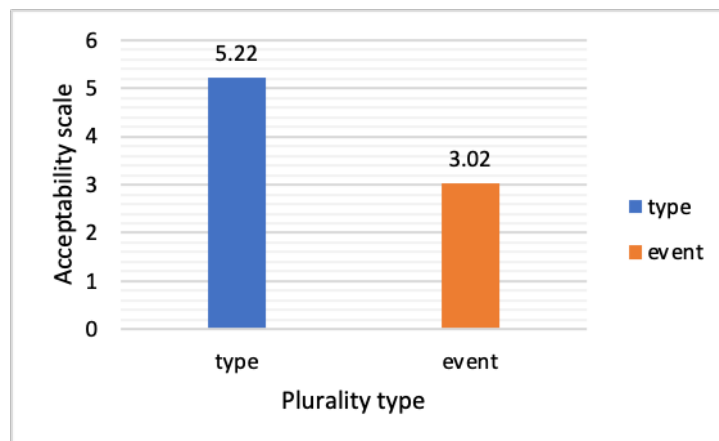


Figure 1. Mean of acceptability scales of type and event plurality

Results of a paired *t*-test found, overall, that type plurality readings were significantly preferred over event plurality readings, with mean scores of 5.22 and 3.02, respectively [$t(2686) = -35.068$, $p < 0.001$].⁴

Table 2 shows mean values of type and event plurality readings correlated with presence or absence of *tul* on subjects and objects, and *ku* on objects.

⁴ We note that in the presentation of the two possible interpretations of each target sentence, the sentence with a type plurality interpretation always preceded the sentence with the event plurality interpretation. It is therefore possible that a priming effect of order of presentation might have influenced participants' responses. It is also the case that subjects were exposed to the ambiguous target sentence and to the two disambiguating type/event plurality sentences on a single screen. This might have allowed subjects excess opportunity to compare the three items. This said, the overall difference in acceptability scores between the two classes of readings (5.22 for type plurality and 3.02 for event plurality) was sufficiently different ($[t(2686) = -35.068$, $p < 0.001]$) that we have confidence in our conclusions nonetheless. Future research on this phenomenon will endeavor to design the presentation of materials so as to eliminate this confound.

Table 2. Mean acceptability values for type/event plurality readings correlated with *tul* on subjects, *tul* on objects, and *ku* on objects

	type plurality	event plurality
<i>tul</i> on subject (–)	5.22	3.04
<i>tul</i> on subject (+)	5.22	2.99
<i>tul</i> on object (–)	5.10	3.23
<i>tul</i> on object (+)	5.35	2.81
<i>ku</i> on object (–)	5.31	3.04
<i>ku</i> on object (+)	5.13	3.00

Figure 2 shows acceptability ratings for type and event plurality readings correlated with *tul* on subjects, *tul* on objects, and *ku* on objects.

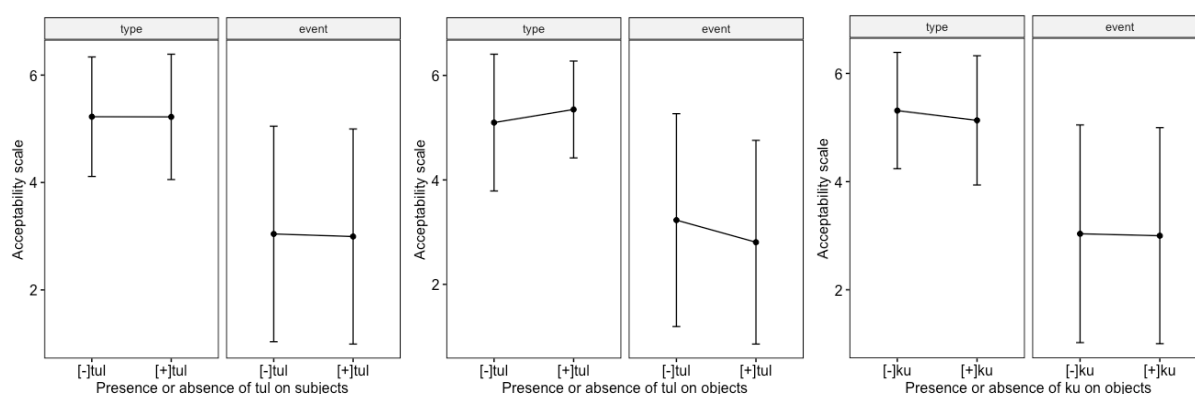


Figure 2. Acceptability ratings by *tul* on subjects and objects and *ku* on objects

The three binary categorical independent variables, presence or absence of the plural marker *-tul* on subjects, presence or absence of *tul* on objects, and presence or absence of the determiner *ku* on objects, were tested for an interaction effect via a multivariate analysis of covariance (MANCOVA) and two-way ANOVA. The results are given in Table 3.

Table 3. The effect of *tul* on subjects, *tul* on objects, and *ku* on objects on type and event plurality readings

MANCOVA			ANOVA					
			Type plurality			Event plurality		
Effect	Pillai's test	p value	df	F	p value	df	F	p value
<i>tul</i> on subject	0.000	0.906	1	0.002	0.962	1	0.192	0.662
<i>tul</i> on object	0.025	0.000***	1	16.557	0.000***	1	15.098	0.000 ***
<i>ku</i> on object	0.006	0.0144 *	1	8.499	0.004**	1	0.117	0.732

* $p < .05$, ** $p < .01$, *** $p < .001$

Results of a MANCOVA found two statistically significant effects of the plural marker *tul* ($p < 0.001$) on objects and the determiner *ku* on objects ($p < 0.05$). However, no effects were found for subjects with respect to the presence or absence of *tul* under either type or event plurality interpretations. Results of two-way ANOVA found the effect of *tul* marking on objects to be significant in the type plurality interpretation, [$F(1,1340)=16.56$, $p<0.001$], the

A two sample *t*-test was run to examine the relation between type and event plurality readings and the presence/absence of plural marker *tul* and determiner *ku* on objects. The results of this *t*-test found that objects with the plural marker *tul* were scored significantly higher in the type plurality reading than those without *tul* [$t(1342) = -4.06, p < 0.001$]. At the same time, objects with the plural marker *tul* were scored significantly lower in the event plurality reading than those without *tul* [$t(1342) = 3.89, p < 0.001$]. As regards the presence or absence of *ku* on objects, no effect was found in regard to the event plurality reading, but the presence of *ku* on an object significantly lowered the acceptability scores under the type plurality reading [$t(1342) = 2.91, p < 0.01$].

Summarizing, type plurality readings were uniformly scored as significantly more acceptable than event plurality readings under all conditions. The addition of *tul* to a subject had no effect on the acceptability of either the type or event plurality reading. The addition of *tul* to an object, however, led to significantly increased acceptability readings for type plurality and significantly lowered acceptability readings for event plurality. Finally, the addition of *ku* to an object significantly lowered the acceptability scores for type plurality but had no effect on the acceptability scores for event plurality.

(10) $[_{DP} [_{NP} \text{yele-conglyu-uy} \text{ phwungsen}]_1 [_{DP} D [_{NP} [_{NP} \text{han-kay}] [_{PP} P [_{AQ} \text{ssik} [\text{e}_1]]]]]_1$
 $[_{DP} [_{NP} \text{SRTKY}]_1 [_{DP} D [_{NP} [_{NP} \text{DSTRSHR}] [_{PP} P [_{AQ} \text{AQ} [\text{e}_1]]]]]_1$

The reason then for type plurality readings to be preferred over event plurality readings has to do with proximity of the SRTKY. The SRTKY *yele-conghu-u* *phwungsen* in (10) is adjoined to the object DP and closer to the DSTRSHR than the VP-external event operator in (11).

The positive effects of object *tul* marking on type plurality interpretations, to the detriment of event plurality readings, might be seen to result from the fact that NP-*tul* objects

are more readily interpreted as plurals. Following Link 1983, Kang (1994) suggests that while *phwungsen* ‘balloon’ denotes a set consisting of singular and plural individuals, *phwungsen-tul* ‘balloons’ denotes a set consisting of only plural individuals. This effect has the result of *phwungsen-tul* tending to denote a plurality of types more so than *phwungsen*. The addition of *ku* to an object, according to Kang, results in the denotation of a singular individual when added to a bare noun (e.g., *ku phwungsen*) and a plural group individual when added to a plural noun (e.g., *ku phwungsen-tul*). Both of these cases tend to make it marginally harder to have the object denote a plurality of kinds (e.g., ‘balloon-kinds’).

Acknowledgements

This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2021S1A5C2A02086884).

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From *suspect* to *doubt*: clausal embedding with dubitative verbs

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1. Introduction

This paper investigates a meaning shift phenomenon concerning dubitative verbs such as *huaiyi* ‘suspect’ in Mandarin. In general, the semantics of dubitative verbs conveys a stance of weak affirmation toward the content of the complement clause on the part of the attitude verb subject. This kind of verb displays a peculiar property: in certain contexts, it is interpreted as weak affirmation of the proposition, and in certain other contexts, it is interpreted as weaker affirmation of the proposition, leading to nearly negate the proposition. I call the former interpretation the affirmation-inclining (henceforth **AI**) reading and the latter interpretation the negative-inclining (henceforth **NI**) reading. These readings are illustrated in (1).

- (1) Zhangsan huaiyi Lisi shi xiongshou.
 Zhangsan suspect Lisi COP murderer
 ‘Zhangsan suspects that Lisi is a murderer.’
 a. AI: For Zhangsan, it is likely to be true that Lisi is a murderer.
 b. NI: For Zhangsan, it is unlikely to be true that Lisi is a murderer.

(1a) shows the AI reading, where *Zhangsan* weakly endorses that *Lisi* is a murderer. By contrast, (1b) exhibits the NI reading, where *Zhangsan* extremely weakly asserts that *Lisi* is a murderer, which is interpreted as doubt/skepticism. The availability of two different readings of *huaiyi* raises the following questions: (i) Why does *huaiyi* show two distinct interpretations? (ii) Are the syntactic structures corresponding to the two readings of *huaiyi* different?

In this paper, I argue for a structural ambiguity account to answer the above questions. I argue that the difference between AI and NI readings turns crucially on whether the content of the complement clause of dubitative verbs is presupposed or not. To elaborate, in a neutral context, where the content of the complement clause is not presupposed and not part of the common ground, this comes out as the AI reading. But in a non-neutral context, where the content of the complement clause is presupposed and is part of the common ground, this comes out as the NI reading. I suggest that presuppositionality is closely tied to whether the complement clause is a CP or in the form of clausal nominalizations containing the DP layer. This idea is generally in line with recent work by, e.g., Kastner (2015), who argues that presuppositional complements are selected by either an overt or covert D head before combining with the attitude verb.

We have observed that *huaiyi* has two kinds of readings—an AI and a NI reading, as in (2).

- At first glance, *huaiyi* appears to take a clause as its complement. But I will show that the internal structure of complements in both readings is different. Likewise, the semantic and pragmatic properties of complements in both readings are divergent.

First, when the full complement of *huaiyi* undergoes A'-movement such as topicalization, only the NI reading is available (3). Similarly, when the CP complement is followed by an overt noun phrase, such as '(the) matter', the NI reading is preserved, but the AI reading disappears (4).

- By contrast, when the post-verbal NP is passivized, the NI reading disappears. Only the AI reading is available. Compare (5a–b).

- Similarly, extraction from complements of *huaiyi* is only limited to complements understood affirmative (AI). In particular, extraction of *wh*-adjuncts such as *weishenme* ‘why’ or *zenmeyang* ‘how (manner)’ is impossible, but extraction of *wh*-arguments such as *shei* ‘who’, *shenmeshihou* ‘at when’ is acceptable.

- (6) a. Zhangsan huaiyi Lisi mai-le **shenme** dongxi?
 Zhangsan suspect Lisi buy-PERF what thing
 ‘What is the thing x such that Zhangsan suspects that Lisi bought x?’
(✓AI; ✗NI)

- b. Zhangsan huaiyi Lisi **shenmeshihou** qu Taipei de?
 Zhangsan suspect Lisi when go Taipei MOD
 ‘When is the time x such that Zhangsan suspects that Lisi went to Taipei in x?’
 (✓AI; ✗NI)
- c. *Zhangsan huaiyi Lisi **weishenme** xiang qu Taipei?
 Zhangsan suspect Lisi why want go Taipei
 ‘Why does Zhangsan suspect that Lisi wants to go to Taipei?’
 (✗AI; ✗NI)
- d. *Zhangsan huaiyi Lisi **zenmeyang** de di-yi ming de?
 Zhangsan suspect Lisi how get first-CL place MOD
 ‘What is the means x such that Zhangsan suspects that Lisi gets the first place by x.’
 (✗AI; ✗NI)

In (6c–d), both *weishenme* ‘why’ or *zenmeyang* ‘how (manner)’ cannot be extracted in the AI reading. By contrast, in (6a–b), *wh*-arguments such as *shei* ‘who’ and *shenmeshihou* ‘at when’ are allowed to be extracted from the embedded clause in the AI reading. But the NI reading are absent after extraction of any complements.

Furthermore, the AI and NI-readings of *huaiyi* show different contextual requirements. Whereas the AI reading is possible in a neutral context, the NI reading requires establishment of prior common ground. This is illustrated in (7).

- (7) Scenario 1: No one claimed that Lisi is a murderer, but...
 Scenario 2: It is widely assumed that Lisi is a murderer, but...
 ...Zhangsan huaiyi Lisi shi xiongshou.
 Zhangsan suspect Lisi COP murderer
 ‘Zhangsan suspects that Lisi is a murderer.’
 (Scenario 1: ✓AI; ✗NI; Scenario 2: ✗AI; ✓NI)

When (7) is uttered in scenario 1, where no prior claim that *Lisi* is a murderer has been made, then only the AI reading is available. Thus, *Zhangsan* is understood as holding it to be likely that *Lisi* is a murderer. By contrast, in scenario 2, where prior common ground has been established that *Lisi* is a murderer, the NI reading becomes available; *Zhangsan* can be understood as holding it to be unlikely that *Lisi* is a murderer. The NI reading is thus dependent on prior context in a way that the AI reading is not. More specifically, the NI reading presupposes the presence of the complement clause content in the common ground.

3. The proposal

3.1 The NI reading

To account for the data presented in section 2, I argue that under the NI interpretation, the sentence has the structure in (8).

- (8) Zhangsan huaiyi [DP Δ [CP Lisi shi xiongshou]].
 Zhangsan suspect Lisi COP murderer

‘Zhangsan suspects that Lisi is a murderer.’

The CP complement clause in (8) is nominalized: it combines with a covert determiner D enabling the proposition that CP denotes to be part of the common ground worlds, which is in line with the analysis of the DP layer proposed by Kastner (2015).

Here is how this proposal accounts for the properties of NI reading. First, given that a clausal complement is allowed to move only if its base-generated position is one in which a DP is allowed to appear (Takahashi 2010), the nominalized status of the CP complement clause explains their ability to undergo movement (3). Second, it has been argued that passivization of the object of an embedded complement clause is grammatical but passivization of subjects yields severe deviance (Cheung & Larson 2015), as illustrated in (9)–(10).

- (9) **Nei-feng** **xin** bei wo jiao Lisi [qing Wangwu
 that-CLletter BEI me tell Lisi ask Wangwu
 [tuo ta meimei ji-zou-le ____].
 request his sister send-away-Perf
 ‘That letter was “told-Lisi-to ask-Wangwu-get-his-sister-to send” by me.’
- (10) ***Zhangsan** bei Lisi xiangxin[____ yiding hui chenggong].
 Zhangsan BEI Lisi believe definitelywill succeed
 ‘Zhangsan is believed by Lisi that he will definitely succeed.’

Thus, the post-verbal NP in the NI reading cannot be passivized because it is in the embedded subject position (5). Third, the unavailability of extraction from the CP complement clause can be viewed as the presuppositional islands (6). Fourth, the contextual requirement of NI reading is a result of combining them with a covert determiner. The determiner requires that there is a unique individual in the context (thought/claim that was previously mentioned) with propositional content the CP describes (7).

3.2 The AI reading

I argue that under the AI reading, the sentence has the structure in (11).

- (11) Zhangsan [VP huaiyi_i Lisi_j [v[CP Op_j[TP t_j shi xiongshou t_{vi}]]]].
 Zhangsan suspect Lisi COP murderer
 ‘Zhangsan suspects that Lisi is a murderer.’

In (11), under the AI reading, the verb *huaiyi* does not directly take a CP clause as its complement. Instead, it takes a DP as its direct object and the embedded CP clause is a V'-level adjunct clause left-adjoining to the verb *huaiyi*, and it is stranded at the right end of the sentence due to the movement of the main verb to v. In addition, there is an empty operator in the specifier of CP which is predicated of the direct object DP.

Interestingly, the CP clause can actually be omitted, which supports the CP adjunction analysis. In (12), without the CP clause, the sentence is still grammatical if there is sufficient background information in the context for the speaker to make the assertion. Here, the proper name, *Lisi*, is understood in terms of something he said, claimed, or his certain behaviors

- (12) Zhangsan huaiyi-guo Lisi.
 Zhangsan suspect-Exp Lisi
 ‘Zhangsan suspected Lisi (’s claim/behavior).’

Here are how the properties of AI reading are accounted for. First, AI-CPs cannot undergo movement because they do not behave like DPs or nominalized clauses (3). Second, the post-verbal DP is in a matrix object position, so it can be passivized (5b). Third, extraction of *wh*-adjuncts from AI-CPs is not allowed because of the adjunct island effect (6). Fourth, there is no contextual requirement on the AI reading because AI-CPs do not combine with a covert determiner (7).

4. Conclusion

In this paper, I argue that dubitative verbs such as *huaiyi* in Mandarin allows two ways to embed a clausal complement. In the NI reading, the CP clause is in the form of clausal nominalization with the DP layer which is responsible for encoding familiarity, leading to presuppositionality. In the AI reading, the CP clause is an adjunct clause left-adjoining to *huaiyi*; thus, there is no presupposition encoding in the CP clause. In fact, different interpretations of verbs are a result of structural ambiguity is actually a systemically cross-linguistic phenomenon. For instance, the verb *explain* in English can receive different interpretations based on whether their complements are CPs or DPs (Elliott 2016; Halpert & Schueler 2013; Pietroski 2000). Furthermore, in various languages, certain verbs display both factive and non-factive uses depending on different types of complement (CP vs. DP or nominalized clauses) they combine with (Özyildiz 2017; Lee 2019; Bondarenko 2020). This paper provides the empirical evidence to show that dubitative verbs are indeed included in this broader picture.

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On a connection between comitative conjunction, *pro*-drop, and Person licensing

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1. Introduction

The paper discusses comitative conjunction constructions (CCs) focusing on the following puzzle from Slavic languages. In Russian, comitative conjunctions with a 1st or 2nd person singular pronoun are prohibited: as indicated in (1), such examples are ungrammatical if the with-PP forms a constituent with the pronominal host, triggering plural agreement on the verb (true conjunction), and are only allowed if the pronoun alone serves as the subject of the clause with the PP adjoining to the clausal spine (adjunction).

- (1) a. Ja s Mašej *pojďem / pojdu v kino.
I with Maša go.1PL go.1SG into cinema
Not available: ‘Maša and I will go to the cinema.’ (*conjunction*)
Only: ‘I will go to the cinema with Maša.’ (*comitative adjunction*)
- b. Ty s Mašej *pojďete / pojďeš v kino.
you.SG with Maša go.2PL go.2SG into cinema
Not available: ‘Maša and you will go to the cinema.’ (*conjunction*)
Only: ‘You will go to the cinema with Maša.’ (*comitative adjunction*)

The restriction does not extend to comitative conjunctions with a 1st or 2nd person plural pronoun: all sentences similar to (2) are accepted by native speakers.

- (2) My s Mašej pojďem v kino.
we with Maša go.1PL into cinema
Inclusive reading: ‘Maša and I will go to the cinema.’
Exclusive reading: ‘Maša and we will go to the cinema.’

To explain the restriction, first, I present a uniform analysis that brings all CCs together,

whereby comitative conjunction is headed by a single functional head (D) that is realized either overtly as a personal pronoun, as in ‘we, I with Petja’, or as a silent *pro*. In this I am arguing against those approaches that group comitative conjunction that involve referential conjuncts with AND coordination and juxtapose them to the so-called inclusive plural pronoun constructions, exemplified in (2) (Dyła 1988, Vassilieva & Larson 2001, i.a.).

Second, I propose that the person restriction stems from a combination of the following two factors: (i) the mechanism of *pro*-drop and the inventory of silent pronouns available in a given language (in the spirit of Roberts 2019), and (ii) the general requirement on licensing of the Person feature of agreeing subjects (cf. Béjar & Rezac 2003).

The analysis not only accounts for the behavior of CCs in Russian but further allows us to capture the difference between Russian, a language with no consistent *pro*-drop, and, for instance, Polish, a fully *pro*-drop language where no person restriction is imposed on CCs (3).

- (3) (Ja) z Maria_i wyjechaliśmy.
 I with Maria left.1PL
 ‘Maria and I left.’

The paper proceeds as follows. Section 2 summarizes the properties of comitative conjunctions comparing them to AND coordination and outlines a single analysis for all CCs. Section 3 focuses on the person restriction and demonstrates that it holds only for agreeing nominative subjects and appears to correlate with the (un)availability of *pro*-drop in the language. Section 4 discusses several predictions made correctly by the proposed analysis and Section 5 concludes the paper.

2. Comitative conjunction and AND coordination

Before addressing the person restriction on comitative conjunction in Russian, let us discuss briefly properties of CCs in general. In the literature, a line is often drawn between CCs that contain only referential conjuncts and those with a plural pronominal host, i.e. the non-PP conjunct (Plural Pronoun Constructions, PPCs); see for instance Vassilieva & Larson (2001) on Russian and Dyła (1988) on Polish. The former are grouped together with AND coordination, while the latter receive a separate treatment due to their peculiar interpretational property. As shown in (2) in the previous section, PPCs allow inclusive readings, whereby the participant pointed to by the second conjunct is included in the reference of the plural pronoun: that is, ‘we with John’ means ‘we, I and John’.

However, upon closer examination, such a division does not match the actual data, as CCs and PPCs pattern together with respect to their semantic and syntactic distribution. The properties of various coordinate constructions are summarized in Table 1, contrasted to comitative adjunction for comparison. Some properties, including the semantic and syntactic plurality and the availability of both collective and distributive interpretations, are common for all coordinate structures. At the same time, AND coordination is more restricted when it comes to sub-extraction (a universal restriction

known as Coordinate Structure Constraint; see Ross 1967, Grosu 1973, i.a.) and more flexible when it comes to commutativity.

	AND coordination	non-pronominal CCs	PPCs (inclusive)	comitative adjunction
sem/syn plural	✓	✓	✓	–
host binds into the 2 nd conjunct	–	–	–	✓
distributive and collective readings	✓	✓	✓	collective only
discontinuity	–	✓/–	✓	✓
commutative	✓	–	–	NA
iterative	✓	–	–	NA
wh/focus extraction: host	–	–	–	✓
wh/focus extraction: 2 nd conjunct	–	✓/–	✓	✓

Table 1. Properties of coordinate structures

Because of the limitations of space, below I only illustrate those cases where CCs and PPCs differ from AND coordination, and I refer the reader to Burukina (2022) for a full list of examples.

The first difference concerns discontinuity. The PP conjunct in a CC can undergo A-bar extraction but only if the whole CC remains preverbal.¹ In contrast, sub-extraction out of AND coordination is banned.

- (4) a. *Maša navernjaka i Petja pojdut v kino.
 Maša certainly and Petja go.3PL into cinema
 Intended: ‘Maša and Petja will certainly go to the cinema.’
 b. Maša navernjaka s Petej pojdut v kino.
 Maša certainly with Petja go.3PL into cinema
 ‘Maša and Petja will certainly go to the cinema.’
 c. My navernjaka s Petej pojdēm vdvoēm v kino.
 we certainly with Petja go.1PL two.ADV into cinema

¹ The Russian examples presented in the paper were elicited with 19 native speakers, 23–33 y.o.

‘I and Petja will certainly go to the cinema, the two of us.’

Similarly, A-bar movement out of the second conjunct (wh/focus extraction) is also allowed only in CCs and PPCs, when the whole CC is preverbal.

- (5) a. [?]S kem Maša pojdut v kino?
 with whom Maša go.3PL into cinema
 ‘Maša and who will go to the cinema?’
- b. [%]Eto S PETEJ Maša pojdut v kino.
 this with Petja Maša go.3PL into cinema
 ‘It is with Petja that Maša will go to the cinema.’
- c. S kem my pojdēm vdvoēm v kino?
 with whom we go.1PL two.ADV into cinema
 ‘I and who will go to the cinema, the two of us?’
- d. Eto S PETEJ my pojdēm vdvoēm v kino.
 this with Petja we go.1PL two.ADV into cinema
 ‘It is with Petja that I will go to the cinema, the two of us together.’

Another difference is related to commutativity. The conjuncts in AND coordination can swap places, while CCs must comply with the Person hierarchy, that is the second conjunct cannot have a Person feature more prominent than that of the first one.

- (6) a. Petja i ja pojdēm v kino.
 Petja and I go.1PL into cinema
 ‘Petja and I will go to the cinema.’
- b. Petja so mnoj / nami pojdēt / *pojdut / *pojdēm v kino.
 Petja with me us go.3SG go.3PL go.1PL into cinema
 Only: ‘Petja will go to the cinema with me/us.’ (*adjunction*)

Taking the properties presented above into account, I argue that there is no empirical support for proposing two different structures for CCs with non-pronominal conjuncts and PPCs. The two should be considered together and contrasted to AND coordination.²

² See McNally (1993), Feldman (2002), Dylā & Feldman (2003), Trawinski (2005) proposing different structures for CCs or PPCs and AND coordination, and Ionin & Matushanski (2002) and Vassilieva (2005) arguing that CCs and PPCs have parallel structures (the analyses proposed in the two papers differ).

In what follows, I confine myself to discussing only comitative conjunction, since it is the focus of the paper. I propose that all CCs have the structure as outlined in (7): a combination of the two conjuncts (tentatively labeled here as FP) is headed by a single functional head (D) that c-commands XP and YP and establishes a multiple Agree relation with both of them. As a result, the acquired features on D are spelled out as a personal pronoun, as in ‘we, I with Petja’. The D head can also be realized as *pro*, as in ‘*pro* I with Petja’, if a silent item with an appropriate set of features is available in a given language. A similar idea – that there is a summarizing D head on top of the coordinate structure – was advocated by Progovic (1997) for AND coordination in English (we, I and Tom) and Cable (2017) for PPCs in Russian (*my* [<*ja*> *s Petej*]), however, to the best of my knowledge, these analyses were not explicitly extended to CCs with non-pronominal conjuncts.

- (7) [DP D [FP XP [PP *s* YP]]

In the remaining part of the paper I elaborate this proposal and show how it captures the distribution of CCs in Russian and some other Slavic languages and accounts for the person restriction.

3. Comitative conjunction and personal pronouns

The structure in (7) predicts several patterns of comitative conjunction to be available. Those are listed in (8); I provided the translation equivalents instead of the Russian words and put the parts that remain silent in < >. Curiously, as indicated by the ungrammaticality marks, CCs with a 1st or 2nd person pronominal conjunct are ruled out and not attested. Thus, the CCs in the language appear to be affected by the Person hierarchy: [1 > 2] > 3 > Animate > Inanimate.

- (8) a. [<they> [Maša/she/he [with Petja]]
 b. [they [<she/he> [with Petja]]] – *inclusive PPCs*
 c. [we/you.PL [<I/you.sg> [with Petja]]] – *inclusive PPCs*
 d. * [<we/you.PL> [I/you.sg [with Petja]]]

Upon closer examination, the person restriction turns out to be more limited. First, it holds only for CCs in the subject position, while CCs used, for example, as direct objects are exempt and can include a 1st or 2nd person pronoun as a host. To show that the with-PPs in (9) and (10) indeed form a constituent with the personal pronoun and thus cannot be analyzed as stand-alone comitative adjuncts I use plural depictive secondary predicates (9) and reciprocal pronouns (10), which require a syntactically and semantically plural antecedent; parallel examples with AND coordination are provided for comparison.

- (9) a. Ty obnjal [menja [s Petej]] pjanymi.

- you hugged me.ACC with Petja drunk.PL.INST
 ‘You hugged me and Petja when we were drunk.’
- b. Ty obnjal [menja i Petju] pjanymi.
 you hugged me.ACC and Petja.ACC drunk.PL.INST
 ‘You hugged me and Petja when we were drunk.’
- (10) a. Ty pokazal [menja i Petju] drug drugu.
 you showed me.ACC and Petja.ACC each other.DAT
 ‘You showed me and Petja to each other.’
- b. Ty pokazal [menja [s Petej]] drug drugu.
 you showed me.ACC with Petja each other.DAT
 ‘You showed me and Petja to each other.’

Second, the person restriction on CCs appears to correlate with the (un)availability of full *pro*-drop. Russian shall be categorized as a partially *pro*-drop language in which only indefinite 3SG/3PL *pro*-s are available, as exemplified in (11). Occasional definite implicit subjects in matrix clauses result from topic drop or ellipsis, and occasional definite implicit subjects in embedded clauses shall be analyzed as nominative chains; see Tsedryk (2015) for a detailed discussion.

- (11) a. Mne zavtra — pozvonjat / *pozvonite.
 me tomorrow *pro*_{3PL}/**pro*_{2PL} call.3PL call.2PL
 ‘Someone will call me tomorrow.’
- b. Dorogu — zametët / *zametü.
 road.ACC *pro*_{3SG}/**pro*_{1SG} block.up.3SG block.up.1SG
 ‘The road will get blocked up by something.’

In this respect Russian can be compared to a Slavic language with full *pro*-drop, such as Polish (McShane 2009; Roberts 2019). Crucially for the present discussion, CCs are allowed in Polish and they are not restricted in terms of the person specification of the host.³

- (12) a. (Ja) z bratem poszliśmy do kina.
 I with brother went.1PL into cinema
 ‘My brother and I went into cinema.’
- b. (Ty) z bratem poszłście do kina.
 you.SG with brother went.2PL into cinema

³ I am grateful to Paulina Lyskawa for the help with the Polish examples.

‘Your brother and you went to the cinema.’

- c. (On) z bratem poszli do kina.
 he with brother went.3PL into cinema

‘He and his brother went to the cinema.’

To summarize, the restriction on CCs in Russian 1) complies with the Person hierarchy, 2) holds only for subject CCs, and 3) correlates with the unavailability of full *pro*-drop in the language. The combination of these factors points towards an account in terms of agreement, [Person] match, and null pronouns, as I show in the next section.

4. Proposal

The analysis that I propose to account for the person restriction is two-fold. The first part – that is, the basic structure of CCs – has already been outlined in Section 2. In a nutshell, I argue that all CCs involve a D head that is manifested as a plural personal pronoun (either overt or *pro*): [DP D [FP XP [PP s YP]]]. D probes both conjuncts, which results in its acquiring two sets of phi-features. The combination is resolved with the person hierarchy effect (first person wins over second, second over third) and the corresponding plural personal pronoun is inserted.

I assume that when the first conjunct is a personal pronoun it can incorporate into the main D head, because all its phi-features are a sub-set of those of D, and thus become phonologically null (Roberts 2019). The second conjunct cannot do that, since the PP is opaque for head movement; thus, ‘we, __ with Petja’ is grammatical but ‘we, I with __’ is not. This is schematized in (13).

- (13) a. [DP D_[L, _] [XP_[3SG] [s YP_[3SG]]]]
 → [DP D_[3SG, 3SG] [XP_[3SG] [s YP_[3SG]]]] → ‘they s/he with Petja’
 b. [DP D_[L, _] [XP_[1SG] [s YP_[3SG]]]]
 → [DP D_[1SG, 3SG] [XP_[1SG] [s YP_[3SG]]]] → ‘we I with Petja’

Second, I propose that the same mechanism that allows for full or partial subject *pro*-drop in a given language is involved in licensing the silent D head in CCs. For the former, I adopt an analysis in terms of feature matching with T and insertion of a silent pronoun, inspired by Roberts (2019), i.a.: the subject in a clause can be realized as null iff its features are copied onto the T head and there is a corresponding *pro* item in the language.

In partially *pro*-drop languages, such as Russian, only third person silent pronouns are available, that is, *pro* is always third person. Therefore, a 1st or 2nd person D head has to be spelled-out (14). In fully *pro*-drop languages, such as Polish, a complete set of person-marked *pro*-s is available and any of those can be used as an exponent of the matching D head.

- (14) a. T [DP D_[1SG, 3SG] [XP_[1SG] [*s* YP_[3SG]]]]
 Russian: D cannot be a *pro* → must be overt: ‘we (I) with Petja’
 Polish: D can be a *pro*: ‘*pro* I with Petja’
- b. T [DP D_[3SG, 3SG] [XP_[3SG] [*s* YP_[3SG]]]]
 D can be a *pro*: ‘*pro* s/he with Petja’

Person mismatch between the D head and a conjunct within a CC is ruled out by the requirement that the Person feature on nominative subjects must be matched under agreement with T (cf. Bejar & Rezac 2003, i.a.). In CCs this can only be done via the D head, since T does not probe the conjuncts directly.

- (15) *T [DP D_[3SG, 3SG] [XP_[1SG] [*s* YP_[3SG]]]]
 D can be a *pro* but the Person mismatch is not allowed

5. Predictions

The analysis sketched in the previous section allows us to make the following prediction. CCs with a 1st or 2nd person pronoun used as non-nominative subjects are expected to be acceptable, under the assumption that only nominative subjects must be probed by the T head, requiring the Person feature to be matched and making spell-out of the D head obligatory. The prediction appears to be borne out. First, CCs used as dative experiencers that are argued to be in Spec,TP but do not control agreement do not fall under the person restriction, as shown in (16). In these examples I use again the reciprocal pronoun *drug druga* ‘each other’ to ensure that the combinations of a pronoun and a with-PP should be analyzed as conjunction and not adjunction.

- (16) a. %Mne s Petej žalko drug druga.
 me.DAT with Petja feel.sorry.3SG each other.ACC
 ‘Petja and I feel sorry for each other.’
- b. Nam s Petej žalko drug druga.
 us.DAT with Petja feel.sorry.3SG each other.ACC
 ‘We – Petja and I – feel sorry for each other.’ (*inclusive*)

Second, there are several predicates in Russian that require a preverbal dative experience and also take a nominative agreeing object; those include *nravits’ja* ‘be liked’, (*byt’*) *nužnym*, ‘be necessary’, etc. Similarly to the examples in (16), we expect dative CCs with a 1st or 2nd person pronoun to be allowed in such sentences, while nominative object CCs with a 1st or 2nd person pronoun should be banned. This is corroborated by the data given in (17).

- (17) a. [My / *ja [s toboj / Petej]] ponravimsja mal'čikam.
 we I with you Petja be.liked.1PL boys.DAT
 'The boys will like me and you/Petja.'
- b. Mal'čikam ponravimsja [my / *ja [s toboj / Petej]].
 boys.DAT be.liked.1PL we I with you Petja
 'The boys will like me and you/Petja.'

In addition to this, my proposal relies heavily on the assumption that there is a direct link between the availability of full *pro*-drop in a language and grammaticality of CCs with a 1st or 2nd person pronoun, which I justify by contrasting Russian with Polish. Interestingly, the correlation appears to be noticeable even within a single language. Stepping outside of the Indo-European family, comitative conjunction is also allowed in many Uralic languages, including Meadow Mari. An example of a CC from Mari is given in (18):⁴ the host forms a constituent with the PP headed by the postposition *dene* 'with', as indicated by the plural agreement on the verb.

- (18) [Petja [Maša dene]] kinoško kajat.
 Petja Maša with cinema.ILL go.3PL
 'Petja and Maša (will) go to the cinema.'

Examining conjunction in Mari, I consulted two native speakers and observed the following pattern of interspeaker variation. Speaker A allows all PPCs (with an inclusive or exclusive reading (20)) but only CCs with a 3rd person singular pronoun, while Speaker B is much more permissive and not bound by the person constraint (19).

- (19) a. %[Təj [Petja dene]] kinoško kajeda. – A: *, B: OK
 you.SG Petja with cinema.ILL go.2PL
 'Petja and you go to the cinema.'
- b. %[Məj [Petja dene]] kinoško kajena. – A: *, B: OK
 I Petja with cinema.ILL go.1PL
 'Petja and I go to the cinema.'
- (20) [Me [Petja dene]] kinoško kajena.
 we Petja with cinema.ILL go.1PL
 (i) 'We – Petja and I – go to the cinema.' (*inclusive*)
 (ii) 'We – Petja, I, and someone else – go to the cinema.' (*exclusive*)

⁴ I am grateful to Elena Vedernikova and Tatiana Jefremova for the help with the Meadow Mari examples.

Interestingly, Speaker A turns out to also be restrictive when it comes to *pro*-drop and mostly accepts only sentences that can be analyzed as contextually conditioned topic drop. In contrast, Speaker B suggested that any pronominal subject could be dropped as long as it was cross-referenced by the corresponding agreement suffix on the verb. While more speakers need to be consulted to confirm the correlation, I believe that this preliminary observation shall already be taken into account, as it is of high interest for the present study mirroring the interlanguage variation between Russian and Polish.

6. Concluding remarks

The present paper discussed comitative conjunction constructions in Russian and introduced the following person restriction: comitative conjunctions with a 1st or 2nd person singular pronoun are prohibited. I showed that the restriction does not extend to CCs with plural pronouns and AND coordination and holds only for agreeing nominative subjects. I proceeded by suggesting that the restriction correlates with the unavailability of full *pro*-drop in the language and argued that the same mechanisms are involved in *pro*-drop licensing and licensing of silent D that heads all CCs. Since person appears to play a crucial role in both cases, I outlined an account for both phenomena in terms of feature-matching and the inventory of *pro* items specified for a [Person] feature that are available in a given language. The paper leaves open several questions for future research, including comparison of the Russian data to those from other Slavic languages and closer examination of the differences between CCs and AND coordination.

Acknowledgments. I would like to thank my colleagues at the Hungarian Research Centre for Linguistics for their helpful feedback. A special thank you goes to Marcel den Dikken, Ekaterina Georgieva, Éva Dékány, Katalin É. Kiss, and Lena Borise for their insightful comments. I am also grateful to the anonymous reviewers and the audience at FASL 31, where an earlier version of the research was presented. All mistakes are mine. The research is supported by the ÚNKP-21-4 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund and by the Hungarian National Research, Development and Innovation Office under the grant NKFI 129921.

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The head-NP raising analysis of a relative clause in Korean

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1. Introduction

There are three different approaches to the structure and derivation of the Korean relative clause. A No-Relative (NR) approach (advocated by Yoon 1993 and Chae 2012) claims that no operator is involved and a gap in the clause is not a variable but an empty pronominal like *pro* manifested in a regular Korean sentence. The other two approaches share the assumption that a null operator is involved. They differ from each other on the issue of whether a null operator moves or not. A movement approach (advocated by Choe 1985, Kang 1985, Yang 1987, Yang 1990, Han 1992, Han & Kim 2004, and Han 2013) claims that a null operator moves into a specifier position of a relative clause and the movement obeys Subjacency. A non-movement or semantic binding approach (suggested by Kang 1986, Choo 1994, Kwon 2008, and Yoon 2011) claims that a null operator in [Spec, CP] binds an empty pronominal and thus there is no violation of Subjacency.

In this study, we claim that a movement approach is on the right track. However, we depart from the earlier studies claiming that what moves is not a null operator but a head NP of a relative clause. Specifically, we argue that the Korean relative clause is formed through two stages of movement: First, a DP including a head NP moves into [Spec, CP] of a relative clause and then the head NP moves (rightward) out of a relative clause, forming an NP-adjunction structure together with the relative clause. A sample derivation is given in (1).

- (1) a. [John-i manna-n] haksayng
 John-NOM meet-ADN student
 ‘A student who John met’
 b. [DP [NP [CP [DP [NP *t_j*] [D $\emptyset$]]_i [C' [IP John-i *t_i* manna-] [C -n]]] [NP haksayng_j]] [D $\emptyset$]]

Note that this derivation is the same as the one suggested for the English relative clause in Bhatt (2002) but differs from the one in Kayne (1994).

The organization of the paper is as follows. In section 2, we present three pieces of evidence supporting the movement of a DP into [Spec, CP]. In section 3, we give three pieces of evidence supporting the head-NP movement out of a relative clause. Finally, in section 4, we discuss one advantage of the head-NP raising analysis and several remaining problems, including apparent counterexamples involving *amwu* ‘any’ negative polarity items (NPIs).

2. Evidence for a movement into [Spec, CP]

The first piece of evidence involves strong crossover (SCO) effects, which are known to hold

for a trace left by movement to A-bar positions (Postal 1971). Note that the status of a gap within a Korean relative clause differs between a movement approach and the other two approaches. The former claims that the gap is a variable, a trace left by A-bar movement, while the latter claims that it is just a null pronoun. An example in (1) shows that an SCO effect holds in relative clauses (cf. Choe 1985, Han 1992).

- (2) *[ku_i-ka [___i khu-ta-ko] mit-nun] John_i
 he-NOM big-DECL-COMP believe-ADN John
 ‘John, who he believes that __ is big’

As Choe (1985) and Kang (1985) noted, when a gap is a null pronoun, the resulting sentence is acceptable. This is shown in (3).

- (3) [ku_i-ka [___i khu-ta-ko] mit-nun-ta.]
 he-NOM big-DECL-COMP believe-PRS-DECL
 ‘He believes that he is big.’

The second piece of evidence involves the interpretation of the example in (4), which is unambiguous. A relative clause in (4) can be derived from two different sources given in (5). A derivation from (5a) involves an island, while a derivation from (5b) does not (cf. Han & Kim 2004). A binding approach predicts that (4) is ambiguous because both derivations are possible. In contrast, a movement approach predicts that (4) can only mean (5b) but not (5a) since movement out of an island is prohibited.

- (4) [sosel-i te yumyengha-n] I kwangswu
 novel-NOM more famous-ADN Lee Kwangswu
 ‘Lee Kwangswu, who is more famous for his novels (than for his poems)’
 ‘*Lee Kwangswu, whose novels are more famous (than others’ novels)’
- (5) a. [kwangswu-uy sosel-i] te yumyengha-ta.
 Lee Kwangswu-GEN novel-NOM more famous -DECL
 ‘Lee Kwangswu’s novels are more famous (than others’ novels).’
 b. [I kwangswu-ka] [sosel-i] te yumyengha-ta.
 Lee Kwangswu-NOM novel-NOM more famous-DECL
 ‘Lee Kwangswu is more famous for his novels (than for his poems).’

The movement approach is also supported by the unambiguity of a so-called double relative in (6).

- (6) [[wuntong-ha-l ttay ip-nun] os-i te mesci-n] John
 exercise-do-ADN when put.on-ADN cloth-nom more nice-ADN John
 ‘John, who looks better in sports clothes (than in suits).’
 ‘*John, whose sports clothes look better (than others’).’

The binding approach claims that a double relativization is possible in Korean since there is no movement from an inner relative clause. However, Han & Kim (2004) shows that the derivation

of (6) would not violate the Complex NP Constraint since the movement is available for the first nominative NP in a double nominative construction as in (7).

- (7) John-i [__ wuntong-ha-l ttay ip-nun] os-i te mesci-ta.
 John-NOM exercise-do-ADN when put.on-ADN cloth-NOM more nice-DECL
 ‘John looks better in sports clothes (than in suits).’

What is crucial here is that with a comparative marker *te*, the meaning of (7) differs from that of (8), where *John* is inside a relative clause.

- (8) [John-i wuntong-ha-l ttay ip-nun] os-i te mesci-ta.
 John-NOM exercise-do-ADN when put.on-ADN cloth-NOM more nice-DECL
 ‘John’s sports clothes look better (than others).’

The binding approach predicts that (6) would be ambiguous since a movement is not involved in the relative clause formation in Korean. In contrast, the movement approach correctly predicts that (6) is unambiguous since the derivation involving (8) violates the Complex NP constraint.

A final piece of evidence concerns weak crossover (WCO) effects. The movement approach predicts that acceptability for object relative clauses is much lower than for subject relative clauses in the WCO configuration. On the other hand, the binding approach does not predict such asymmetry. Kwon (2008) conducted an experimental study comparing subject and object relative clauses (Compare (9a) with (9b)). Kwon’s (2008: 58) overall results are given in (10). Noting the discrepancy between the overt pronoun case and the null pronominal/reflexive cases, Kwon did not adopt this result as supporting evidence for the movement approach. However, if *ku* is excluded from the test following Choi’s (2013) claim that *ku* in Korean is not a true pronoun but a 3rd person referring expression and thus cannot be interpreted as a variable,¹ Kwon’s test results strongly support the movement approach.

- (9) a. [___i ku_i /pro_i /caki_i -uy emeni-lul seltukha-n] haksayng_i
 he/pro/self-GEN mother-ACC persuade-ADN student
 ‘a student who persuaded his/pro/self’s mother’
 b. [ku_i /pro_i /caki_i -uy emeni-ka ___i seltukha-n] haksayng_i
 he/pro/self-GEN mother-NOM persuade-ADN student
 ‘a student who his/pro/self’s mother persuaded’

(10) WCO effects of subject and object relative clauses

	overt pronoun	null pronominal	reflexive	average
Subject RC	3.17	1.54	1.25	1.98
Object RC	3.15	2.13	2.29	2.52

(1: acceptable, 5: unacceptable)

¹ Kwon (2008:58) also admits that “it is possible that an overt pronoun is not a true pronoun.” Note also that the acceptability rating of *ku* is much worse than those of null pronominal and reflexive. This difference is unexpected under the traditional assumption that *ku* is a true pronoun.

3. Evidence for a movement of a head-NP out of a relative clause

In English, a low reading of an adjectival modifier such as *first* in (11) is taken to be supporting evidence that *first book* originates in the object position of *written* (Bhatt 2002).

- (11) the first book that John said Tolstoy had written
 ‘Low’ reading:
 John said that the first book that Tolstoy had written was *War and Peace*. Hence
 The NP is *War and Peace*.

Kwon (2008) shows that in (12), a Korean example corresponding to (11), only the high reading is available, where *chespenccay* modifies *malha-*, and claims that there is no evidence for a head-NP raising in Korean.

- (12) [[Tolstoy-ka ssesstako] John-i malhayss-ten] chespenccay(-uy) chayk
 Tolstoy-NOM wrote-COMP John-NOM said-ADN first(-GEN) book
 ‘the first book about which John said that Tolstoy had written’

However, we claim that this comparison is misleading in that *chespenccay* can be genitive-marked. In Korean, there is a noun-modifying noun that cannot be genitive-marked as in (13).

- (13) yumyeng(*-uy) paywu, namca(*-uy) paywu,
 famous(*-GEN) actor male(*-GEN) actor

The examples in (14) show that a low reading is available for this type of noun-modifying noun.

- (14) [[Mary-ka cohahayss-tako] John-i malhan] yumyeng/namca paywu
 Mary-NOM liked-COMP John-NOM said-ADN famous/male actor
 ‘the famous/male actor whom John said that Mary liked’
 Low reading: X is the famous/male actor that Mary liked

This indicates that a noun that allows a genitive marking merges with a head NP after the movement, while a noun that disallows the marking moves along with a head NP.

The examples in (15) also show the same story.

- (15) a. John-i Sewul-ey on itum(*-uy) hayey kyelhonhayss-ta.
 John-NOM Seoul-to come next(-GEN) year married-DECL
 ‘John got married the year after he came to Seoul.’
 Low reading: the year of John’s marriage is the same as the year he came to Seoul
 (*) High reading: the year of John’s marriage is the year after he came to Seoul
 b. John-i Sewuley on taum(-uy) hayey kyelhonhayss-ta.
 John-NOM Seoul-to come next(-GEN) year married-DECL
 *Low reading: the year of John’s marriage is the same as the year he came to Seoul
 High reading: the year of John’s marriage is the year after he came to Seoul

As seen in (15), *itum* and *taum* mean the same. However, the two differ in genitive marking, and the low reading is available only in (15a).

The second piece of evidence concerns the unavailability of relativization of a kinship noun such as *apeci* in a double-nominative sentence.

- (16) a. John-i apeci-ka pwuca-i-si-ta.
 John-NOM father-NOM rich-COP-HON-DECL
 ‘John’s father is rich.’
 b. *[John-i ____i pwuca-i-si-n] apeci i
 John-NOM rich-COP-HON-ADN father
 ‘John’s rich father’

It is not clear how to account for this fact under any approach assuming a null operator. Under a head-NP movement approach, a straightforward account is available. Suppose that a kinship noun has a structure in (17), where the *pro* is in [Spec, DP] to ensure a correct interpretation of a kinship relationship. Suppose also that an LF-condition holds for *pro* such that it needs to be bound by a c-commanding DP.

- (17) [DP *pro* [D' [NP *apeci*] [D]]]

Note that under the head-NP movement approach, to get the word order in (16), first the DP including *apeci* moves into a SPEC of a relative clause, and then *apeci* moves rightward out of the relative clause. (16) is ungrammatical since, after the first step, *pro* inside the kinship DP violates the LF-condition mentioned above.

A final piece of evidence concerns the numeral classifier (NC) constructions in Korean. In Choi (2001), it is claimed that the structures of the NC constructions are not equal. More specifically, it is claimed that structures differ depending on whether a case marker appears after a noun. When there is no case marker, the structure is as in (18a), while when a case marker appears after a noun, the construction has the structure as in (18b).

- (18) a. [DP [NP [N [N *haksayng*] [Num *twu* *myeng*]]] [D]]
 student two CLF
 b. [DP [NumP [NP [N *haksayng-ul/-i*]] [Num *two myeng*]] [D]]
 student-ACC/NOM two CLF
 ‘two students’

Note that in (18a), an NC is inside the NP, while in (18b), it is outside the NP. Under the head-NP movement approach, a difference in interpretation is expected between (18a) and (18b) when *haksayng* is relativized. This expectation is borne out, as shown in (19).

- (19) a. kyengchal-i [John-i manna-n] *haksayng twu myeng-ul* chephohay-ss-ta.
 police-NOM John-NOM met-ADN student two CLF-ACC arrest-PST-DECL
 ‘The police arrested two students whom John met.’
 Low reading: The two students John met and the two arrested are the same.

*High reading: The police arrested two of the students John met.

- b. kyengchal-i [John-i manna-n] haksayng-ul twu myeng-ul chephohay-ss-ta.
 police-NOM John-NOM met-ADN student-ACC two CLF-ACC arrest-PST-DECL
 ‘The police arrested two students whom John met.’

*Low reading: The two students John met and the two arrested are the same.

High reading: The police arrested two of the students John met

4. Discussions and remaining problems

In this closing section, we first present one interesting advantage of the head-NP analysis and then discuss several issues that may be raised about the analysis.

There is a well-known isolated difference between Korean and English or most Indo-European languages concerning relative clauses. That is, while there is a relative pronoun in English, there is no relative pronoun in Korean. This is shown in (20) and (21).

- (20) a. the picture [**which** [John liked]]
 b. the woman [**who** [John liked]]

- (21) a. [John-i coaha-nun] ku kulim
 John-NOM like-ADN the picture
 ‘the picture which John liked’
 b. [John-i coaha-nun] ku yeoca
 John-NOM like-ADN the woman
 ‘the woman who John liked’

If the head-NP raising analysis is correct for both Korean and English, the difference in question ceases to be isolated. Instead, it could be analyzed as the following parametric difference between Korean and English if we adopt the DP hypothesis for both languages.

- (22) D is non-overt in Korean, while it is overt in English.

In other words, under the head-NP raising analysis, no relative pronoun in Korean is due to the non-overtness of a D in Korean.

Next, we discuss several remaining issues that can be raised against the analysis. First, unlike in English, in which the movement into [Spec, CP] is overtly realized, in Korean, the movement is not since a D is null. Thus, one might raise the question of whether the first stage movement is real in Korean. If not, one might assume a one-step movement of a head-NP out of a relative clause. However, there is a piece of empirical evidence supporting the two-step movement for relative clause formation in Korean, which is the unavailability of relativization of a kinship noun in a double nominative sentence. Note that if the relativization in Korean involves a one-step movement, it is not clear how to account for the ungrammaticality of (16b). This strongly suggests that even in Korean where the movement into [Spec, CP] is not overtly realized, a one-step head-NP movement out of a relative clause is prohibited. The question is why. We suggest that Minimal Search, as in Chomsky (2013, 2014), is responsible for the prohibition. Assuming that a head-NP movement involves Internal Merge of CP and NP, a

search for an NP inside a DP which is in [Spec, CP] is always minimal than the one for an NP which is inside a relative clause.

Second, as Bhatt (2002: note 20) pointed out, the second-step movement does not involve DP but NP. Then, “the question will arise as to why NP movement is only found in relative clauses.” Gapless adnominal clauses in Korean, as in (23), might provide a simple answer to that question.

- (23) a. [kogi-ka tha-nun] namsay
 meat-NOM burn-ADN smell
 ‘smell of burning meat’
 b. [param-i puw-nun] sori
 wind-NOM blow-ADN sound
 ‘sound of blowing wind’

Given that it is impossible or unmotivated to assume a gap inside the adnominal clauses corresponding to the head NP in (23), gapless adnominal clauses could be the result of External Merge of CP and NP. Earlier, we proposed that the relative clause involves Internal Merge of CP and NP. If this proposal is on the right track, the answer to Bhatt’s question is simple. The reason why NP movement is only found in relative clauses is that the relative clause is formed by External Merge of CP and NP.

In fact, gapless adnominal clauses and relative clauses in Korean share common properties concerning order and projection. In both clauses, the adnominal clause precedes the head-NP and NP projects. That is, CP does not project. This suggests that order and projection in both clauses have nothing to do with the movement operation since the gapless adnominal clause does not involve the movement. We suggest that order is due to a morphosyntactic property of the Korean adnominal ending, which is that the ending precedes NP. If true, it means that order in the Korean relative clause has nothing to do with the Right Roof Constraint as in (24) (cf. Baltin 2006).

- (24) Right Roof Constraint
 An element cannot move rightward out of a clause in which it originates.

Also, the problem of projecting movement pointed out in Bhatt (2002: 76) might not be real since NP projects even in the gapless adnominal clause, which does not involve the movement.

Finally, Bhatt (2002: 60) claims that negative polarity items (NPIs) licensing in (25) could be evidence for head-NP raising.

- (25) the first/only/longest book that John said that Tolstoy had ever written

Note that an NPI *ever* is in the *write*-clause and its licenser *first/only/-est* is external to the relative clause. The head-NP raising analysis provides a simple solution. Under the analysis, *first/only/-est* can be at LF in the *write*-clause and then *ever* can be licensed. Crucially, Bhatt (2002) claims that the examples in (25) only display the low reading of *first/only/-est*.

In contrast, a Korean NPI *amwu* displays a different behavior, as shown in (26).

- (26) a. John-i coaha-nun amwuto Mary-lul an coaha-n-ta.
 John-NOM like-ADN anyone Mary-ACC NEG like-PRS-DECL

- ‘Anyone who John likes does not like Mary.’
- b. *John-i an coaha-nun amwuto Mary-lul coaha-n-ta.
 John-NOM NEG like-ADN anyone Mary-ACC like-PRS-DECL
 ‘Anyone who John doesn’t like does like Mary.’

The ungrammaticality of (26b) could be problematic to the head-NP raising analysis because the head-NP *amwuto* could be inside the relative clause at LF, being licensed by *an*. The solution to this problem is available if we adopt and modify Choi’s (1998) proposal on the structure of *amwu* expressions. My basic proposal for the structure is given in (27).²

- (27) [DemP [NP [N *t_i*]] [Dem [Dem *amwu*] [N *pro_i*]]]

This structure is motivated based on the following facts. First, there is another form of *amwu*, which includes an overt noun. This form has two variants that differ from each other in the position of the noun and case marking. In one variant, the noun follows *amwu* and cannot be case-marked. In the other, the noun precedes *amwu* and is case-marked. Examples of each variant are given in (28) and (29), respectively.

- amwu N (*-case)-to
- (28) a. amwu haksayng (*-ul/*-i)-to, amwu saram (*-ul/*-i)-to, ...
 any student ACC/NOM any person ACC/NOM
 b. amwu cayk (*-ul/*-i)-to, amwu mulken (*-ul/*-i)-to, ...
 any book ACC/NOM any stuff ACC/NOM
- N-case amwu (kes)-to
- (29) a. haksayng-ul/-i amwu-to, saram-ul/-i amwu-to, ...
 student-ACC/NOM any person-ACC/NOM any
 b. cayk-ul/-i amwu kes-to, mulken-ul/-i amwu kes-to, ...
 book-ACC/NOM any thing stuff-ACC/NOM any thing

Second, as shown in (29), the form of *amwu* changes depending on whether the noun preceding *amwu* is either human or non-human. If the noun is human, only *amwu* appears. If the noun is non-human, *kes*, which means ‘thing’, appears after *amwu*. This suggests that there is a dependency between a noun preceding *amwu* and a lexical item following *amwu* in terms of being human or non-human. To capture this dependency, we propose that there is an empty category *pro* which is interpreted as human after *amwu* in (29a). That is, the structure of the N-case variant is as follows.³

- (30) [DemP [NP [NP haksayng/cayk] [N *t_i*]] [Dem [Dem *amwu*] [N *pro_i/kes_i*]]]

² The structure in (27) is a slight modification of an original structure given in Choi (1998), where *amwu* is identified as a noun. In (27), *amwu* is proposed as a demonstrative. This proposal reflects the idea that *amwu* and *i/ku/ce* ‘this/the/that’ belong to the same class. Irrelevant details concerning a delimiter *-to* and the upper part of DemP are omitted. See Choi (1996) for the details of a delimiter construction in Korean.

³ As shown in (30), we suggest that *pro/kes* undergoes a head movement to Dem.

There is interesting independent evidence for this proposal, and that evidence involves a dative marker variation in Korean. A dative marker in Korean has two variants *-eygey* and *-ey*. The former appears when a preceding noun is human, and the latter does when the noun is non-human. The examples in (31) show this variation.

- (31) a. John-i Mary-eygey/*-ey senmul-ul ponay-ss-ta.
 John-NOM Mary-DAT gift-ACC send-PST-DECL
 'John sent Mary a gift.'
 b. John-i hwapun-*eygey/-ey mul-ul cwu-ess-ta.
 John-NOM pot-DAT water-ACC give-PST-DECL
 'John watered the pot.'

If the postulation of human *pro* after *amwu* is correct in (29a), we expect a dative marker to be realized as *-eygey*, not as *-ey*. This expectation is borne out as seen in (32).

- (32) John-i haksayng-tul amwu-eygeyto/*-eyto senmul-ul an ponay-ss-ta.
 John-NOM student-PL anyone-DAT gift-ACC NEG send-PST-DECL
 'John did not send a gift to any student.'

Then, what is the structure of the *amwu* N variant in (28)? We suggest that the basic structure is the same as the one in (30), except there is only one NP below Dem. The structure of the *amwu* N variant is given in (33).

- (33) [_{DemP} [_{NP} [_N *t_i*]] [_{Dem} [_{Dem} *amwu*] [_N *haksayng_i/chaky_i*]]]

Note that the structure in (27) is the same as the one in (33), except that the head N is human *pro*. That there is human *pro* in *amwu* NPI having no overt noun is supported by the fact that a dative marker is realized as *-eygey*, not as *-ey*, which is shown in (34).

- (34) amwu-eygey-to/*amwu-ey-to

So far, we have proposed that the correct structures for *amwu* NPIs are either (30) or (27, 33). Note that in both structures, *amwu* is located outside the NP. This proposal provides a straightforward answer as to why (26b) is ungrammatical. Under the head-NP raising analysis, what moves out of a relative clause is NP. That is, *amwu* merges with the moved NP outside the relative clause. Note that there is no negative marker in the main clause of (26b). Also, a negative marker inside the relative clause cannot license *amwu* because they are not within the same clause. Finally, the grammaticality of (26a) is straightforward. Since *amwu* merges with the NP outside the relative clause, *amwu* and a negative marker are within the same clause in (26a).

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Verb doubling in Korean

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1. Introduction

Verb doubling in Korean, also referred to as predicate focus, appears as in 1. and 2.¹

- (1) Minswu-ka chayk-ul ilk-ki-nun ilk-ess-ta
Minsu-NOM book-ACC read-NMLZ-TOP read-PST-DECL
Minsu did read the book (but...)
- (2) Swuni-ka toyncang-ccikay-lul mek-ki-nun hay-ss-ta
Swuni-NOM soybean.paste-stew-ACC eat-NMLZ-TOP do-PST-DECL
Suni did eat the soybean paste stew (but...)

In 1., the doubled predicate, which appears before the nominalization marker *-ki* is repeated in full. In contrast, in 2. the resumptive verbal complex contains only the light verb *-ha*. From here on I will refer to the construction in 1. as ‘full verb doubling’ and the construction in 2. as ‘light verb doubling’². The two constructions have often been given a unified treatment, but a detailed examination of their distribution and properties reveals notable differences in possible word orders, pragmatic interpretation, and distributions of morphology on the predicate copies.

Following this, I will propose distinct analyses for full verb doubling and light verb doubling that begin to illuminate their observed empirical differences.

* Thank you to Martin Salzmann for guidance and reviewers and participants of SICOOG 24 for constructive comments and feedback. Special thanks to Yeji Hwang for her grammaticality judgments. Unless otherwise noted, all data comes from her. All errors remain my own.

¹ Glossing abbreviations used in this paper are as follows:

NOM = nominative case

ACC = accusative case

TOP = topic marker

PST = past tense

NMLZ = nominalization marker

DECL = declarative

² Neither construction requires that the doubled predicate be verbal; however, here I focus on transitive verbs and thus adopt this terminology for ease of reference.

2. Empirical Generalizations

2.1. Differences in possible word orders

Full verb doubling and light verb doubling show different patterns of possible word orders. Light verb doubling only permits a subset of the word orders found to be acceptable in full verb doubling, suggesting that the underlying structure of light verb doubling fixes the order of its constituents to a greater degree.

Kim 2015 examines the possible word orders for full verb doubling, and provides an account of the pragmatic differences between different word orders. The unmarked word order for verb doubling appears to be *S O V-kinun V*. Another natural word order is *O S V-kinun V*, presumably derived via scrambling of the object.

- (3) Minswu-ka chayk-ul ilk-ki-nun ilk-ess-ta
 Minsu-NOM book-ACC read-NMLZ-TOP read-PST-DECL
 Minsu did read the book (but...)

- (4) chayk-ul Minswu-ka ilk-ki-nun ilk-ess-ta
 book-ACC Minsu-NOM read-NMLZ-TOP read-PST-DECL
 Minsu did read the book (but...)

Kim, Taehoon 2015

According to Kim 2015, 3. and 4. are natural in response to a yes/no question, and are concessive in nature. 5. is natural in response to a subject-wh question, and 6. is most natural in response to an object-wh question.

In line with Kim 2015's predictions, our consultant required a subject-wh question context in order to find 5. (*O V-kinun S V*) felicitous. The same also held for 6. (in this case, an object-wh question context was required), which has order *S V-kinun O V*.

- (5) chayk-ul ilk-ki-nun Minswu-ka ilk-ess-ta
 book-ACC read-NMLZ-TOP Minsu-NOM read-PST-DECL
 It is Minsu who read the book.

- (6) Minswu-ka ilk-ki-nun chayk-ul ilk-ess-ta
 Minsu-NOM read-NMLZ-TOP book-ACC read-PST-DECL
 Minsu read a/the book.

- (7) ?? ilk-ki-nun chayk-ul Minswu-ka ilk-ess-ta
 read-NMLZ-TOP book-ACC Minsu-NOM read-PST-DECL
 As for reading, Minsu read the book.

- (8) ?? ilk-ki-nun Minswu-ka chayk-ul ilk-ess-ta
 read-NMLZ-TOP Minsu-NOM book-ACC read-PST-DECL
 As for reading, Minsu read the book.

Even given the context suggested in Kim 2015, though, 7. and 8. were judged to be almost fully ungrammatical by Y.H. Overall, this pattern supports Kim 2015's proposal about the

information-theoretic aspects of full verb doubling, and suggests in addition that the word orders of 7. and 8. are degraded.

As for full verb doubling, the most natural word orders for the light verb construction appear to be *S O V-kinun V* and *O S V-kinun V*:

- (9) Swuni-ka toyncang-ccikay-lul mek-ki-nun hay-ss-ta
 Swuni-NOM soybean.paste-stew-ACC eat-NMLZ-TOP do-PST-DECL
 Suni did eat the soybean paste stew (but...)
- (10) toyncang-ccikay-lul Swuni-ka mek-ki-nun hay-ss-ta
 soybean.paste-stew-ACC Swuni-NOM eat-NMLZ-TOP do-PST-DECL
 Suni did eat the soybean paste stew (but...)

In contrast to full verb doubling, none of the following word orders improved significantly given the appropriate context (as defined by Kim 2015)³:

- (11) %toyncang-ccikay-lul mek-ki-nun Swuni-ka hay-ss-ta
 soybean.paste-stew-ACC eat-NMLZ-TOP Swuni-NOM do-PST-DECL
 Eating soybean paste stew, Suni did.
- (12) *Swuni-ka mek-ki-nun toyncang-ccikay-lul hay-ss-ta
 Swuni-NOM eat-NMLZ-TOP soybean.paste-stew-ACC do-PST-DECL
 Eating soybean paste stew, Suni did.
- (13) *mek-ki-nun Swuni-ka toyncang-ccikay-lul hay-ss-ta
 eat-NMLZ-TOP Swuni-NOM soybean.paste-stew-ACC do-PST-DECL
 Eating soybean paste stew, Suni did.
- (14) */??mek-ki-nun toyncang-ccikay-lul Swuni-ka hay-ss-ta
 eat-NMLZ-TOP soybean.paste-stew-ACC Swuni-NOM do-PST-DECL
 Eating soybean paste stew, Suni did.

The two constructions also differ in the possible positioning of adverbs with respect to the verb copies. Previous literature suggested on the basis of the following examples that adverbs could not occur in full verb doubling.

- (15) (*cacwu) manna-ki-nun John-i Tom-ul manna-ss-ta
 (often) meet-NMLZ-TOP John-NOM Tom-ACC meet-PST-DECL
 Meet often, John met Tom.
- (16) *John-i (cacwu) manna-ki-nun Tom-ul manna-ss-ta
 John-NOM (often) meet-NMLZ-TOP Tom-ACC meet-PST-DECL
 Meet often, John met Tom.

Cho and Kim 2002: 665

³ Our main consultant Y.H. rated all of these examples fully ungrammatical, but other consultants' judgments differed somewhat.

(17)	Minswu-ka	chayk-ul	ppalli	ilk-ki-nun	ilk-ess-ta
	Minsu-NOM	book-ACC	quickly	read-NMLZ-TOP	read-PST-DECL
	Minsu did read the book quickly (but...)				
(18)	chayk-ul	ecey	Minswu-ka	ilk-ki-nun	ilk-ess-ta
	book-ACC	yesterday	Minsu-NOM	read-NMLZ-TOP	read-PST-DECL
	Minsu did read the book yesterday (but...)				

(19) Swuni-ka toyncang-ccikay-lul mek-ki-nun chenchenhi mek-ess-ta
Swuni-NOM soybean.paste-stew-ACC eat-NMLZ-TOP slowly eat-PST-DECL
Suni ate the soybean paste stew slowly.

(20) *Chelswu-ka ppang-ul mek-ki-nun ecey hay-ss-ta
 Chelswu-NOM bread-ACC eat-NMLZ-TOP yesterday do-PST-DECL
 Cheolsu yesterday did eat bread.

(21) */??John-i Tom-ul silhe-ha-ki-nun cengmal hay-ss-ta
 John-NOM Tom-ACC dislike-do-NMLZ-TOP really do-PST-DECL
 John really did dislike Tom, but...

(22) *Swuni-ka toyncang-ccikay-lul mek-ki-nun chenchenhi hay-ss-ta
Swuni-NOM soybean.paste-stew-ACC eat-NMLZ-TOP slowly do-PST-DECL
Suni ate the soybean paste stew slowly.

(23) Swuni-ka toyncang-ccikay-lul chenchenhi mek-ki-nun hay-ss-ta
Swuni-NOM soybean.paste-stew-ACC slowly eat-NMLZ-TOP do-PST-DECL
Suni ate the soybean paste stew slowly.

Including the adverb data, the overall pattern is one in which word order in full verb doubling is quite free, albeit modulated by context and pragmatic meaning, while word order in light verb doubling is significantly more restricted.

2.2. Differences in doubled morphology

The two constructions also differ in the pattern of morphemes that can appear on one, either, or both of the verb copies. The following summary tables illustrate the observed distributions of verbal morphology on the base and resumptive verbs in full verb doubling and light verb doubling. The morphemes are ordered by approximate position in the clausal spine, from lowest to highest⁴. The symbol % is used to indicate significant inconsistency and/or variation between speakers.

	can double	must double	must appear on base V	must appear on resumptive V
NEG	✓	✓	✓	✓
PASS	✓	✓	✓	✓
PROG	✓	✗	✗	✓
HON	✓	✗	✗	✓
PST	✓	✗	✗	✓
FUT	✓	✗	✗	✓
EPIS	%	✗	✗	✓
MOOD	✗	✗	✗	✓

Table 1: Full verb doubling

For full verb doubling, we can see that all but the highest morphemes in the clausal spine can double; that short negation and the passive morpheme, presumably the lowest on the clausal spine, must double if they appear at all; and that all morphemes that appear on one of the verb copies must appear on the resumptive, or higher, copy.

	can double	must double	must appear on base V	must appear on resumptive V
NEG	✗	✗	✓	✗
PASS	✗	✗	✓	✗
PROG	✗	✗	✓	✗
HON	✓	✗	✗	✗
PST	✓	✗	✗	✗
FUT	✓	✗	✗	✗

⁴ NEG = 안 *an* (short negation only; uniquely precedes the verb)

PASS = -어지 *-eci*

PROG = -고 있 *-ko iss*

HON = -으시 *-usi*

PST = -었 *-ess*

FUT = -을 거 *-ul ke*

EPIS = -겠 *-keyss*

MOOD = -더 *-te*

EPIS	%	✗	✗	✓
MOOD	✗	✗	✗	✓

Table 2: Light verb doubling

For light verb doubling, the generalizations are distinct: the lowest morphemes in the clausal spine (short negation, passive, progressive) cannot double and must appear only on the base verb; the only morphemes that must appear on the resumptive verb if they appear at all are the highest in the clausal spine (epistemic marking and mood).

2.3. Other differences: adverb doubling

Jo 2013 presents judgments that in full verb doubling, not just the verb but also the subject, object, and adverbs can double. While Y.H. did not find doubling of either the subject or the object grammatical, our consultations did replicate the potential for adverb doubling in full verb doubling, and its absence in light verb doubling.

- (24) Chelswu-ka tongsayng-uy cangnankam-ul hampwulo
 Chelswu-NOM younger.sibling-GEN toy-ACC carelessly
 peli-ki-nun hampwulo pely-ess-ta
 throw.away-NMLZ-TOP carelessly throw.away-PST-DECL
 Cheolsu did throw away his younger sibling's toy carelessly.

- (25) Swuni-ka siksa-lul onul-achim chali-ki-nun
 Swuni-NOM meal-ACC today-morning prepare-NMLZ-TOP
 onul-achim chaly-ess-ta
 today-morning prepare-PST-DECL
 Suni did prepare a meal this morning.

- (26) *Chelswu-ka tongsayng-uy cangnankam-ul hampwulo
 Chelswu-NOM younger.sibling-GEN toy-ACC carelessly
 peli-ki-nun hampwulo hay-ss-ta
 throw.away-NMLZ-TOP carelessly do-PST-DECL
 Cheolsu did throw away his younger sibling's toy carelessly.

- (27) *Swuni-ka siksa-lul onul-achim chali-ki-nun
 Swuni-NOM meal-ACC today-morning prepare-NMLZ-TOP
 onul-achim hay-ss-ta
 today-morning do-PST-DECL
 Suni did prepare a meal this morning.

3. Analyses

Jo 2013 and Aoyagi 2006 both present unified analyses of the two types of verb doubling under which light verb doubling results from deletion of higher copied elements under identity (see also Jo 2000). While Jo's analysis shows that such unified analyses still do have the potential to account for certain

differences between light verb and full verb doubling⁵, no such analysis should be able to account for the observed pragmatic and discourse use differences between the constructions (see Kim 2000 for a detailed overview of pragmatic differences between the constructions beyond the word order context facts discussed in Section 2.1).

3.1. Full verb doubling

Aoyagi's analysis, under which both constructions are analyzed as the result of adjunction of the focus marker *-nun* creating a chain, is successful in capturing the morphological facts for full verb doubling: since the higher copy is the result of further movement up the clausal spine, we derive that all morphology present on the lower copy must show up on the higher copy; furthermore, optionality in the adjunction site of *-nun* derives the optionality in how much morphology shows up on the lower copy. The obligatory doubling of NEG and PASS will also follow as long as these elements are too low or too directly adjacent to the verb root for *-nun* to adjoin below them/between them and the verb root—under most analyses of short negation, this follows without assumption for NEG.

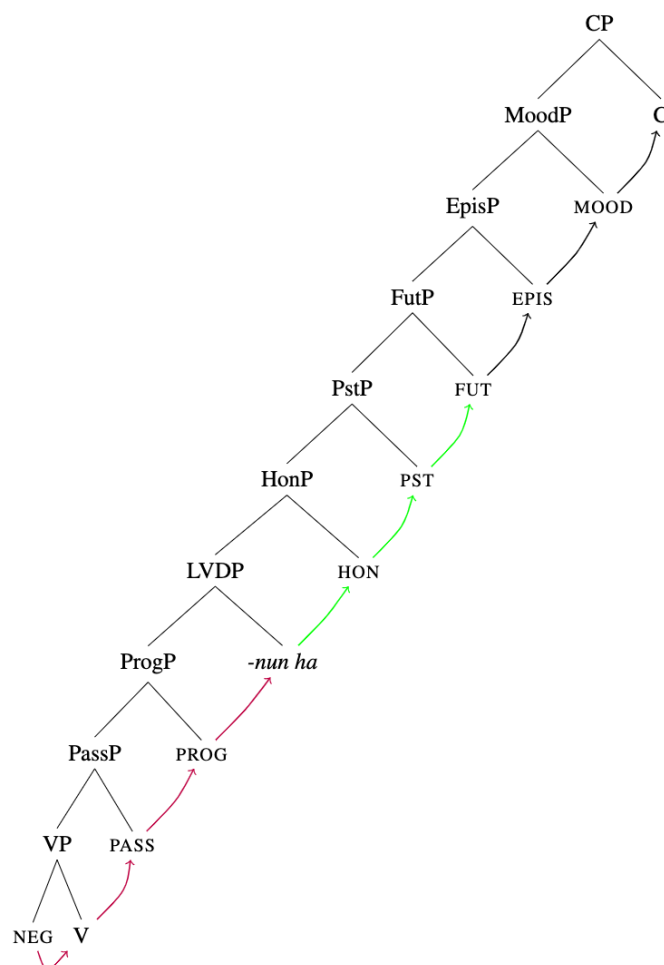
However, if the head movement of the verbal element is, as Aoyagi assumes, post-syntactic, then we have no recourse for deriving the various word order options for full verb doubling. An equivalent analysis in which the head movement occurring is syntactic provides us with significantly more potential to capture these facts, although the details of how each word order is derived will have to be spelled out at a later point (see Harizanov & Gribanova 2018, Arregi & Pietraszko 2021 for some potential head movement frameworks).

Another advantage of Aoyagi's analysis when applied to full verb doubling alone is that the attachment of *-nun* at the phrasal level may be exploited to explain the potential of certain non-verbal elements, namely adverbs, to double along with the verb in this construction (alternatively, see Chung 1993 and, following, Kim 2000 for the suggestion that adverbs may be re-analyzed as a single element with the verb they modify). Again, though, the specifics of such an analysis will be left to future refinements.

3.2. Light verb doubling

Along similar lines, Jo's phrasal-fronting analysis of both constructions accurately accounts for the morphological facts for light verb doubling. However, in order to account as well for the full range of pragmatics and word order facts, I will instead pursue an analysis in which the base verb and light verb form a complex head. In line with Aoyagi's analysis as adapted for full verb doubling, I will assume that *-ki* is inserted to host the focus marker *-nun*—but now I propose that instead of *-nun* itself adjoining to the tree, there is a complex head *-nun ha*, whose position in the clause is between PROG and HON. This is illustrated in the following tree.

⁵ Jo accounts for the general pattern of full verb doubling displaying more word order options than light verb doubling—however the potential for O S V-*kinun* V word order in light verb doubling is critically not accounted for.



Assuming head movement of the verb up the clausal spine, we then derive that, when present, all of NEG, PASS, and PROG must appear only on the lower/lexical verb copy, as these elements form a complex head with the verb before it moves to *-nun ha*. Then, if the complex head formed by the lexical verb and *-nun ha* maintains an internal structure with two verbal elements (the lexical verb and *ha*), heads to which this complex head later moves to can be morphologically realized on either or both of those verbal elements. Finally, the inability of the highest heads in the clausal spine to appear on the lexical verb may simply follow from the inability of these morphemes to appear before the nominalization marker *-ki*.

One possible objection to this analysis is that the lexical verb and light verb in light verb doubling are not always linearly adjacent for all speakers—the word order O V-*kinun* S V is accepted by some (see example 11 above). Given the disagreement between speakers, though, it seems plausible that when this word order appears, the grammatical parse is not one of light verb doubling, but rather one in which *-ki* appears as a proper nominalizer followed by the topic marker *-nun*. That is, this case is analogous to the appearance of accusative case after the nominalization marker—Hein 2017 reports that light verb doubling can appear with accusative case in place of the topic marker after *-ki*, in contrast to full verb doubling, as shown in the examples below.

- (28) Swuni-ka sakwa-lul mek-ki-lul hay-ss-ta
 Swuni-NOM apple-ACC eat-NMLZ-ACC do-PST-DECL
 Suni ate the apple.

Cho and Kim 2002: 666

- (29) *Swuni-ka sakwa-lul mek-ki-lul mek-ess-ta
 Swuni-NOM apple-ACC eat-NMLZ-ACC eat-PST-DECL
 Suni ate the apple.

Cho and Kim 2002: 666

Again, our main consultant found both examples fully ungrammatical as verb doubling, but did accept 30., in which the nominalized verb has undergone pseudo-noun incorporation, suggesting a more prototypical case of proper nominalization⁶.

- (30) Minswu-ka kul-ssu-ki-lul hay-ss-ta
 Minswu-NOM writing-write-NMLZ-ACC do-PST-DECL
 Minsu did writing.

4. Discussion

While full verb doubling and light verb doubling have many surface similarities in both form and meaning, there is ample evidence in the form of empirical differences between the two constructions to justify distinct analyses of their underlying syntax. The analyses I've applied here to these constructions have the potential to account for these empirical differences—in full verb doubling, the two verb copies are separable elements, and the resumptive verb necessarily contains all the morphological material spelled out on the base verb; in light verb doubling, the two verb copies are part of one complex head, and all morphology incorporated before the light verb doubling complex head is formed will appear only on the base verb, while morphology that appears higher in the clause can be spelled out on either or both elements within the complex head. As a consequence, we can capture the following empirical generalizations: the possibility in full verb doubling for word orders in which the verb copies are not adjacent, and the impossibility of such word orders in light verb doubling; the fact that in full verb doubling all morphology that appears on the base verb must also appear on the resumptive verb, while in light verb doubling, morphemes are split between those that must only appear on the base verb and those that can appear on either or both of the base and resumptive verb. Certain empirical facts will require more work to account for fully—in particular, the ability of adverbs to double in full verb doubling, and the inability of EPIS and MOOD to appear on the base verb in light verb doubling. However, while the current analyses do not thoroughly account for these facts, in both cases there are potential ways forward while maintaining the empirical gains.

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⁶ It has been suggested that light verb doubling itself is simply an instance of proper nominalization—see for instance Cho 2002—but this is made implausible by a detailed view of the meaning of the construction and the discourse contexts in which it is licensed.

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Locative Inversion and Labeling

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Locative Inversion Constructions do not permit Subject-Aux Inversion (SAI), sentential negation, sentential emphasis, and VP-ellipsis. This study claims that the peculiar pattern of LI originates from the fact that T cannot provide a label. More specifically, it will be shown that (i) T's weakness in projectability can be resolved by T-movement as well as subject raising, and (ii) in LI Constructions only T-to-Topic movement is available, which gives rise to the peculiarities of LI. Sentential negation, sentential emphasis, and VP-ellipsis involve deletion of the uninterpretable features of T, and they cannot be deleted if T-to-Topic movement takes place, because T-to-Topic movement results in undoing Merge of T with a NegP, EmphasisP, and VP_[Ellipsis]. This paper also shows that the incompatibility of the LI construction with SAI follows from the fact that T cannot project a label in the landing site after T-to-Topic movement. This study extends the T-movement approach to specificational copular constructions.

1. Introduction

Locative Inversion (LI) is not compatible with Subject-Aux Inversion (SAI), sentential negation, sentential emphasis, and VP-ellipsis (Bruening 2010), as illustrated in (1-2).

- (1) From this observation will emerge a new understanding of natural language.
- (2) a. *Will from this observation emerge a new understanding of natural language?
b. *From this observation has not emerged a new understanding of natural language.
c. *From this observation DID emerge a new understanding of natural language!
d. *From this observation will emerge a new understanding of natural language, and from that one will too. (Bruening 2010: 45)

This study claims that the ungrammaticality of (2a-d) originates from the fact that T cannot provide a label. It will be shown that (i) T's weakness in projectability can be resolved if either subject raising or T-movement takes place, and (ii) in LI Constructions only T-movement is available, which gives rise to the peculiar pattern in (2a-d).

2. Labeling in LI Constructions

This section shows that the incompatibility of LI with sentential negation, sentential emphasis, VP-ellipsis, and T-to-C movement follows from the fact that the operation 'Merge' cannot be completed unless the resulting structure is labeled.

Chomsky (2013, 2015) proposes that T is weak in projectability, and the problem is resolved when the subject raises to SPEC-T, as the resulting structure can be labeled as ΦP via feature sharing.

(7) a. Not a word did I say.
 b. *Not a word I said.

I assume that Focus, just like T, is weak in projectability. In (12c) the SPEC *not a word* and the head $[[T_{\phi[uNeg]} \text{ Focus}]]$ share two features: Focus and Neg. Hence, α is labeled as Focus/NegP via feature sharing. This amounts to saying that the syntactic object in (12d) is the projection of T as well as Focus, and hence (12d) satisfies the condition that $T_{[uNeg]}$ or the projection of $T_{[uNeg]}$ must be merged with a NegP. Therefore, (7a) is grammatical. In (7a) T-movement is required, but in (9a) the $[uNeg]$ feature of T can be deleted without recourse to T-movement. In (13a-c), T is merged with a NegP, and if *John* undergoes raising, the resulting structure can be labeled as ΦP . As soon as labeling takes place, the $[uNeg]$ feature of T can be deleted, as in (13c-d), and so the Adjacency Condition is satisfied. It is worthwhile to stress that uninterpretable features can be deleted only after Merge and labeling.

- (13) a. $[NegP \text{ not } [_{VP} \text{ like Mary}]]$: Merge of $T_{[uNeg]}$
 b. $[T_{[uNeg]} [NegP \text{ not } [_{VP} \text{ like Mary}]]]$: Merge of *John*
 c. $[\alpha \text{ John } T_{[uNeg]} [NegP \text{ not } [_{VP} \text{ like Mary}]]]$: Labeling and Deletion of $[uNeg]$
 d. $[\Phi P \text{ John } T_{[uNeg]} [NegP \text{ not } [_{VP} \text{ like Mary}]]]$

Given that deletion of an uninterpretable feature is not permitted prior to labeling, the Adjacency Condition cannot be met in LI constructions. As shown in (14a), $[T \text{ has}]$ is merged with the NegP $[NegP \text{ not } [\dots]]$. However, the merging operation is not completed yet because there is no label for the resulting structure. As it is incomplete, the $[uNeg]$ feature cannot be deleted. In fact, if α is not determined, $[T_{[uNeg]} \text{ has}]$ must undergo head movement, with the result that Merge of T with the NegP is undone. Accordingly, just Merge of $T_{[uNeg]}$ with a NegP cannot license deletion of $[uNeg]$ unless the resulting structure is labeled. Let us now consider what happens when T moves to Topic. In (14b) T is merged with Topic, not with a NegP. Therefore, neither the lower copy of T nor the higher copy can satisfy the Adjacency Condition (11), and hence (14c) is ill-formed.

- (14) a. $[\alpha [T_{[uNeg]} \text{ has}] [NegP \text{ not } [\dots]]]$: Merge of Topic, T-Movement, and Topicalization
 b. $[_B \text{ From this observation}_{[uTopic]} [_{Topic} [T_{[uNeg]} \text{ has}] [_{Topic}]] [\alpha [\cancel{T}_{[uNeg]} \text{ has}] [NegP \text{ not } [\dots]]]]$: Labeling
 c. $[_{TopicP} \text{ From this observation}_{[uTopic]} [_{Topic} [T_{[uNeg]} \text{ has}] [_{Topic}]] [\alpha [\cancel{T}_{[uNeg]} \text{ has}] [NegP \text{ not } [\dots]]]]$

Sentential stress as well as sentential negation is also licensed by T. Sentence (2c), repeated here as (15), is ill-formed for the same reason as (6) is.

- (15) *From this observation DID emerge a new understanding of natural language!

Laka (1990) proposes that there is a positive polarity head that corresponds to the negative polarity head *not*, and it is realized as an emphatic stress. T must be adjacent to the positive polarity phrase as well as to the negative polarity phrase: that is, T has an uninterpretable $[\text{Pos(itive)}]$ feature and it can be deleted via Merge with a Pos(itive)P . Accordingly, the Adjacency Condition in (11) must be generalized as follows:

- (16) The Adjacency Condition on Sentential Negation/Sentential Emphasis
 $T_{[\alpha \text{Polarity}]}$ or its projection must be merged with a $[\alpha \text{Polarity}]$ phrase, where α can be either negative or positive.

In (17a), for instance, T has the [uPos] feature and it is deleted when it is merged with a PosP.

(17) John DOES love Mary.

- (18) a. [_α John [T_[uPos] [PosP $\emptyset$ Pos [love Mary]]]]: Labeling and Deletion of [uPos]
 b. [_{ΦP} John [T_[uPos] [PosP $\emptyset$ Pos [love Mary]]]]

In (18a) α can be labeled as Φ P, which completes Merge of T with PosP. Therefore, the [uPos] feature can be deleted. By contrast, the Adjacency cannot be met in LI Constructions. Although T_[uPos] is merged with a PosP in (19a), there is no label for the resulting structure. Thus, the [uPos] feature cannot be deleted. As shown in (19b-c), the higher copy of T_[uPos] is merged with Topic, not with a PosP. Therefore, the Adjacency Condition is violated.

- (19) a. [_{PosP} $\emptyset$ Pos [...]]: Merge of [_T T_[uPos] will]
 b. [_α T_[uPos] [_{PosP} $\emptyset$ Pos [...]]]: Merge of Topic, T-to-Topic Movement, and Topicalization
 c. [From this observation_[uTopic] [_{Topic} [T_[uPos] Topic] [_α T_[uPos] [_{PosP} $\emptyset$ Pos [...]]]]]

To recapitulate, (i) T cannot project a label and undergoes movement to Topic in LI, (ii) if T must undergo movement, there is an effect of undoing Merge of T with a NegP/PosP, (ii) therefore, the [uNeg] and [uPos] features cannot be deleted in LI.

2.3 LI and Ellipsis

Let us now consider why (2d), rewritten as (20), is ungrammatical.

- (20) *From this observation will emerge a new understanding of natural language, and from that one will too.

In minimalism, operations are triggered by features. For instance, *wh*-movement is triggered by a Q-feature or a *wh*-feature (Chomsky 1995, 2001, 2008, 2013, Pesetsky and Torrego 2001, Bošković 2007, 2011, Cable 2010, among many others). Not surprisingly, there have been many attempts to explain ellipsis by exploiting (un)interpretable features (Lobeck 1995, Merchant 2001, 2004, Aelbrecht 2010, Conner 2019, among many others). Most of them share the following two assumptions: (i) the phrase to be elided has an uninterpretable [E]-feature, and (ii) ellipsis is licensed when it bears an Agree relation with an interpretable [E]-feature on a functional node. In (21), for instance, *gentle* can be deleted at PF when its uninterpretable [E] feature bears an Agree relation with the [E] feature on T (Saito & Murasugi 1990, Lobeck 1995, Griffiths and Den Dikken 2021).

- (21) [he T_[E] [be <_{[u(n)interpretable] E} gentle>]]

If this line of approach is on the right track, we can provide an account for why (20) is ungrammatical. By slightly modifying the above proposal, I propose that T has an

uninterpretable [E]-feature, the vP to be elided has an interpretable [E]-feature, and the [uE]-feature can be deleted via Merge.²

(22) The [uE] feature of T can be deleted via Merge with vP_[E].

In (23) the lower copy of [*T*_[uE] [*will*]] cannot be deleted via Merge with the vP_[E], as there is no label for the constituent that results from Merge of [*T*_[uE] [*will*]] and vP. Nor can the [uE] feature of the higher copy can be deleted.

(23) [From this observation_[uTopic] [Topic [*T*_[uE] [*will*]] Topic] [_α [*T*_[uE] [*will*] vP_[E] emerge a new understanding of natural language]]]

Therefore, LI is not compatible with VP-ellipsis. To recapitulate, sentential negation, sentential emphasis, and VP-ellipsis are not permitted in LI constructions exactly for the same reason.

2.4 LI and T-to-C Movement

If the locative phrase is a Topic in LI Constructions and T moves to Topic, the ungrammaticality of (2a), rewritten here as (24), can be explained in a straightforward way.

(24) *Will from this observation emerge a new understanding of natural language?

TopicP does not permit T-to-C movement. For instance, (25) is not grammatical, which suggests that T cannot move to C if TopicP intervenes between C and T.

(25) *Will in the morning you meet Mary?

- (26) a. [_α in the morning_[uTopic] [Topic will Topic] [you ~~will~~ ...]]: Labeling
 b. [TopicP in the morning_[uTopic] [Topic will Topic] [you ~~will~~ ...]]: Merger of C
 c. [C [TopicP in the morning_[uTopic] [Topic will Topic] [you ~~will~~ ...]]]
-

In (26a) α is labeled as TopicP via feature sharing, as *in the morning* and the head Topic share the feature [Topic]. I assume that a head is not visible if it is not involved in providing a label. In (26c) the head Topic provides a label, but T does not. Accordingly, Topic is visible, but T is not. Being invisible, T cannot trigger T-to-C movement. Therefore, (25) is ill-formed. Sentence (20) is not grammatical for the same reason as (25) is not.

(27) [C [TopicP from this observation_[uTopic] [Topic will [Topic]] [~~will~~] [...]]]

In (27) the higher copy of *will* is not visible, and so it cannot undergo further movement to C.

² There are many cases in which a constituent smaller than the sister of T is deleted. It is beyond the scope of this paper to provide a detailed discussion of VP-ellipsis.

Specificational copular constructions are analogous to LI constructions in that they are not compatible with VP-ellipsis, sentential negation, and sentential emphasis. This section extends the T-movement approach to specificational copular constructions.

(32) a. [_α [_T have T_[uE]] [_{vP} your biggest worry_[uTopic]] [_{vP} ... [_{SC} the agreement facts t_i]]]

Merge of Topic and T-to-Topic Movement

- b. $[[_T \text{ have } T_{[uE]}] \text{ Topic } [\alpha \text{ ~~have~~ } T_{[uE]}] [_{VP} \text{ your biggest worry}_{[uTopic]}] [_{VP} \dots [_{SC} \text{ the agreement facts } t_i]]]$

Therefore, (29b) is ill-formed.

As mentioned above, specificational copular constructions do not permit sentential negation and sentential emphasis. Higgins (1976) and Declerck (1988) point out that they cannot be negated,³ and Choi and Park (2021) report that they cannot be emphasized either.

- (33) a. *The biggest problem is **not** factory closings
 b. *The biggest problem **IS** factory closings.

Sentences (33a-b) are not grammatical for the same reason as (29b) is not. Let us try to generate (33a). In (33a) the $[uNeg]$ feature cannot be deleted because α is not labeled. Therefore, the Adjacency Condition cannot be satisfied and so (33a) is not grammatical.

- (34) a. $[\alpha T_{[uNeg]} [_{NegP} \text{ not } [_{SC} \text{ factory closings } \text{the biggest problem}_{[uTopic]}]]]$: Merge of Topic, T-to-Topic Movement, and Topicalization
 b. $[_{Topic/\Phi P} \text{ the biggest problem}_{[uTopic]}] T_{[uNeg]} \text{ Topic } [\alpha \text{ ~~have~~ } T_{[uNeg]} [_{NegP} \text{ not } [_{SC} \text{ factory closings } \text{the biggest problem}_{[uTopic]}]]]$

The ungrammaticality of (33b) can be explained in the same fashion, as illustrated in (35a-b).

- (35) a. $[\alpha T_{[uPos]} [_{PosP} \text{ } \emptyset_{Pos} [_{SC} \text{ factory closings } \text{the biggest problem}_{[uTopic]}]]]$: Merge of Topic, T-to-Topic Movement, and Topicalization
 b. $[_{Topic/\Phi P} \text{ the biggest problem}_{[uTopic]}] T_{[uPos]} \text{ Topic } [\alpha \text{ ~~have~~ } T_{[uPos]} [_{PosP} \text{ } \emptyset_{Pos} [_{SC} \text{ factory closings } \text{the biggest problem}_{[uTopic]}]]]$

In (35a) α cannot be labeled, and so the $[uPos]$ feature cannot be deleted.

3.2 T-to-C Movement in Specificational Copular Constructions

Let us finally consider T-to-C movement in specificational copular constructions. It is usually accepted that in English the precopular nominal agrees with T. However, it is not always the case, as pointed out by many linguists (Heycock and Kroch 1999, 2002, Heycock 2012, Selvanathan 2016, among many others).⁴ In (36a-b) T can agree with the postcopular nominal as well as the precopular nominal.⁵

- (36) a. A major hindrance to your success is/are the Smiths.
 b. An issue that had to be solved was/were the recurring problems of the newly appointed faculty members. (Selvanathan 2016: 48)

Interestingly, Selvanathan (2016) reports that the Φ -features of T are only determined by the

³ According to Higgins (1979) and Declerck (1988), (33a) is acceptable on a contradiction reading.

⁴ Heycock and Kroch (1999, 2002) and Heycock (2012) also present similar examples as instances of predicate fronting constructions.

⁵ In Italian only the postcopular nominal can agree with T (Moro 1997).

(37) a. Is/*Are a major hindrance to your success the Smiths?
b. Was/*Were an issue that had to be solved the problems of the newly appointed faculty members?

(38) a. [_{α} T_[uΦ]] [be_[SC] the Smiths a major hindrance to your success_[uTopic]]]]:
 AGREE and Merge with Topic
 b. [Topic [_{α} T_[+PI, 3rd Person]] [be_[SC] the Smiths a major hindrance to your success_[uTopic]]]]:
 be-to-T movement, T-to-Topic Movement and Topicalization
 c. [TopicP a major hindrance to your success<sub>[uTopic]_i] be T_[+PI, 3rd Person] Topic [_{α} [~~be~~-T_[+PI, 3rd Person]]
 Person] [~~be~~ [_{SC} the Smiths t_i]]]: Merge with C
 d. [C [TopicP a major hindrance to your success<sub>[uTopic]_i] be T_[+PI, 3rd Person] Topic [_{α} [~~be~~-T_[+PI, 3rd Person]]
 Person] [~~be~~ [_{SC} the Smiths t_i]]]: *T-to-C-Movement</sub></sub>

(39) a. [_α be T_[uΦ] [_β [_{SC} the Smiths a major hindrance to your success_[uTopic]]]]:
be-to-T movement, Agree, Merge with Topic, T-to-Topic Movement,
 and Topicalization
 b. [_β a major hindrance to your success_[uTopic] [_{be} T_[-Pl, 3rd Person]] Topic [_α ~~be~~ T_[-Pl, 3rd Person]
{be} [{SC} the Smiths t_i]]]: Labeling
 c. [Topic/ΦP a major hindrance to your success_[uTopic] [_{be} T_[-Pl, 3rd Person]] Topic [_α ~~be~~ T<sub>[-Pl, 3rd-
 Person]</sub> [_{be} [_{SC} the Smiths t_i]]]: Merge with C and T-to-C Movement
 d. [CP [_{be} T_[-Pl, 3rd Person] Topic] C [Topic/ΦP a major hindrance to your success_[uTopic] [_{be} T<sub>[-Pl, 3rd-
 3rd Person]</sub>] Topic [_α ~~be~~ T_[-Pl, 3rd Person] [_{be} [_{SC} the Smiths t_i]]]

4. Comparison of LI constructions and *there*-constructions

(40) a. In this yard is buried a number of gold bars.

- b. [[_{PP} In this yard] [_{TP} *pro* [_{T'} is buried a number of gold bars]]]

This analysis is based on the assumption that there are parallelisms between (40a) and (41a). Sentence (41a) is usually analyzed as (41b), where *there* is in SPEC-T and the PP is in a fronted position.

- (41) a. In this yard there is buried a number of gold bars.
 b. [[_{PP} In this yard] [_{TP} *there* [_{T'} is buried a number of gold bars]]]

If there is a null expletive that corresponds to *there* in (40a), it makes sense that (40a) is represented as (40b). Furthermore, there seems to be evidence for the existence of *pro*_{there}. Postal (2004) observes that overt existential *there* shows up in the tag questions of PP-preposed constructions in (42a-b).

- (42) a. To Gloria will fall a number of unpleasant tasks, won't there?
 b. At that time were built a number of warships, weren't there? (Postal 2004: 42)

As the *pro*-form in the tag refers back to the subject in the matrix clause, there must be a constituent that *there* is co-indexed with in the matrix clauses of (42a-b). *To Gloria* and *at that time* are possible candidates, but the possibility can be ruled out because they cannot be pronominalized as *there*, as shown in (43a-b).

- (43) a. That task fell [to Gloria], but it shouldn't have fallen **there/to* her.
 b. They built a number of warships [at that time], but they didn't deploy them
 **there/then*. (Postal 2004: 42)

This study remains agnostic about whether or not *pro* is available in English. However, it is noteworthy that although *pro*_{there} is present in the LI construction, T must undergo movement because a null constituent cannot trigger labeling via feature sharing. If *pro* could permit labeling through feature sharing, there would be no reason that *pro* is not permitted in English (Landau 2007). For instance, there is no reason that (45) is ill-formed if *pro* can be involved in providing a label via feature sharing. Hence, the T-complex [*T will*] must undergo head movement, as illustrated in (45a-c).

- (44) *[*pro* T [love Mary]]

- (45) a. [[*T will*] [emerge ... from this observation]]: Merger with *Pro*_{there}
 b. [*pro*_{there} [*T will*] [emerge ... from this observation]]: *Labeling. Hence T-to-Topic
 movement after Merge of Topic
 c. [[[*T will*] Topic] [*pro*_{there} [~~*T will*~~] [emerge ... from this observation]]]

On the other hand, *there* seems to be strong enough to trigger labeling via feature sharing. According to Chomsky (2000), *there* has a person feature.⁶ So α can be labeled via feature sharing.

⁶ In fact, it is likely that *there* has a number feature as well as a person feature if *there* has unvalued Φ -features, and they are valued via Agree with the postocular nominal.

- (46) a. [[T will] [emerge ... from this observation]]: Merger with *there* and Labeling
 b. [_α there_Φ [T_Φ will] [emerge ... from this observation]]: Labeling
 c. [_{ΦP} there_Φ [T_Φ will] [emerge ... from this observation]]

Therefore, *there*-constructions do not display the peculiar pattern of LI constructions.

5. Conclusion

Chomsky (2013, 2015) proposes that (i) T is weak in projectability, and (ii) subject raising resolves the problem because labeling can take place via feature sharing. However, LI Constructions cannot make use of the mechanism ‘feature sharing’ because subject raising does not take place. This study has claimed that T-movement is another mechanism that can resolve the labeling problem, and then showed that various peculiarities of LI follow from the fact that T-movement is obligatorily required in LI constructions. In addition, it has been shown that this line of approach can be extended to specificational copular constructions.

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Converbs — a generative approach

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1. Introduction

This study provides a preliminary, syntactic analysis of converb constructions in Khalkha Mongolian and Manchu — with particular attention given to their argument structure and clausal relationships. Specifically, I argue in **Section 2** that converbs project their own *v*Ps, and in **Section 3** that these *v*Ps adjoin to a higher-positioned functional projection that is directly below the matrix TP. This analysis incorporates Dependent Case Theory in **Section 4** in order to account for the case facts observed with these constructions, and concludes with future routes of research in **Section 5**. The remainder of this introduction is dedicated to providing an overview of the properties of converbs.

Converbs for the most part are defined as non-finite verb forms that do not occur on their own, but modify a verb (i.e., the main verb). With respect to their function, Ross 2021 notes that prototypical converbs are “used to express a general temporal or adverbial (e.g. sequentiality, simultaneity, or circumstance) relationship with another clause” (104). In terms of their form, converbs occur with affixes that lack other inflection on the verb, such as the inflection for tense, aspect, and modality (TAM) found within finite clauses. Prototypical converbs occur with suffixes to indicate dependency on the main verb, with which TAM features are shared. That converbs are usually suffixes aligns with the observation that these constructions typically occur in verb-final (SOV) languages such as Mongolian and Manchu. Finally, converbs are observed to usually precede the independent clauses containing the main verb that they modify (Haspelmath 1995; Nedyalkov & Nedyalkov 1987; Ross 2021).

My analysis relies on data collected through fieldwork sessions in Khalkha Mongolian and Manchu.¹ These data consist of the imperfective converb in Mongolian (suffixed as *-ž*), and the imperfect converb in Manchu (*-me*) — which are the most common forms in both languages. In both languages, the verb with the converb suffix is interpreted as occurring simultaneously with the main verb (Janhunen 2012; Gorelova 2002). As will be seen, both *-ž* and *-me* function almost identically with respect to their argument structure and clausal relationships. Examples of these converbs (bolded, glossed CVB) are shown in (1)-(2).

(1) *Khalkha Mongolian*

Žon _i	zurgaa	xar-ž	öör-ijg-öö _i	bišir-lee
John	picture	look-CVB	self-ACC-REFL	praise-PST

¹ I would like to express my gratitude to my language consultants for Mongolian (Anka, Suri, Nomunsor) and Manchu (Meng Rong Lu, Tony So) who made this research possible. Additional thanks for feedback and guidance from Arunima Choudhury, Jun Jie Lim (UC San Diego) and Daniel Ross (UC Riverside).

'John was praising himself looking at a picture.'

(2) *Manchu*

bi buda **je-me** bithe tuwa-mbi
 1SG rice eat-CVB book read-IMPF
 'I eat rice reading a book.'

(1)-(2) are examples of same-subject (SS) converbs. In the Mongolian example (1), *Žon* is interpreted as performing both actions: 'looking' and 'praising'. The verb for 'looking', *xar*, is marked with the imperfective converb suffix *-ž*, and the resulting converb occurs before the main verb for 'praising': *bišir-lee*. The same applies for the Manchu example (2), such that the imperfect converb *je-me* precedes the main verb *tuwa-mbi*, and both actions ('eating' and 'reading') are performed by the 1st person. Data similar to SS examples like (1)-(2), in addition to examples of different-subject converbs, are explored in the next section to ascertain the argument structure of these constructions.

2. Argument structure of converbs

In this section, I find that converbs project their own vP shells. This is as opposed to an analysis that posits converbs to project with lesser structure, such as a VP. This VP-only analysis could work for (1)-(2), with the assumption that the subject shared among the converb and main verb would project at Spec,vP of the main verb. However, the VP-only analysis encounters problems when dealing with different-subject (DS) converbs, which involve the converb having its own subject that is separate from the main verb. Examples of DS converbs are shown in (3)-(4).

(3) *Khalkha Mongolian*

Žon_i öör-ijg-öö_i **erxlüül-ž** (Saraa) xevte-ne
 John self-ACC-REFL pamper-CVB Sarah lie.down-NPST
 'John is pampering himself (while Sarah is) lying down.'

(4) *Manchu*

bi buda **je-me** (si) tuwa-mbi
 1SG rice eat-CVB 2SG read-IMPF
 'I eat rice (while you are) reading.'

In (3), there are two versions — SS and DS — based on the presence or absence of a second subject *Saraa*. If *Saraa* is absent, then (3) takes the form of an SS converb. In this version, *Žon* is interpreted as the agent of both the converb (= 'pamper') and the main verb ('lie down'). If *Saraa* is also present, (3) is a DS converb. For this version, *Žon* is still interpreted as the agent of the converb, but it is not the agent of the main verb anymore: *Saraa* is. From (3), we see a symmetry in the SS and DS versions, such that the sentence-initial subject *Žon* is the agent of the converb under both versions. This symmetry in subjecthood also occurs in Manchu, as shown in (4). In the SS version, the sentence-initial subject, the 1st person singular, is the agent of both the converb (= 'eat') and the main verb ('read'). When the additional subject — the 2nd person singular — is introduced under the DS version, the 2nd person singular is now the agent of the main verb, but the sentence-initial subject is still the agent of the converb.

To account for this symmetry in subjecthood in the SS and DS versions of (3)-(4), the sentence-initial subjects — *Žon* and the 1st person singular, respectively — should be licensed by the converb. Converbs should then project as a *vP*s to house these subjects. Projecting a *vP* for the converb is also supported by the fact that converbs can involve double object constructions, shown in (5)-(6).

(5) *Khalkha Mongolian*

bi *Žon-d* *zurag-ijg* **xaruul-ž** *eež-tej* *jari-laa*
 1SG John-DAT picture-ACC show-CVB mother-COM talk-PST
 ‘I was showing John a picture talking to my mother.’

(6) *Manchu*

bi *gucu-de* *doro-be* **bu-me** *waji-habi*
 1SG friend-DAT gift-ACC give-CVB finish-PST
 ‘I finished giving a gift to my friend.’

In (5), the converb is composed of a ditransitive verb, *xaruul* (= ‘show’), and it has two internal arguments, *Žon-d* and *zurag-ijg*, and an external argument: the 1st person singular *bi*. The same phenomenon occurs in (6), such that the ditransitive converb *bu-me* has two internal arguments, and *bi* as an external argument as well. We could have both internal arguments project within a converb VP. However, that would leave the external argument of the ditransitive verb (= *bi* in both examples) no space to project. Considering Larson 1988 and Chomsky 1995’s analysis of double object constructions, converbs should have more structure than a VP, and therefore project as a *vP* to house the external argument.

Note that the v^0 would be null except in cases where the converb has an overt causative (or passive) suffix, which is possible in Mongolian and Manchu. Projecting a *vP* would then account for the availability of this causative suffix (Murasugi & Hashimoto 2004). Naturally, the causative suffix would occupy v^0 , so an additional functional projection would be needed for the converb suffix. To that end, there should be a converb phrase (CvbP) with the suffix at its head, to which the verb would move and merge. The CvbP would take the converb *vP* as its complement, resulting in the order of V(-causative)-CVB. An example of this order is shown in (7).²

(7) *Khalkha Mongolian*

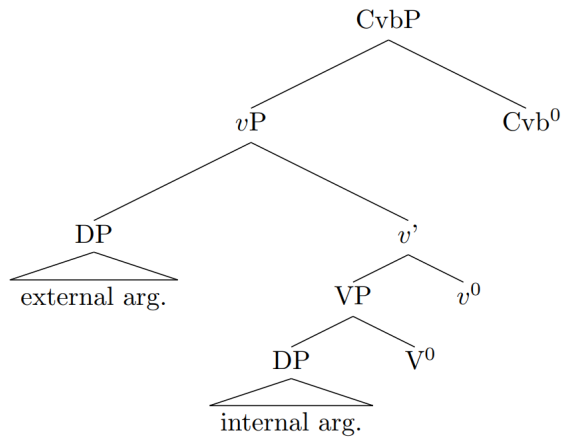
xanya-lg-e.j *doos-e.sn-ii* *daraa ...*
 cough-CAUS-CVB stop-P.RF-GEN after
 ‘After the coughing spell is over ...’ (adapted from Janhunen 2012)

As an interim summary, projecting a converb *vP* (as well as a CvbP) accounts for the possibility of there being a causative suffix between the lexical verb and converb suffix, as seen in (7). The converb *vP* also accounts for the possibility of there being converb ditransitive constructions, observed in (5)-(6), as the *vP* would have enough space for the external and internal arguments. Finally, projecting a *vP* allows us to account for the symmetry in subjecthood shown in (3)-(4); we would expect the sentence-initial subject to project at the

² Note that the converb (represented as *-j*) in this example is identical to the imperfective *-ž*, differing only in the transcription convention used.

specifier of the converb vP — both for SS and DS converbs. The derived structure of prototypical converb clauses under this analysis is shown in (8).

(8)



The derivation in (8) can be applied to the converb clauses observed in (1)-(4). For example, referring back to (1), the sentence-initial external argument *Žon* would base-generate at Spec, vP of the converb clause, and the internal argument *zurgaa* would generate as sister to the verb *xar*. We would then expect the verb *xar* to move to v^0 (which is null unless there is a causative suffix) and move again to Cvb^0 to merge with the converb suffix, *-ž*.

Before turning to the next section on clausal relationships, I will briefly discuss the argument structure of the main verb (independent) clause. Looking at DS converbs like (3)-(4), if the converb projects as a vP to house the sentence-initial external argument, then the main verb should also project as a vP to house its own external argument. For example, with respect to the DS version of (4), the first external argument *bi* would base-generate at the specifier of the converb vP , and the second external argument *si* would be housed at the specifier of the main verb. The question then arises of whether SS converbs project a vP as well, or just a VP. In this paper, especially in more detail in **Section 4**, I argue that the main verb of SS converbs still project a vP , but with an implicit subject: a PRO.

Specifically, this PRO will project at the specifier of the main vP , and it will co-refer with the external argument of the converb — like a control structure. After all, in the SS examples reviewed thus far, the agent of the main verb, though not overt, is the same as that of the converb. Referring back to (4), if we were to follow the SS version where *bi* performs both actions of the converb and main verb, *bi* would base-generate at the specifier of the converb vP — same as what was observed for the DS version. The main verb will also be a vP , but it would project a PRO, rather than an overt subject, that is co-referential with *bi*. This PRO at the specifier of the main vP accounts for the shared agenthood between the converb and main verb in SS converbs, and I will discuss evidence for it with respect to case later in this paper. Before that, I look at the clausal relations between the converb and main verb clause in the next section.

3. Clausal relations between converb and main verb

In this section, I utilize diagnostics such as extraction, adjunction, and scope of negation to ascertain the position of the converb clause in relation to the main verb clause. I find that the converb (= $CvbP$) adjoins high up in the matrix clause and directly below the TP. Like the

analyses of Haspelmath (1995) and Ylikoski (2003), I also argue that converbs — such as *-ž* in Khalkha Mongolian and *-me* in Manchu — are adverbial and subordinate in nature (as opposed to coordinate) due to their syntactic properties and especially the grammaticality of *wh*- extraction from converb clauses. Take for instance (9)-(10).

(9) *Khalkha Mongolian*

Žon_i jaagaad zurgaa **xar-ž** öör-öö_i baxarx-san be?
 John why picture look-CVB self-REFL praise-PST Q
 ‘Why did John praise himself looking at a picture?’

(10) *Manchu*

si ai **je-me** bithe tuwa-mbi?
 2SG what eat-CVB book read-IMPF
 ‘What do you eat while reading the book?’

In (9), there is an adverbial *wh*- (= *jaagaad*) situated within the converb clause, and in (10) the *wh*- element *ai* also originates from the converb clause. From both examples, we see that Khalkha Mongolian and Manchu permit extraction out of converb clauses. This is evidence in favor of treating converb clauses as adverbials that are subordinate in nature, as it rules out the possibility of them being coordinate due to the Coordinate Structure Constraint. That converb clauses are adverbials is also supported by (11), where there is an optional subordinating conjunction (*baj-x üe-d* = ‘while’) following the converb. Note that (11) is structurally the same as the DS version of (3), but with the optional subordinating conjunction.

(11) *Khalkha Mongolian*

Žon_i öör-ijg-öö_i **erxlüül-ž** (baj-x üe-d) Saraa xevte-ne
 John self-ACC-REFL pamper-CVB be-IRR time-DAT Sarah lie.down-NPST
 ‘John is pampering himself while Sarah is lying down.’

Tserenpil & Kullmann (2005) treat *baj-x üe-d* as a subordinating conjunction that introduces temporal clauses. In the case of (11), the optional subordinating conjunction introduces the converb clause, and it follows the converb suffix. This is expected if the converb clause were to be an adverbial, since other optional constituents — such as *baj-x üe-d* — can follow it. To that end, there is sufficient evidence from extraction and adjunction, shown in (9)-(11), to categorize converb clauses as adverbials, and the next step is to ascertain where in the matrix clause they would adjoin. To do this, I look at the interactions between the converb clause and negation, as shown in (12)-(13).

(12) *Khalkha Mongolian*

Bold_i öör-ijg-öö_i **xamgaal-ž** togloo-d türüül-sen-güj
 Bold self-ACC-REFL protect-CVB game-DAT win-PST-NEG
 ‘Bold didn’t win the game protecting himself (he protected himself, but didn’t win).’

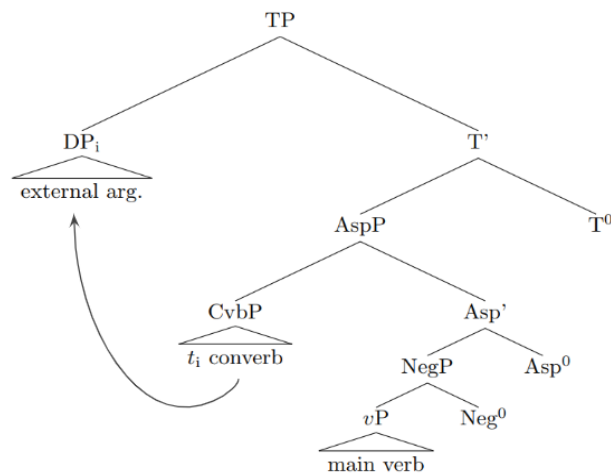
(13) *Manchu*

bi buda **je-me** gene-he ofi bithe tuwa-hakūbi
 1SG rice eat-CVB go-PART because book read-NEG.PST
 ‘I didn’t read the book, as I went to eat.’

In (12), the main verb *türüül* (= ‘win’) is negated, resulting in the reading that Bold did not win the game. However, the verb with the converb suffix, *xamgaal* (‘protect’), is still interpreted as being in the affirmative, such that the action of ‘protecting’ took place. From (12), we see that the converb falls out of the main verb’s scope of negation, and the same applies in (13). In (13), although the main verb *tuwa* (‘read’) is negated, the converb *je-me* (‘eat’) is not interpreted as being negative. In other words, the interpretation is that the 1st person still ate. As shown from (12)–(13), the converb does not fall within the main verb’s scope of negation, and consequently, we would not expect the converb clause, or CvbP, to be within the main verb clause’s c-command domain. If so, the CvbP should adjoin to a functional projection high up in the matrix clause, and above NegP, so it can scope out of the main verb’s negation.

Now that we know where in the matrix clause the CvbP is positioned, the last step is to figure out to which functional projection it would adjoin. As mentioned in **Section 1**, prototypical converbs share the tense-aspect-modality (TAM) features of the main verbs they precede. This applies to the imperfect(ive) converbs explored in this paper, *-ž* in Khalkha Mongolian and *-me* in Manchu, as these forms indicate temporal simultaneity between the converb and main verb. Both converbs thus convey aspectual information, and for that reason they should adjoin to a phrase like AspP. This AspP would be null, and crucially, it would be above the NegP so the converb can fall out of its scope. High up in the matrix clause then, the AspP would be sister to T⁰ and take the NegP as its complement. The full proposed derivation of converb constructions like the Mongolian *-ž* and Manchu *-me* is shown in (14).

(14)



There is then the question of how other converb forms not discussed in this paper would be accounted for under this analysis. Assuming that the observations about argument structure in **Section 2** and clausal relations in this section stay consistent, we would expect this derivation to apply for prototypical converbs. After all, the presence of the CvbP accounts for the converb suffix, and the adjunction structure accounts for their canonical occurrences in adverbial positions before the main verb. The adjunction structure also buys this analysis a form of flexibility with respect to the type of converbs we’re trying to derive.

It was already mentioned that converbs are not inflected for TAM but share these features with the main verb. With there being variation in the semantic meanings of converbs within and across languages (cf. Nedyalkov & Nedyalkov 1987 for discussion on the varying

functions of converbs), we can posit that the CvbP would then adjoin to the functional projection corresponding to the type of TAM information that its suffix conveys. For instance, while the imperfect(ive) forms like *-ž* and *-me* may adjoin to AspP, the conditional forms in Khalkha Mongolian (*-bel*) and Manchu (*-ci*) would have the same structure as (14) but adjoin to ModP instead. The derivation in (14) — where the CvbP adjoins to a T/Asp/ModP — therefore accounts for the properties of converbs outlined in **Section 1**, while also providing room for their semantic variation. Before concluding, I address in the next section questions of case that arise with the proposed derivation, especially with respect to the PRO in SS converbs.

4. Case calculus

In this paper, I looked at the argument structure of converbs to argue that constructions with converbs project one ν P for the converb itself, and another ν P for the main verb — regardless of whether these constructions are SS or DS. In this section, I utilize Dependent Case Theory to account for the case forms of the constructions observed in this paper. Proposed in Marantz 1991 and discussed extensively in Baker 2015, Dependent Case Theory (henceforth DCT) involves an algorithm of case assignment that is reliant on two or more DPs (or a PRO) being in a c-command relationship. Whichever DP that is at the lower end of the c-command relationship receives dependent (= accusative) case — at least for nominative-accusative languages — and the higher DP receives unmarked (nominative) case. As for DPs that are alone and not within a c-command relationship, they are also assigned unmarked/nominative case. DCT is unlike the more conventional theory of case, which posits assignment through functional heads: finite T^0 would assign nominative to the DP at Spec,TP, and transitive ν^0 would assign accusative to the DP positioned as the sister to V^0 .

In my analysis of converbs, I choose to adopt DCT, with the reason being that in some of the examples reviewed, there are not enough functional heads to license the case forms observed. This can be seen in the DS versions of (3)-(4). In both of these examples, there are two external arguments which are in the nominative, or unmarked, case. Under the theory of case assignment by functional heads, we could posit finite T^0 to assign nominative to one of the external arguments, for example the converb external argument. However, that would mean there is no functional head (i.e., an additional T^0) to assign case to the main external argument — which would be problematic. As an alternative, we could use DCT, and I outline how this theory would work with respect to the derivation in (14) by looking at both DS and SS converbs. For this analysis, I am assuming the Earliness Principle, where syntactic operations apply as soon as possible. In other words, the dependent case calculus should go through as soon as the ingredients for it (two or more DPs in a c-command relationship) are present.

With respect to DS converbs like (3)-(4), there are two external arguments in the nominative case, and one internal argument (that of the converb) in the accusative case. Note that the ingredients for dependent case calculus are already present in the converb ν P, crucially before the converb external argument moves to Spec,TP (cf. (8) and (14) for relevant derivations). In the converb ν P, the DP for the external argument is c-commanding that of the internal argument. We would then predict the lower DP, the internal argument, to receive accusative, and the higher DP, the first external argument, to receive nominative. The final DP in need of case is the external argument of the main ν P. Without an internal argument of the main verb³,

³ None of my fieldwork data contains DS converbs with an internal argument licensed by the main verb. However, if there were to be a main internal argument in addition to an external argument, this analysis predicts that the

the DP for the external argument is alone and not within the c-command domain of another DP, so we would predict it to receive the unmarked, nominative case — just like the converb external argument. In summary, for DS converbs under DCT, we predict there to be two nominative external arguments and (at least) one internal argument that is accusative — a prediction that is met when looking at (3)–(4). The case calculus for DS converbs is schematized in (15), and the remaining task is to analyze the licensing of case in SS converbs under DCT.

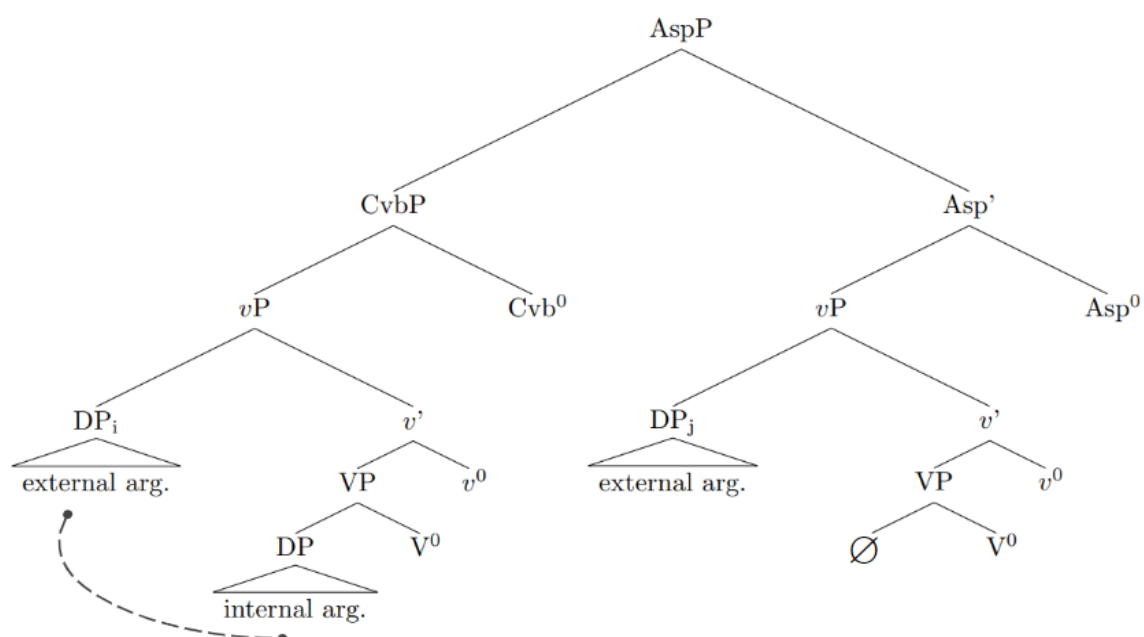
SS converbs, like (1)–(2), were observed to have one nominative external argument and two internal arguments, both of which are accusative. Like the DS converbs, case calculus would occur in the converb *vP* — resulting in the lower DP, the internal argument, to receive accusative and the higher DP, the converb external argument, to receive nominative. There is then the question of how case would be assigned to the internal argument of the main verb clause. As discussed in **Section 2**, I posit the main verb to be a *vP*, as opposed to a *VP*, that has at its specifier a *PRO*, co-referential with the converb external argument. Here, I argue that there has to be a *PRO* in order for the assignment of accusative case to the main verb's internal argument. If the main verb were to be a *VP*, then its internal argument would be alone without any case competitors, and it would subsequently receive the unmarked/nominative case. This is contrary to what is observed in SS converbs like (1)–(2), where the main verb and converb internal arguments are in the accusative. To ensure the licensing of the accusative case for the main verb internal argument, there should be a c-commanding implicit subject, like a *PRO*.

PRO, like a standard DP, is a competitor for dependent case, so if there were to be one at the main verb's specifier, it would be in a c-command relationship with the internal argument. The case calculus would then go through, with the internal argument at the lower end receiving accusative case, and the higher *PRO* receiving its own case⁴ (cf. Baker and Vinokurova for a similar analysis of Sakha). This is consistent with what is observed in (1)–(2), such that the internal argument of the main verb is indeed accusative. Therefore, by projecting a *vP* with a *PRO*, we are able to account for the observation that the main verb's internal argument is accusative, as the *PRO* gives rise to the case calculus necessary for the accusative form to be licensed. (16) outlines this case calculus for SS converbs — made possible by the use of DCT in this analysis.

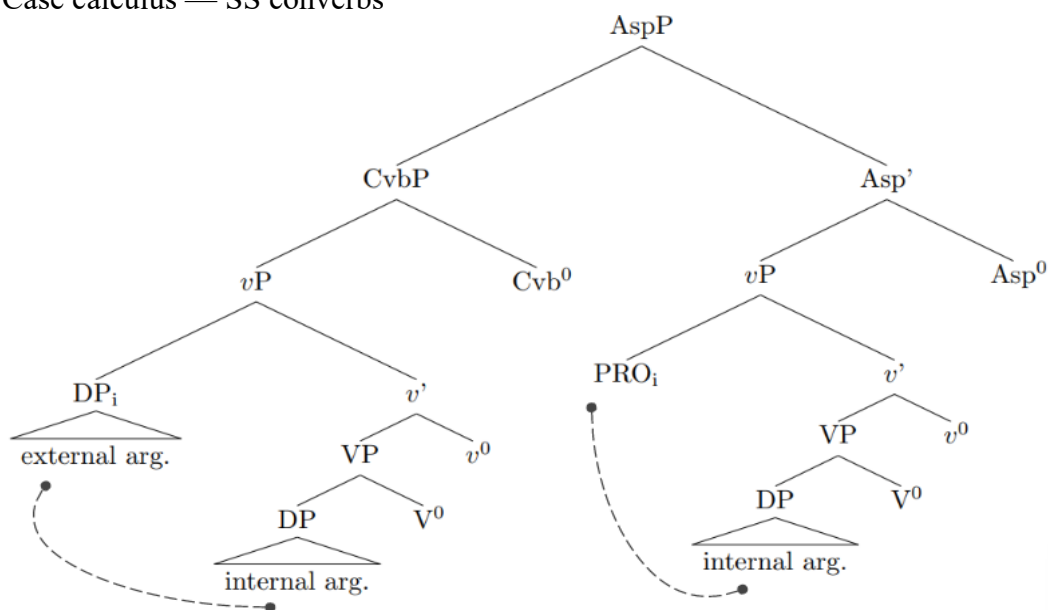
main internal argument (like the internal argument of the converb) would receive accusative. After all, it would be within the c-command domain of the main verb's external argument and thus be the lower DP of the two that is eligible to receive accusative case.

⁴ It is assumed that *PRO* either does not receive case, or it has a case form that is null (Martin 2001).

(15) Case calculus — DS converbs



(16) Case calculus — SS converbs



5. Conclusion

Investigating the argument structure and clausal relations of converbs, this study provided a preliminary, syntactic derivation of these constructions. Whether SS or DS, I argued that both the converb and main verb in these constructions project their own *v*Ps, with the converb *v*P adjoining to a T/Asp/ModP below the TP to scope out of negation. Dependent Case Theory was used to account for the case facts observed, with particular emphasis on how the main *v*P of SS converbs project a PRO for the licensing of accusative case. The proposed derivations

(14)-(16) were observed to account for the structures of converbs in both Khalkha Mongolian and Manchu, specifically for the imperfect(ive) forms *-ž* and *-me*.

There are a few limitations of this study, as well as future paths of research, worth acknowledging. First, converbs in only two typologically-similar languages, like Mongolian and Manchu, were explored, and there is much room for further study on these constructions which appear in many of the world's languages (cf. Ross 2021 for a large-scale cross-linguistic survey). Second, only data with imperfect(ive) converbs were collected and analyzed, when in actuality there exists a great variety of semantic meanings ranging from temporal succession to even narration (Nedyalkov & Nedyalkov 1987). With this widespread distribution of converbs and their meanings across/within languages, further investigation is called for to apply the derivations in (14)-(16) to more contexts — in order to expand our understanding of the commonalities of these linguistically prevalent constructions, and their room for variation.

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Notes on Pre-nominal Relative Clauses in Mandarin Chinese

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1. Introduction

As schematized in (1), pre-nominal Relative Clauses (RCs) in Mandarin Chinese can precede the Demonstrative-Numeral-Classifier sequence, cf. RC1 position, or follow it, cf. RC2 position. The RC1 position is exemplified by (2a), while the RC2 position by (2b). In addition, Mandarin RCs require the presence of the subordinator or modificational particle *de*, cf. (2), except when preceding a demonstrative, cf. (3a) (see Lin and Tsai (2015) and references therein).

- (1) Position RC1 vs RC2
RC1 - Demonstrative - Numeral - Classifier - **RC2** - (AP) - Noun
- (2) RCs with *de*, *de*-RCs
- | | | | |
|----|--|---------------------|----------|
| a. | [RC1 _ xǐhuān Zhāngsān] | de nà -yí-ge | xuéshēng |
| | like Zhangsan | DE that-one-CLF | student |
| | ‘that one student that likes Zhangsan’ | | |
| b. | nà -yí-ge [RC2 _ xǐhuān Zhāngsān] | de | xuéshēng |
| | that-one-CLF like Zhangsan | DE | student |
| | ‘that one student that likes Zhangsan’ | | |
- (3) RCs without *de*, *de*-less RCs
- | | | | |
|----|---|------------------|----------|
| a. | [RC1 _ xǐhuān Zhāngsān] | nà -yí-ge | xuéshēng |
| | like Zhangsan | that-one-CLF | student |
| | ‘that one student that likes Zhangsan’ | | |
| b. | * nà -yí-ge [RC2 _ xǐhuān Zhāngsān] | | xuéshēng |
| | that-one-CLF like Zhangsan | | student |
| | (‘that one student that likes Zhangsan’) | | |

In this paper, we argue against two views in the literature, namely, the relative clause in the RC1 position is derived from the RC2 position by movement, and *de* is optional when the RC is pre-demonstrative (see Cinque 2020 and references therein). Rather, we argue that the relative clause in the RC2 position can be derived from the RC1 position, which is a base-generated position, and that RCs without *de* (cf. *de*-less RCs) are syntactically different from RCs with *de* (cf. *de*-RCs).

The paper is organized as follows. In section 2, we distinguish *de*-less RCs from *de*-RCs based on three structural differences. One crucial difference is that *de*-less RCs cannot be stacked, whereas *de*-RCs can. We further examine reconstruction effects in section 3. As argued in Section 4, *de*-less RCs only involve Raising, whereas *de*-RCs involve both Raising and Matching. We conclude

2. *de*-RCs vs *de*-less RCs

First, as described in section 1, unlike *de*-RCs, *de*-less RCs only occur in a pre-demonstrative position. We emphasize that the demonstrative is obligatory. Hence, as shown in (4), *de*-less RCs are not possible with definite descriptions without demonstratives such as proper names and pronouns, or with strong quantifiers such as *měi* ‘every’ and *suǒyǒu* ‘all’, in contrast with *de*-RCs.

- As shown in (5a), in contrast with (5b), the obligatory presence of the degree morpheme *hěn* ‘very’ indicates that the *de*-less RC must be predicative. In Mandarin Chinese, the morpheme *hěn* ‘very’ is generally obligatory in forming a predicative adjective. Without *hěn* ‘very’ as in (5b), the adjective *piàoliang* ‘pretty’ remains attributive. The fact that the lack of *hěn* ‘very’ as in (5b) leads to ungrammaticality suggests that the *de*-less RC cannot be an attribute adjective.

- By contrast, as shown in (6), the addition of *de* blurs the contrast as shown in (5). With *de*, (6a) shows a clear *de*-RC with a subject gap, while (6b) shows that the attributive adjective needs *de* to precede a demonstrative Head.

- (6) a. *de*-RCs, predicative
 [_ hěn piàoliàng] **de** nà-ge rén
 very pretty DE that-CLF person
 ‘that person that is pretty’
 b. with *de*, attributive
 [piàoliàng] **de** nà-ge rén

pretty DE that-CLF person
 ‘that person that is pretty’

Second, *de*-RCs can be stacked, whereas *de*-less RCs cannot. As illustrated in (7), two RCs with *de* can be stacked in the RC1 position, cf. (7a), or in the RC2 position, cf. (7b).

- (7) a. *de*-RCs, RC1 position, stacking: ok
 [Zhāngsān hěn xǐhuān **de**] [**de** tèbié cōngmíng **de**] [nà -yí-ge xuéshēng]
 Zhangsan very like DE especially clever DE that-one-CLF student
 ‘that one student that Zhangsan likes a lot that is especially clever’
- b. *de*-RCs, RC2 position, stacking: ok
 nà -yí-ge [Zhāngsān hěn xǐhuān **de**] [**de** tèbié cōngmíng **de**] [xuéshēng]
 that-one-CLF Zhangsan very like DE especially clever DE student
 ‘that one student that Zhangsan likes a lot that is especially clever’

By contrast, *de*-less RCs cannot be stacked, cf. (8). Recall that unlike *de*-RCs, *de*-less RCs can only precede a demonstrative in the RC1 position. Therefore, the examples as in (8) only involve the pre-demonstrative position.

- (8) a. *de*-less RCs: no stacking
 * [Zhāngsān hěn xǐhuān _] [**de** tèbié cōngmíng] [nà -yí-ge xuéshēng]
 Zhangsan very like especially clever that-one-CLF student
 (‘that one student that Zhangsan likes a lot that is especially clever’)
- b. * [**de** qīfū-le Lǐsì] [**de** bèi lǎoshī pīpíng] [nà -yí-ge xuéshēng]
 bully-PERF Lisi PASS teacher criticize that-one-CLF student
 (‘that one student that bullied Lisi that was criticized by the teacher’)

Third, *de*-less RCs show restrictions on verbal constellations inside the clause when an object gap is involved. Before illustrating the complex data with an object gap, we begin with RCs with a subject gap. RCs with a subject gap can be easily formed for both *de*-RCs and *de*-less RCs, cf. (2) and (3), where a stative verb *xǐhuān* ‘like’ occurs. The examples as in (9) further show that an eventive verb *pīpíng* ‘criticize’ can occur in bare form. It is to be noted that the bare eventive verb as in (9) has a past tense reading, in contrast with the bare stative verb as in (2) and (3), which has a present tense reading.

- (9) a. [RC _ pīpíng Zhāngsān] **de** nà -yí-ge lǎoshī
 criticize Zhangsan DE that -one-CLF teacher
 ‘that one teacher that criticized Zhangsan’
- b. [RC _ pīpíng Zhāngsān] nà -yí-ge lǎoshī
 criticize Zhangsan that -one-CLF teacher
 ‘that one teacher that criticized Zhangsan’

The past tense reading is also detected with the bare eventive verb when the RC has an object gap. As shown in (10), the relative Head is related to the internal argument of *pīpíng* ‘criticize’.

- (10) a. [RC Zhāngsān pīpíng _] **de** nà -yí-ge xuéshēng
 Zhangsan criticize DE that -one-CLF student
 ‘that one student that Zhangsan criticized’

- b. [RC Zhāngsān pīpíng _] nà -yí-ge xuéshēng
 Zhangsan criticize that -one-CLF student
 ‘that one student that Zhangsan criticized’

The surface string of the *de*-less RC as in (10b) resembles that of a declarative sentence as in (11). However, bare eventive verbs in Mandarin Chinese in root clauses have a habitual or generic reading, not a past tense reading (see Sun (2014)). Therefore, the example as in (11) is translated with a present tense in English, meaning that Zhangsan habitually criticizes that one student.¹

- (11) Zhāngsān pīpíng nà -yí-ge xuéshēng
 Zhangsan criticize that -one-CLF student
 ‘Zhangsan criticizes that one student.’

The grammaticality of *de*-less sentences with an object gap as exemplified by (10b) has been cast in doubt in the literature. Cheng and Sybesma (2009: (24d)) provided an example similar to (10b), and reported that their native speakers strongly prefer *de*. They think that this preference is related to a processing problem because the *de*-less RC with an object gap is string-like a root clause. Similarly, some of our consultants initially found it difficult to accept the grammaticality of the *de*-less RC with an object gap. However, when some intonation such as narrow focus is added to the clause, the judgement is significantly improved. For instance, as shown in (12), the *de*-less RC is judged well-formed when the RC internal ‘Zhangsan’ and ‘Lisi’ are contrasted via stress, indicated by underlying.

- (12) shì [[RC Zhāngsān pīpíng _] nà -yí-ge xuéshēng] tuìxué-le,
 be Zhangsan criticize that -one-CLF student get.expelled-LE
 bú shì [[RC Lǐsì pīpíng _] nà -yí-ge xuéshēng].
 NEG be Lisi criticize that -one-CLF student
 ‘It is that one student that was criticized by ZHANGSAN got expelled, not that one student that was criticized by LISI.’

With an object gap, *de*-less RCs show restrictions on verbal constellations. In contrast with (10b), the occurrence of the perfective *-le* renders the structure ill-formed, cf. (13a). However, the addition of a post-verbal duration phrase *yí-ge xiǎoshí* ‘one hour’ as in (13b) improves the grammaticality.

- (13) a. * [RC Zhāngsān pīpíng -le_] nà-yí-ge xuéshēng
 Zhangsan criticize -PERF that-one-CLF student
 (‘that one student that Zhangsan criticized’)
 b. [RC Zhāngsān pīpíng -le yí-ge xiǎoshí] nà-yí-ge xuéshēng
 Zhangsan criticize -PERF one-CLF hour that-one-CLF student
 ‘that one student that Zhangsan criticized for one hour’

¹ The bare eventive verb *pīpíng* ‘criticize’ in *de*-less RCs can have a habitual reading only when an adverb *jīngcháng* ‘often’ is overtly added to the bare verb form, cf. (i). Without an overt adverb, the bare form must have a past-tense reading.

(i) [RC Zhāngsān jīngcháng pīpíng] nà -yí-ge xuéshēng
 Zhangsan often criticize that -one-CLF student
 ‘that one student that Zhangsan often criticizes’

(14)	a.	[_{RC} — pīpíng -le Zhāngsān]	nà-yí-ge xuéshēng
		criticize -PERF Zhangsan	that-one-CLF student
		‘that one student that criticized Zhangsan’	
	b.	[_{RC} — pīpíng -le Zhāngsān yí-ge xiǎoshí]	nà-yí-ge xuéshēng
		criticize -PERF Zhangsan one-CLF hour	that-one-CLF student
		‘that one student that criticized Zhangsan for one hour’	
	c.	[_{RC} — pīpíng -le yí-ge xiǎoshí Zhāngsān]	nà-yí-ge xuéshēng
		criticize -PERF one-CLF hour Zhangsan	that-one-CLF student
		‘that one student that criticized Zhangsan for one hour’	

In this section, we have shown that *de*-less RCs differ from *de*-RCs in three respects. *De*-RCs only occur in a pre-demonstrative position, cannot be stacked, and show restrictions on verbal constellations or extraction sites inside the relative clause.

In this section, we first show that *de*-less RCs display island sensitivity and reconstruction (effects) for anaphor and referential expression. Second, we reexamine reconstruction for numeral scope in *de*-RCs, showing that numerals reconstruct when the *de*-RC occurs in the RC1 position, not in the RC2 position.

(15) a. * [wǒ xǐhuān [[*t_i* chuān de] yīfu]] nà-yí-ge rén_{*i*}
 I know wear DE clothes that-one-CLF person
 ('that one person_{*i*} that I like the clothes he_{*i*} wears')

b. * [tā rènshi [[huì chàng *t_i* de] nà-ge rén]] nà-yì-shǒu gē_{*i*}
 he know know sing DE that-CLF person that-one-CLF song
 ('(that one song_{*i*} that he knows that person who knows how to sing it_{*i*})')

Furthermore, (16) shows reconstruction (effect) for Binding Condition A and C in *de*-less RCs. (16) can be explained if the relative Head, which contains an anaphor *tā-zìjǐ* ‘himself’ or a R-expression *Lìsǐ*, can reconstruct in the object position inside the RC. The anaphor is then locally bound,

whereas the R-expression is ruled out because it is c-commanded by a pronoun which is coreferential with it.

- (16) a. [Lǐsì_i zuìjìn jì-gěi biānjì _] nà-yì-běn tā-zìjǐ-de xiǎoshuō
 Lisi recently send-give editor that-one-CLF he-self-DE novel
 ‘that one novel of himself_i that Lisi_i sent to the editor recently’
 b. * [tā_i zuìjìn jì-gěi biānjì _] nà-yì-běn Lǐsì-de xiǎoshuō
 he recently send-give editor that-one-CLF Lisi-DE novel
 (‘that one novel of Lisi_i that he_i sent to the editor recently’)

The island effect and reconstruction effect indicate that the relative Head originates inside the *de*-less RC.

3.2 Reconstruction for numeral scope interpretation

We begin with re-examining Aoun and Li’s (2003) reconstruction for numeral scope in *de*-RCs. As observed by Aoun and Li (2003, 134), the numeral in the relative Head of (17a) *sān* ‘three’ can be reconstructed in the scope of a RC internal universal quantifier *měi-ge rén* ‘every person’. Together with (17a), (17b) further demonstrates reconstruction of numerals under the scope of a RC internal quantifier. It is to be noted that the *de*-RC as in (17) occurs in the RC1 position.

- (17) a. RC1 position, reconstruction for numeral scope: ok
 every>3, 3>every, from Aoun and Li, 2003, 134, (4)
 wǒ huì zhěnglǐ [[měi-ge rén huì kàn *t_i* de] sān-běn shū].
 I will arrange every-CLF-person will read DE three-CLF book
 ‘I will put the three books that everyone will read in order.’
 b. RC1 position, reconstruction for numeral scope: ok, every>3, 3>every
 wǒ huì zhěnglǐ [[měi-ge rén huì kàn *t_i* de] nà-sān-běn shū].
 I will arrange every-CLF-person will read DE that-three-CLF book
 ‘I will put those three books that everyone will read in order.’

By contrast, as shown in (18), when the *de*-RC follows the Dem-Num-Classifier sequence, that is, in the RC2 position, the numeral cannot reconstruct in the scope of the RC internal universal quantifier.

- (18) RC2 position, reconstruction for numeral scope: *
 *every>3, 3>every, our observation
 wǒ huì zhěnglǐ [(nà)-sān-běn [měi-ge-rén huì kàn *t_i*] de shū].
 I will arrange that-three-CLF every-CLF-person will read DE book
 ‘I will put (those) three books that everyone will read in order.’

If the relative clause in the RC1 position is derived from the RC2 position by movement, as claimed in the literature (see Cinque 2020: sec 3.6 and references therein), we expect the *de*-RC to be semantically identical in both RC1 and RC2, contrary to the fact. As a matter of fact, the RC1 position shows one more semantic interpretation due to reconstruction of numerals, cf. (17).

We need to clarify one issue. Aoun and Li (2003) originally used another set of data as cited in (19a) to argue that only NPs can reconstruct. Unlike (17a), (19a) involves the morpheme *dōu*, which they translated as ‘all’, and the numeral does not reconstruct in the scope of the RC internal universal quantifier. To explain the narrow scope of the numeral as in (17a), Aoun and Li (2003: 135)

argued that it is the universal quantifier *měi-ge rén* ‘every person’ that ‘raises out of the relative clause (owing to the absence of Agreement in Chinese)’, resulting in scoping over the numeral. By contrast, the morpheme *dōu* as in (19a) prevents the QP *měi-ge rén* ‘every person’ from raising out ‘because of the domain (government) requirement between ‘all’ and the related QP’.

- (19) a. *every>3, 3>every, from Aoun and Li, 2003, 133, (3)
 wǒ huì zhěnglǐ [[měi-ge rén **dōu** huì kàn t_i] de sān-běn shū $_i$].
 I will arrange every-CLF-person DOU will read DE three-CLF book
 ‘I will put the three books that everyone will read in order.’
- b. every>1, 1>every, Pan (2016: 167, (43))
 [měi-ge dǎoyǎn **dōu** huì kàn hǎo-jǐ-biàn t_j] de yí-bù diànyǐng-yùgào piān.
 every-CLF director DOU will watch several.time DE one-CLF movie-trailer
 ‘a movie trailer $_j$ that every director will watch t_j several times.’

However, Pan (2016) reported a piece of data as cited in (19b), indicating that the numeral can in fact reconstruct in the scope of the RC universal quantifier at the presence of the morpheme *dōu*. We note that Pan’s example differs from Aoun and Li’s in the addition of a post-verbal frequency phrase. This modification on verbal constellations could affect extraction sites (cf. (13)). We think that the numeral inside the relative Head can reconstruct inside the clause when the right verbal constellation is formed.

Finally, reconstruction for numeral scope interpretation can be detected for *de*-less RCs, cf. (20), though being more difficult than *de*-RCs, cf. (17b).

- (20) *de*-less RCs, reconstruction for numeral scope: ok, 3>every, ???every>3
 wǒ huì zhěnglǐ [[měi-ge rén huì kàn t_i] **nà**-sān-běn shū $_i$].
 I will arrange every-CLF-person will read that-three-CLF book
 ‘I will put those three books that everyone will read in order.’

We summarize section 3. Like *de*-RCs, *de*-less RCs display island sensitivity, reconstruction effects for binding conditions and reconstruction for numeral scope interpretation. In addition, we have made a new observation on *de*-RCs, that is, the numeral of the Head can reconstruct for a narrow scope reading only when *de*-RCs occur in the RC1 position, not in the RC2 position. This observation cannot be explained by the previous claim according to which the RC2 position is a basic position, and the RC1 position is derived from it.

4. Analysis

Both *de*-RCs and *de*-less RCs display island sensitivity and reconstruction effects for binding conditions, suggesting that the surface Head originates inside the RC and undergoes Raising. Nevertheless, *de*-RCs can be stacked, whereas *de*-less RCs cannot. As argued by Cinque (2020), possibility of stacking indicates a Matching structure in which the surface Head is an external Head, which is not part of a movement chain with the internal Head. As summarized in (21), *de*-RCs involve both Raising and Matching, whereas *de*-less RCs only involve Raising.

- | | | | |
|------|---------------------|------------------|-------------------|
| (21) | | Raising Analysis | Matching Analysis |
| a. | <i>de</i> -RCs | yes | yes |
| b. | <i>de</i> -less RCs | yes | no |

(22) a. [Zhāngsān hěn xǐhuān] de sān-ge xuéshēng
Zhangsan very like DE three-CLF student
'the three students that Zhangsan likes'

Figure 1 illustrates the syntactic structure of the sentence in (1). The structure is a DP (Determiner Phrase) consisting of a Spec IP (Specification of the Inflectional Phrase) and a D' (D-bar) structure. The D' structure branches into D° (D-bar degree) and C' (C-bar). D° contains the particle *de*. C' branches into Spec (Specification) and C° (C-bar degree). Spec contains the phrase *sān-ge xuéshēng*, which is glossed as 'three-CLF student'. C° branches into C' (C-bar degree) and IP (Inflectional Phrase). C' contains the particle *hěn*. IP branches into Spec and C' (C-bar degree). Spec contains the phrase *Zhāngsān*, which is glossed as 'Zhangsan'. C' contains the phrase *xíhuān sān-ge xuéshēng*, which is glossed as 'very like three-CLF student'.

(22) c. **sān-ge** [Zhāngsān hěn xǐhuān] de xuéshēng
 three-CLF Zhangsan very like DE student
 'the three students that Zhangsan likes

d. [**sān-ge** [_{DP} RC-IP [_{D'} [_D de] [_{CP} *sān-ge xuéshēng*
 three-CLF DE three-CLF student
 [_{IP} Zhāngsān hěn xǐhuān ~~sān-ge xuéshēng~~]]]]
 Zhangsan very like three-CLF student

Bhatt (2002) argued for a different version of Raising according to which the internal Head raises and further projects, turning the CP into NP (see also Vergnaud 1974, Iatridou et al. 2001). As a result, the head D takes an NP as complement. Is this version of Raising analysis applicable to Mandarin RCs? The answer is no. We use the examples as in (23) to show that the internal Head should not project after raising to Spec,CP. If the internal Head, which is an NP or a number expression as in (23a), projects after raising from the subject position, we expect the resulting structure to be an NP, which should occur in the object position of the verb *yùjiān* ‘meet’ like (23c), contrary to the fact. (23b)

further shows that the lack of NP structure is not caused by the order of RC with respect to its Head.

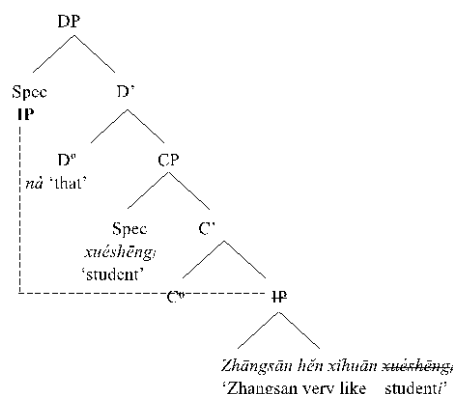
- (23) a. * wǒ yùjiàn-le [xuéshēng/yí-ge xuéshēng] [*t_i* xǐhuān Zhāngsān]
 I meet-PERF student /one-CLF student like Zhangsan
 ('I met the student(s)/one student that like(s) Zhangsan.')
- b. * wǒ yùjiàn-le [[*t_i* xǐhuān Zhāngsān] xuéshēng/yí-ge xuéshēng].
 I meet-PERF like Zhangsan student /one-CLF student
 ('I met the student(s)/one student that like(s) Zhangsan.')
- c. wǒ yùjiàn-le [xuéshēng/yí-ge xuéshēng].
 I meet-PERF student /one-CLF student
 'I met the student(s)/one student.'

Given that the internal Head does not project, *de* is therefore indispensable in nominalizing the CP, cf. (24a). Furthermore, as shown in (24b), there is a close dependency relation between *de* and the RC. The fact that the occurrence of *de* depends on the presence of a relative clause can be explained by merging *de* in D, which selects the CP, cf. (22b).

- (24) a. wǒ yùjiàn-le [DP [*t_i* xǐhuān Zhāngsān] *(**de**) xuéshēng/yí-ge xuéshēng].
 I meet-PERF like Zhangsan DE student /one-CLF student
 'I met the student(s)/one student that like(s) Zhangsan.'
- b. [DP *(**[*t_i* xǐhuān Zhāngsān]) de** xuéshēng/yí-ge xuéshēng].
 like Zhangsan DE student /one-CLF student
 'the student(s)/one student that like(s) Zhangsan'

To account for reconstruction effects in *de*-less RCs, we assume Kayne's [D + CP] Raising analysis as well. In contrast with (22b), the D as in (25b) is filled by a demonstrative, given its obligatory status in the formation of *de*-less RCs. The rest of structure and derivation is like that of (22b).

- (25) a. [Zhāngsān hěn xǐhuān _] [**nà** xuéshēng]
 Zhangsan very like that student
 'that student that Zhangsan likes a lot'
- b.



In *de*-less RCs, it is the demonstrative that nominalizes the relative clause. In addition, we speculate that the demonstrative in D imposes some selectional restriction on the raised internal Head. Recall that *de*-less RCs display some restriction on verbal constellations when an object gap is involved. We tentatively interpret this restriction as a selectional restriction on the internal Head imposed by the

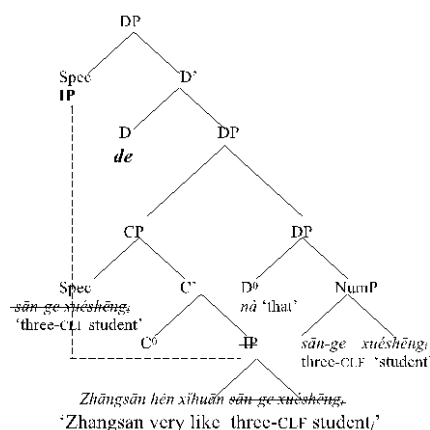
demonstrative. By contrast, if the particle *de* in D does not impose the same restriction on the raised internal Head, we have an answer to why *de*-RCs do not display any restrictions.

We comment on the relative clause CP involved in the Raising analysis of both *de*-RCs and *de*-less RCs. The internal Head does not project after raising. The CP is in fact an Internally Headed Relative Clause (IHRC), with an *ex-situ* internal Head in Spec,CP. Due to the movement of the remnant IP to Spec,DP, the internal Head surfaces to the right of the RC. Interestingly, Hiraiwa et al (2017) claimed that the IHRC with an internal Head to the right of the RC is unattested. If our analysis is on the right track, Mandarin RCs can complete the gap in Hiraiwa et al.'s (2017) typology of IHRCs.

To account for the possibility of stacking, we assume a Matching structure for *de*-RCs. As shown in (26), the particle *de* occupies D, which takes a complex noun phrase as complement. In the complex noun phrase, the RC is left-adjoined to an external Head. The internal Head *sān-ge xuéshēng* 'three students' raises to Spec,CP, and is phonologically deleted under identity (cf. Sauerland 2003).

- (26) a. [Zhāngsān hěn xǐhuān] *de* nà -sān-ge xuéshēng
 Zhangsan very like DE that -three-CLF student
 'those three students that Zhangsan likes'

b.



5. Conclusion

In this paper, we have distinguished RCs without the modificational particle *de* from RCs with it in Mandarin Chinese. We argued that *de*-less RCs only involve Raising, whereas *de*-RCs involve both Raising and Matching. We have further argued that *de*-RCs that precede the Demonstrative-Numeral-Classifier sequence can be used as a base structure to derive *de*-RCs that follow the sequence.

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A small typology of composite A'/A-probes

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1. Introduction

In this paper, I extend the composite probe hierarchy in Lohninger et al. (2022) to a broader set of phenomena. Lohninger et al. (2022) (partly following Scott 2021) suggest that composite A'/A-probes exhibit three different probing mechanisms: conjunctive probing [A'+A], dependent probing [A|A], and independent probing [A'] [A], defined by how independent the two probing parts are from each other. They use the three-way split to analyse cross-clausal A-dependencies (CCA), such as Hyperraising and Long-distance agreement. I extend the composite probe hierarchy to other, non-CCA contexts such as focalization, relativization, topicalization, and wh-movement. I suggest that several languages which have been analysed as involving composite A'/A-probes (i.e. whose A'-movement shows A-properties) are divisible into the three classes, and that each single composite probing language can be captured by one of the three types. In this way, I point out how different accounts on composite probes connect to each other, support the composite probe hierarchy in Lohninger et al. (2022) with further data, and contribute to the ongoing discussion about composite probes with fine-grained details about possible probing mechanisms, serving as a tool to disentangle and categorize the empirical field of composite probing. In section 2, I begin with an overview of the A'/A-distinction and composite probing in general, followed by a discussion of the three types of composite probes: conjunctive in section 3, dependent in section 4, and independent in section 5. In section 6, I give an outlook on the formation of composite probes, and then conclude.

2. Three types of composite probes

In the recent years, the idea of composite A'/A-probes has grown stronger together with the featural perception of the A'/A difference, rather than a positional one. Traditionally, the distinction between A'- and A has been tied to landing-sites of moved elements and thus to structural positions. A'-dependencies (s.a. wh-movement, topicalization, relativization, focalization) are assumed to be less local and less restrictive than A-dependencies (e.g. head-movement, passivization, raising, agreement). The difference in locality is visible from the properties in the Table below (van Urk 2015: 23) and implies that A'-movement targets structurally higher positions than A-movement and that differing landing-sites alone are able to derive the A'/A difference.

A-properties	A'-properties
Local, restricted to nominals, no reconstruction for principle C, no WCO, new antecedents for anaphors, no parasitic gap licensing	Long-distance, not restricted to nominals, reconstruction for principle C, WCO, no new antecedents for anaphors, parasitic gap licensing

Such a positional approach to A'/A implies that the difference between them is tied to the head triggering movement: C triggers A'-movement whereas non-phasal heads (like T) trigger A-movement. In a A featural perception of the A'/A difference, contrary to a positional one, not the position or the nature of the attracting head defines whether an element and its movement exhibit A'- or A-quality but rather which features are involved in the agreement process. Van Urk (2015) proposes that features part into A'-features (s.a. [FOC], [TOP], [WH], [REL] and other discourse-related features) and A-features (s.a. [Φ], [θ], [n], [D]). The two types of features are not strictly tied to a certain head but their distribution within the structure is subject to language-specific variation. Similarly, Obata & Epstein (2011) suggest that the A'/A difference lies in the featural make-up of a head rather than in its position: whenever an attracting head carries [Φ], the resulting dependency (and movement) exhibits A-quality; whenever a head does not carry [Φ], the resulting dependency is of A'-quality. They propose that there is no universal (structural) restriction that C cannot carry [Φ], but a language-specific one. Assuming that the difference between A' and A is tied to features opens the door to composite probes, that is two combined features on a single head. Such feature bundling has been proposed for TMA probes in various accounts (a.o. Bobaljik & Thráinsson 1998, Coon & Bale 2014, Deal 2015, Coon & Keine 2020) but has now also entered the A'/A discussion in the form of composite A'/A-probes. A composite A'/A-probe is a single head carrying both A'-features and A-features, and the specifier it projects, the agreement-dependency it establishes, and the movement it triggers exhibits both A'- and A-quality. The notion of composite probes is by now widespread (a.o. Obata & Epstein 2011, Legate 2014, van Urk 2015, Erlewine 2018, Branan & Erlewine 2020, Branan 2021, Coon et al. 2020, Scott 2021, Lohninger et al. 2022); however, it seems as if the questions of i) how exactly composite probing proceeds and ii) how composite probes are distributed across and within languages are rather understudied. In the following, I will investigate in detail three types of composite probes (and their probing mechanisms) brought forward in Lohninger et al. (2022): conjunctive probes [A'+A], dependent probes [A'|A], and independent probes [A'] [A]. The three differ in two crucial aspects: first, the ability to skip partly fitting goals (i.e. goals that fit only the A'- or A-part of the composite probe) in favor of a lower, fully matching goal; second, the ability of the A-part and the A'-part to attract elements on their own and independently of the other part.

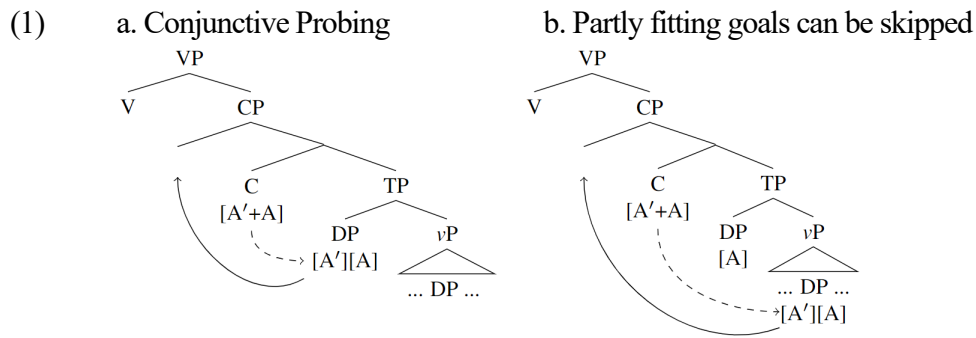
	Conjunctive [A'+A]	Dependent [A' A]	Independent [A'] [A]
Partly fitting goals stop further probing	no	yes	(there are no partly fitting goals since they do not probe together)
The two probes can probe on their own	no	no	yes

Expanding the findings in Lohninger et al. (2022), who only investigate composite probes in cross-clausal A-dependencies [CCA], I will extend the three-way split to a larger set of composite probes, involving wh-movement, focalization, topicalization, and relativization, and demonstrate that the classification into three probing mechanisms seems to hold across different languages. Additionally, I point out analytical options of how the probing mechanisms could be derived.

3. Conjunctive Probes

A conjunctive probe, termed [A'+A], is characterized by the strong entanglement of its two parts: they are inseparable from each other and probe together for a fully fitting goal. The derivation succeeds if a

goal is found that satisfies both parts of the composite probe. Conjunctive probes are similar to what Coon & Bale (2014) suggest for Mi'gmaq A-probe bundles, where [PERS] and [NUM] features act as a conjunctive probe and will only agree with a goal that carries both features. A crucial aspect of conjunctive probing is that partly fitting, intervening goals are not visible to the probe and can be skipped in favor of a lower, better fitting goal. (structures in (1) taken from Lohninger et al. 2022: 27).



Lohninger et al. (2022) suggest that a conjunctive probe is involved in Korean and Japanese Hyperraising. Furthermore, conjunctive probes can be found in Ndengeleko focus movement (Scott 2021), Dinka Bor focalization, relativization, and topicalization (van Urk 2015) and Khanty topic movement/passivization (Colley & Privoznov 2020). Even though involving different features in each language, the composite probes exhibit the same probing mechanism: agreement (and movement) shows both A'- and A-quality and the probe searches for a fully fitting goal, ignoring everything on its way there.¹ This is visible from the fact that it is not necessarily the closest element that will be attracted by the composite head, which on the surface looks like a violation of A-Minimality. In fact, the probing mechanism is captured by *Relativized Minimality* (Rizzi 1990), where it is stated that a probe must agree with the closest suitable goal. For a conjunctive probe, this is a goal carrying both relevant features. In Ndengeleko for example, C carries a conjunctive probe [FOC+n] and hence searches for a focalized nominal (Scott 2021). If there is a closer nominal lacking [FOC] (s.a. the direct object *food* in (2)), it is ignored by the [FOC+n] probe. Instead, it finds a lower goal (*Nadya* in (2)), which carries both features and moves it to a clause-internal focus position. In cases where no fitting goal can be found, the element that is focalized will have to be nominalized in order to fulfill the conjunctive probe's requirements. This is visible in (3), where the verb *cook* needs to be marked with a noun class (15) in order to be focalized.

- (2) *Ni-m-pa-y-a* *Nádyá ki-lyó.*
 1SG.SM-1.SM-give-APPL-FV **Nadya** 7-food
 'I'm giving NADYA food.' [Scott 2021: 19]
- (3) *N-and-á* **(u)-telek-a* *pilau.*
 1SG.SM-AUX-FV **(15)-cook-FV* rice
 'I am COOKING rice.' [Scott 2021: 14]

¹ For lack of space, I will not list the different A'- and A-qualities in the single languages presented here but refer the interested reader to the cited references on each language as well as to Lohninger To appear, giving an overview of a broad set of A'- and A-properties involved in CCA.

Dinka Bor, restricting relativization, topicalization, and focalization to nominals, behaves similarly to Ndengeleko: its conjunctive probe $[A'+\Phi]$ on C can skip a partly fitting goal (*Ayen* in (4), carrying just $[\Phi]$) in favor of a lower, better fitting one (*food* in (4), carrying $[\text{TOP}+\Phi]$).

- (4) *Cuûin* à-yàa tàak [*kè* cεem *Áyèn* t].
food 3S-HAB.1SG think.NF [C eat.OV Ayen.GEN t]
 ‘The food, I think Ayen is eating.’ [van Urk 2015: 95]

However, in contrast to Ndengeleko, if no fully fitting goal can be found, the probe will attract the next best goal, that is the one with the highest amount of fitting features (labeled *Principle of Best Match* in van Urk 2015). This difference shows that there probably are language-specific “rescue” mechanisms that counteract a crash of the derivation if no perfectly fitting goal is found. Ndengeleko “makes” the goal perfect by forcing it to adjust to the required A' -features (i.e. focalizing the element) whereas Dinka Bor, exhibiting a less rigid probing regime, minimally lowers the probe’s requirements in order to agree with an almost fitting goal as a last resort rescue option. Note that such behavior could also be derived along the lines of Preminger (2014): probes can fail without necessarily leading to ungrammaticality.

Last, Colley & Privoznov (2020) show for Khanty passivization that it involves topicalization and is triggered by a $[\text{TOP}+\Phi]$ head. Passivization/topicalization targets DPs only but is not restricted to the closest element; any DP can be promoted to subject. In (5), the probe attracts the theme *candy* and, as predicted by conjunctive probing, skips the structurally closer but only partly fitting subject DP *Masha*.

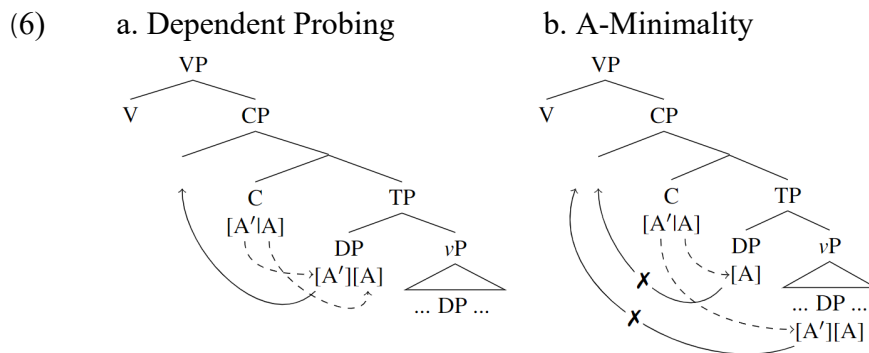
- (5) *maw-λ-am* *maša-jen-ən* *ńawrem-em-a* *mä-s-i-jət*.
candy-PL-1SG Masha-2SG-LOC kid-1SG-DAT give-PST-PASS-3PL
 ‘My Candy was given by (your) Masha to my kid.’ [Colley & Privoznov 2020: 2]

Colley & Privoznov (2020) point out that partly fitting goals which have been skipped by the composite probe (s.a. *Masha* in (5)), exhibit locative case. They take this case assignment to be an instance of partial agreement, along the lines of Deal (2015): the parts of the conjunctive probe interact with partly fitting goals on their search downwards, visible in locative case assignment. Scott (2021) suggests that conjunctive probing can be implemented via an extension of the interaction and satisfaction framework in Deal (2015): every probe comes i) with an *interaction condition*, specifying the features a probe copies back to it, and ii) with a *satisfaction condition*, telling the probe when to stop probing. For conjunctive probes, the satisfaction condition is conjoint of an A' - and an A -feature. A conjunctive probe will not stop probing until it finds an element carrying both features. Khanty locative marking on skipped goals (as in (5)) exhibit a morphological instantiation of the interaction condition: partial fits (that is DPs carrying solely $[\Phi]$; *Masha*) will interact with the probe but not satisfy it, visible in locative case assignment. Agreement, exhibiting the satisfaction condition, will be established only with a fully fitting goal, being the lower DP (*candy*).²

² Note that such interaction varies strongly crosslinguistically (e.g. nothing similar can be observed in Dinka Bor or Ndengeleko): I leave these phenomena open for further research, similar to the question whether all languages exhibit both interaction and satisfaction features or whether there are such which lack one of the two.

4. Dependent Probes

Dependent probes exhibit a slightly more complex probing mechanism than conjunctive probes. A dependent probe $[A'|A]$ consists of two probing segments which are able to probe and find fitting goals on their own. This means that the A-part of the composite probe will find an A-goal independently of what its A'-partner does. The single parts of the dependent probe, that is the A-probe and the A'-probe alone, however, are not strong enough to trigger agreement on their own. Instead, if they find a partly fitting goal, they will block further probing and the derivation will crash. This results in the fact that dependent probes exhibit A-Minimality: since all intervening partly fitting goals block further probing of the whole probe, only a derivation where the two probes find the same goal is successful. This goal will necessarily be the closest one (structures in (6) from Lohninger et al. 2022: 34). Dependent probes are reflected in extraction constraints: that is cases/languages where A'-extraction is restricted to certain elements and can be found in Māori relativization, topicalization, focalization, and wh-movement (Douglas 2018), Austronesian object extraction (Aldridge 2017), Acehnese wh-movement (Legate 2014), Mayan focalization, relativization, and wh-movement (Coon et al. 2020), Toba Batak focalization and wh-movement (Erlewine 2018, Branen & Erlewine 2020), and Romanian and Turkish Hyperraising and Tsez Long-distance agreement (Alboiu & Hill 2016, Lohninger et al. 2022).



Take Toba Batak as an example, where C probes for $[FOC|D]$. (7a) is a successful derivation where the highest element (the subject) fulfills both of the probe's requirements. In (7b), there is a closer, partly matching subject DP (*Poltak*) and a lower, fully matching object DP (*what*). Since the probe interacts with the partly matching goal (*Poltak*), the goal halts the whole probing process, the probe cannot find the lower, better fitting goal *what*, and (7) is ungrammatical.

- (7)
- | | | | | | |
|----|------------------------------|-------------------|---------------|----------------|-------------------------|
| a. | <i>Ise</i> | [<i>man-uhor</i> | [<i>buku</i> | [<i>t</i>]?] | |
| | who | [ACT-buy | book | <i>t</i>] | |
| | ‘Who bought a book?’ | | | | [Erlewine 2018: 664] |
| b. | * <i>Aha</i> | [<i>man-uhor</i> | <i>t</i> | <i>si</i> | <u><i>Poltak</i></u> ?] |
| | what | [ACT-buy | <i>t</i> | PN | <u><i>Poltak</i></u>] |
| | Int.: ‘What did Poltak buy?’ | | | | [Erlewine 2018: 663] |

Note that there may be different language-specific probing options for dependent probes. For example, the dependent probe in Toba Batak seems to allow multiple probing. In the successful derivation in (8), the subject (*Poltak*) carries $[FOC|D]$ and is attracted by the dependent probe on C. After that, an additional (fully fitting) element (*what* in (8)) can be attracted and raised. Note that all extracted

elements need to fully fit the dependent probe, that is carry both [FOC]- and [D]-features.

- (8) *Aha holan si Poltak* [man-uhor t t].
what only PN Poltak [ACT-buy t t]
 ‘What did only Poltak buy?’ [Erlewine 2018: 663]

The multiple fronting behavior in Toba Batak does not interfere with the analysis of the composite probe as dependently probing, but simply shows that there is room for language-specific variation such as the allowance of multiple probing. Multiple probing, however, underlies the same restrictions as single probing: the targeted goal needs to carry both A'- and A-features (making (8) grammatical but (7) illicit).

In Māori, as Douglas (2018) argues, focalization, relativization, topicalization, and wh-movement are only possible with subjects, that is the highest DP and triggered by a [A'|D] probe on C. I suggest that this probe in fact exhibits dependent probing behavior: in (9), the subject DP (*the rock scoria*) can be relativized whereas (10) shows that a lower DP (the object *the man*) cannot if there is a higher, partly fitting goal (*John*) in the way.

- (9) ... *kua tata ki te taha o te toka rangitotoi*
 ... TAM near to the side of **the rock scoria**
 [e tū *ana t i te ara*]
 [TAM stand TAM *t* at the path] [Bauer 1997: 566]
 ‘... [she] neared the side of the scoria rock which was standing in the path’
- (10) **Ka mōhio ahau ki te tangatai* [i *kōhuru a Hone t*].
 TAM know I to **the man** [TAM murder PERS John t]
 Int.: ‘I knew the man that John murdered.’ [Bauer 1997: 569]

Further, I suggest that Acehnese extraction, described in Legate (2014), is triggered by a dependent probe: A'-movement in Acehnese is restricted to the closest DP (the subject), shown in (11). A lower DP cannot be extracted unless the clause is passivized, rendering the subject DP an adjunct and the former object DP the closest eligible goal, shown in (12).³

- (11) *Soe yang pajôh ungkot?*
who C eat fish
 ‘Who ate the fish?’ [Legate 2014: 84]
- (12) *Peue yang geu-pajôh lé Ibrahim?*
what C 3POL-eat by Ibrahim [Legate 2014: 84]
 ‘What does Ibrahim eat?’ (Lit.: ‘What is eaten by Ibrahim?’)

Extraction in Acehnese, or rather in Austronesian languages in general, exhibits both A'- and A-properties: only the DP that is promoted (by Voice/Focus) can undergo further extraction. It has been argued that this promoted DP involves a topic interpretation (Pearson 2005) and

³ Legate (2014) does not describe the probe on C as a composite probe (even less as a dependent probe) but as the result of incomplete C-T feature inheritance. However, it seems as if Acehnese extraction exhibits A-properties and thus involves a composite probe and is categorizable in the class of dependent probes.

Similarly, Tagalog, Philippine and Formosan extraction (also languages of the Austronesian family) in Aldridge (2017) can be categorized as dependent probing. Tagalog for example, like Acehnese, exhibits an extraction constraint: in a transitive clause (where the subject is marked with ergative case), only the object can be A'-extracted (e.g. relativized), see (13,14). Subject extraction is only possible in intransitive clauses where the object receives inherent (genitive) case, as in (15).

- Mayan, too, exhibits a dependent probe on C – a conglomerate of [D] and A'-features such as [FOC], [REL], or [WH]. In Mayan, as in the other languages presented so far, a closer, partly fitting goal blocks further agreement, and the derivation crashes. The only grammatical option is such where the closest DP carries both the relevant A- and A'-features. This is what the Mayan *Ergative Extraction Constraint* (Aissen 2017, Coon et al. 2014, Coon et al. 2020; similar to what has been stated for Austronesian languages) descriptively reflects: the observation that in a transitive clause only a certain DP (the object DP) can be A'-extracted. This may seem counter-intuitive since the object is not the structurally highest DP. However, Coon et al. (2020) convincingly argue that in Mayan transitive clauses, the object moves above the subject, and so becomes the highest element and thus the only one eligible for the dependent probe on C (and hence, extraction), shown in (16) and (17). Subject

⁴ Aldridge (2004, 2008) proposes that the object DP moves above the subject DP and thus becomes the closest goal to C (similar to what Coon et al. 2020 suggest for Mayan languages, see the next part). Aldridge (2017) revises this claim and suggests that Case is the driving force of A-Minimality. No matter which of the two accounts is chosen, it is the object that is the A-minimal DP for C.

extraction is only licit from intransitive clauses where the subject necessarily inhabitates the highest position, as can be seen in (18).

- (16) *Maktxel* *max* *y-il-a'* *naq* *winaq* *t?*
who ASP 3ERG-see-TV CLF man *t*
 ‘Who did the man see?’ [Coon et al. 2014: 192]
- (17) **Maktxel* *max* *y-il-a'* *t* *ix* *ix?*
who ASP-3ABS 3ERG-see-TV *t* CLF woman
 Int.: ‘Who saw the woman?’ [Coon et al. 2014: 193]
- (18) *Maktxel* *max* *way-i* *t?*
who ASP sleep-ITV *t*
 ‘Who slept?’ [Coon et al. 2014: 192]

Dependent probes can be implemented in different ways: I follow the proposal of Coon et al. (2020) along the lines of a feature-geometry (Harley & Ritter 2002). They argue (for Mayan) that [A'] and [D] are part of the same featural geometry, F, where both [D] and [A'] entail F. This means for [A'], that it is specified as [F[A']] and for [D] that it is specified as [F[D]].

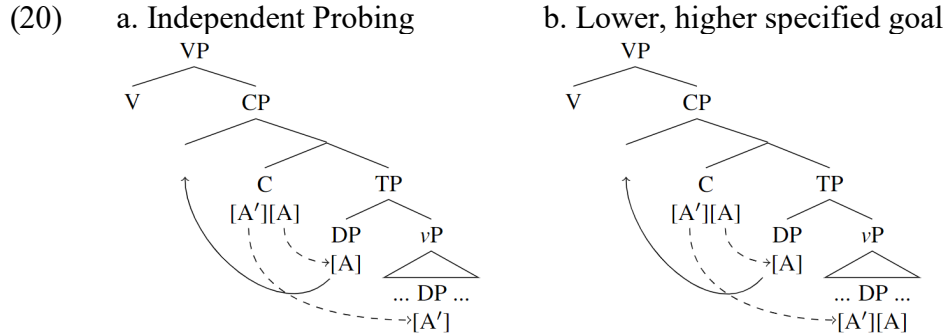
- (19)
$$\begin{array}{c} \mathcal{F} \\ \swarrow \searrow \\ \text{D} \quad \text{A'} \end{array}$$
 [Coon et al. 2020: 19]

Coon et al. (2020) suggest that a featural segment (A' or D) can, even when it is part of a feature geometry, find a goal that does not exhibit the whole geometry. This means that if there is a closer goal carrying [D] but not [A'], the [D]-segment of F will find it. This is the case since all features [D] will be specified as [F[D]]; the probing [F] will enable the partly fitting goal to be found by the probe, which primarily searches for [F]. If [A'] then finds another goal, a *Feature Gluttony* situation (Coon & Bale 2014) arises: there is a too-high number of potentially fitting goals. Note that this is only a problem if there is a lower, higher-specified goal: if the closest goal will already fit all of F's requirements, no further probing will take place to begin with. In a Feature Gluttony situation, however, the composite probe on C will enter an Agree relation with both goals, leading to a crash of the whole derivation. Another analytical option for dependent probing is given in Branagan (2021) who argues that composite probes can come in the form of contingent probes. This means that they will probe one after another, and the goal of the first probing operation serves as the domain for subsequent probing of the second probe. For example (8) from Toba Batak, this would mean that [D] probes first and restricts the search domain of the subsequently probing [FOC]. Thus [FOC] on C can only succeed if the closest DP also carries [FOC].

5. Independent Probes

The third type of composite probes is independent probes (Scott 2021 refers to them as “disjunctive probes”). In independent probing, the two probes on C, [A] and [A'], can find a goal on their own, establish agreement on their own, and (however, sometimes depending on language-specific requirements) trigger movement on their own. This predicts that i) the A-probe will find the closest A-element whereas the A'-probe can find another element and ii) that if the two probes find different goals, both goals can, in principle, be agreed with. Similarly, a lower, higher specified goal does not

lead to a crash of the derivation (opposed to dependent probing) (structures in (20) from Lohninger et al. 2022: 28).



Dependent probing is found in Kipsigis movement to post-verbal position (Bossi & Diercks 2019, Scott 2021), Cantonese and Vietnamese Hyperraising (Lee & Yip 2022), and CCA in Brazilian Portuguese, Buryat, Mongolian, Zulu, and Uyghur (Lohninger et al. 2022). In Kipsigis, discourse-prominent elements move to the immediately post-verbal position, triggered by an A'-feature $[\delta]$ (Bossi & Diercks 2019). This movement is restricted to nominals, that is it involves an additional feature $[D]$. If, however, the two requirements cannot be met by one single element, both the discourse dominant element and the highest DP will undergo movement. Such behavior is predicted by an independent probe: the two probes will search for and agree with two goals independently. In (21), $[\delta]$ and $[D]$ find the same element (*who*) whereas in (22) they find two different goals and, as a consequence, $[D]$ agrees with and moves the closest nominal (*children*) whereas $[\delta]$ agrees with and moves the discourse prominent adverb *well*.

- (21) *Kii-Ø-goo-chi* **ngo** *Kibet* *kitabut?*
 PST-3SG-give-APPL **who** Kibet book
 'Who gave Kibet a book?' [Bossi & Diercks 2019: 8]

- (22) *Koo-Ø-min* **lagok** *komie* *bandeek*.
 PST-3PL-plant **children** well maize
 'The children planted the maize WELL.' [Bossi & Diercks 2019: 18]

Whether there is a single element carrying both $[\delta]$ and $[D]$ or two separate elements is irrelevant for the independent probe's probing mechanism.

Independent composite probes have not yet been analysed in much detail across literature (see Scott 2021 for a first analysis). I propose that in independently probing languages, head movement from T to C takes place, rendering a composite head CT. The two heads bundle together, although, their probes remain independent of one another, being able to establish agreement on their own. Importantly, they may target the same goal and in many cases (Kipsigis) this is the preferred option. Additionally, it seems as if the A'-probe does not always have to be satisfied: as pointed out in Lohninger et al. (2022), in CCA configurations involving an independent probe, the A'-probe occasionally remains unvalued. This can be explained along the lines of Preminger (2014), who suggests that certain goals can remain unsatisfied, not rendering ungrammaticality but rather default agreement. I propose that this is true for the A'-part of independent probes: it can remain unsatisfied without inducing a crash of the whole derivation.

6. Conclusion and outlook on the formation of composite probes

In this paper, I have extended the composite probe hierarchy suggested in Lohninger et al. (2022) to languages and phenomena beyond cross-clausal A-dependencies. It seems as if the three-way split of composite probes holds across a variety of constructions, ranging from relativization, focalization, and topicalization to wh-movement and other types of discourse-relevant movement. A question unanswered so far is how composite probes emerge in the first place. In Lohninger et al. (2022), we propose that in the case of cross-clausal A-dependencies, a predication relator phrase, RP, fuses with CP and equips it with A-properties. However, additional assumptions need to be made to derive the hierarchy of composite probes: the fusion mechanism could differ, being a lexical fusion in conjunctive probes, a featural adjunction (rendering a feature geometry) in dependent probes, and head movement from C to R in independent probes. Another analytical option is given in Legate (2014) and Aldridge (2017), who suggest that composite probes emerge through incomplete C-T feature inheritance. Feature inheritance (Richards 2007, Chomsky 2008) depicts the idea that $[\Phi]$ -features on T are inherited from C. Originally, this suggestion was made to derive the difference between T embedded under C, which is able to assign case whereas T without C is dependent on exceptional case marking and seems to lack $[\Phi]$ -features. Legate (2014) and Aldridge (2017) suggest that in Austronesian languages and Acehnese, C to T inheritance does not take place or only partially takes place and thus, $[\Phi]$ -features remain on C. Again, an additional assumption would have to be made to derive the three types of composite probes. Ouali (2008) for example suggests that there might be different types of feature inheritance; one where all $[\Phi]$ -features are inherited (DONATE), one where they are copied onto T but partly remain on C (SHARE) and one where they are not inherited at all (KEEP). Along the lines of Ouali (2008), one could suggest that for composite probes, inheritance happens in different ways for conjunctive and dependent probes (KEEP and SHARE) whereas for independent probes, inheritance takes place properly (DONATE), followed by head movement from T to C, rendering a composed but independently probing head. Last, Erlewine (2018) suggests that composite probes are bundles of C and T heads which exists additionally to the separate heads (at least in the Austronesian Toba Batak). Similar to the the two former accounts, an additional bundling mechanism would have to be stipulated to derive the difference of probing mechanisms. I leave open for future research an exact analysis of how the different types of composite probes can be derived, as well as whether languages parametrically pattern with one of the three or are in fact able to exhibit different probing mechanisms. Another interesting question is how an extension of the proposal to other sorts of composite probes (s.a. bundles of A-probes) would look like.

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Remarks on Addressed Non-Hearers^{*}

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1. Introduction

Since Speas and Tenny (2003), there has been a growing interest in treating discourse participants such as Speaker and Hearer as syntactically represented elements. This interest is further strengthened by scholars represented by Haegeman and Hill (2013) and Miyagawa (2017) among others. Naturally, these studies deal with constructions which involve the presence of Hearer.

This paper deals with a construction in Japanese which do not allow the presence of Hearer (at least to some speakers including the present author), and it shows that there is a slight difference between Hearer and Addressee, which can be captured in Baker's (2008) terms with a slight modification.

2. Hearer and Addressee

As argued in McCawley (1999), the term "Hearer" can cover various roles. For instance, consider a situation where three people (A, B, and C) are having a conversation, sitting at a table. They are all discourse participants. When A is asking B a question, B is an addressee as well as a hearer. C is not addressed but can hear the question, which makes him not an addressee but a hearer. Suppose further that there is another individual D, who is a stranger to A, B, and C, sitting at another table, not being a discourse participant, but overhears the conversation as a bystander, which makes him an overhearer. This state of affairs is summarized in (1).

(1)

	addressed	unaddressed
participant	B (addressed hearer)	C (unaddressed hearer)
non-participant		D (overhearer)

There is an empty slot in the table above, which refers to the addressed non-participant. Though not

^{*} I would like to thank three anonymous reviewers of SICOGG 24, Michael Barrie, Myung Kwan Park, and Ka Fai Yip for their comments and suggestions. I am also grateful to Kenji Arisaka, and Masamichi Fujiwara, Riichi Yoshimura, and Masaki Yasuhara for their judgements on Japanese examples as well as their comments and suggestions. All remaining inadequacies are my own.

paid attention to by McCawley, this type of discourse role is possible, as we will see in the next section, which deals with self-addressed questions in Korean.

3. Self-Addressed Questions in Korean

Jang (1999) observes that Korean main clause questions employ different complementizers, depending on their directionality. To be exact, hearer-addressed questions and self-addressed questions require different forms of sentence-final particles. Below is an illustration of the pattern.

- (2) a. Mary-ka o-ass-ta.
Mary-NOM come-PAST-DEC
'Mary has come.'
b. Mary-ka o-ass-ni?
Mary-NOM come-PAST-Q
'Has Mary come?'
c. Mary-ka o-ass-na?
Mary-NOM come-PAST-Q
'I wonder whether Mary has come.'
(Jang 1999: 849)

(2a), ending with *ta*, is a declarative sentence. (2b) and (2c) are both questions, but they differ from each other with respect to who the questions are directed to. (2b), which ends with *ni*, is a hearer-addressed question, in which the speaker asks the addressee a question. (2c), on the other hand, involves the particle *na*, which makes it a self-addressed question, where the speaker addresses the question to himself, as shown by the translation of the example.

Let us then observe the following paradigm.

- (3) a. Mary-ka o-ass-upni-ta.
Mary-NOM come-PAST-HON-DEC
'Mary has come.'
b. Mary-ka o-ass-upni-kka?
Mary-NOM come-PAST-HON-Q
'Has Mary come?'
c. * Mary-ka o-ass-upni-ka?
Mary-NOM come-PAST-HON-Q
(Jang 1999: 849)

The examples in (3) all involve the hearer-honorific marker *upni*, which indicates the presence of the hearer. (3a) is fine, which contains the particle *ta*, which makes it a declarative clause. (3b) is also perfectly acceptable and it is a hearer-addressed question, due to the particle *-kka*. (3c), however, is unacceptable, which is a self-addressed question because of the presence of the particle *-ka*. Since self-addressed questions are generally uttered when there is nobody to respond, the degraded status of (3c) is well expected.

A similar pattern can be found in the following paradigm.

- (4) a. Nay-ka chencay i-n-ka?
I-NOM genius be-PRES-Q

- ‘I wonder whether I am a genius.’
 b. * Ne-ka chencay i-n-ka?
 You-NOM genius be-PRES-Q
 ‘I wonder whether you are a genius.’
 (Jang 1999: 849)

Both the questions in (4) are self-addressed questions ending with *-ka*, the difference between them being the subjects. (4a) is fine, where the subject is the first person pronoun, referring to the speaker, the sole discourse participant in this question. (4b) is deviant, which involves the second person pronoun as its subject. Its deviancy comes from the lack of a hearer in the self-addressed question.

It is important to note that this person restriction effect is absent in the following example.

- (5) a. Ne-ka chencay i-ni?
 You-NOM genius be-Q
 ‘Are you a genius?’
 b. Ne-ka chencay i-ess-ten-ka?
 You-NOM genius be-PAST-RECOLL-Q
 ‘I wonder whether you were a genius.’
 (Jang 1999: 851)

Both (5a) and (5b) have the second person pronoun *ne* as the subject. (5a), which is fine, is trivial, since it is a hearer-addressed question, ending with the particle *-ni*. Interestingly, (5b) is fine as well. This is surprising, considering that (4b) is bad. Jang (1999: 850) points out that (5b) is fine if the speaker is talking about someone who was the hearer at some point in the past, who he again addresses with the second person pronoun. In this case, the individual referred to as *ne* cannot hear him and is not a participant of the present discourse but he is currently addressed by the speaker, which makes him an addressed non-hearer. The next section shows that much the same effect is observed in a certain wish construction in Japanese.

4. A Wish Construction in Japanese

As examined in detail by Nitta (1991), Japanese has various constructions which display person restriction effects. As observed in Ueda (2007), certain wish sentences are subject to person restrictions, at least to some speakers¹. Let us first see what a wish sentence is. Observe (6).

- (6) a. (Kimi-wa) majime-ni nar-e!
 you-TOP serious-COP.ADV become-IMP
 ‘(You) Be serious!’
 b. Hayaku asita-ni nar-e!
 soon tomorrow-COP.ADV become-WISH
 ‘I wish that it would be tomorrow soon!’

¹ Ueda (2007) deals with imprecation (negative wish) sentences such as “Die!” in Japanese and claims that the subject of such sentences cannot be in second person. I do not detect any person restriction effect in her relevant examples, however. In the text, I examine certain non-negative private wish sentences that my informants and I judge to show person restriction effects.

(6a) is an imperative sentence and (6b) is a wish sentence. They both involve the morpheme *-e*, which has different functions in (6a) and (6b). While imperative sentences generally require the presence of an addressee as the second person subject, wish sentences do not have such a requirement. Here the morpheme is glossed differently in (6a) and (6b) for expository purposes. Whether imperative sentences and wish sentences should be given a unified treatment is beyond the scope of the present paper, a question that will be left for future research. It is important to note that there are speakers who feel that these wish sentences are private expressions in that they should be uttered when the speaker is alone or has no one to respond to him.² The following discussion is based on those speakers³. To such speakers, the effect found in (7) obtains.

(7) (The speaker talks to the addressee, looking her in the eye.⁴)

- a. * Hayaku kimi-no tanjoubi-ni nar-e!
 soon you-GEN birthday-COP.ADV become-WISH
 ‘I wish that it would be your birthday soon!’
- b. * Kono kimoti, kimi-ni todok-e!
 this feeling you-to reach-WISH
 ‘I wish that this feeling would reach you!’

This type of sentences disallows the second person pronoun *kimi* (or other ones such as *anata* and *omae*) under the intended context, where the addressee functions as a hearer.

What is not discussed in Nitta or Ueda concerning person restriction effects is that this second person pronoun is allowed when this individual is not a discourse participant. This situation is possible when the speaker is alone, thinking of someone in his mind and talking to the individual by referring to her as *kimi* ‘you’, who is not there and unable to hear what he says. Another likely situation would be the one where the speaker talks to the picture of an individual who is not there. One more candidate would be a context in which the speaker (or the writer, to be exact) writes a letter to someone, addressing her as *kimi* ‘you’, who is not in his vicinity, not even knowing of being addressed.

It is important to note that one’s physical closeness to the speaker and one’s being able to hear him talk do not necessarily make one an addressed hearer. Kenji Arisaka (personal communication) finds that the speaker can utter (7b) as a confession of love in the presence of the hearer when he shouts the sentence to the beach with the hearer standing at his side. I claim that this is not an ‘addressed hearer’ case but an ‘overhearer’ or ‘bystander’ case, in which he utters (7b) as a private wish in the context of self-talk in the hope that she will overhear what he says.

Treating the individual next to the speaker as an overhearer or bystander is not an ad-hoc way to deal with this particular interpretation of (7b). It is cross-linguistically observed as reported in McCawley (1999), according to whom, in Dyirbal culture, a man is not allowed to talk to his mother-

² Wilson and Sperber (1988) provide audienceless cases in English such as *Please don't rain*, but I focus on Japanese examples.

³ All the informants I consulted detected the contrast between (6b) and (7) under the intended context. Some of the informants who the reviewers consulted, however, do not.

⁴ This is necessary so that the irrelevant ‘overhearer’ interpretation can be excluded. See below for more. The condition in the bracket was added after the reviewing process, so it is possible that with this condition, the relevant person restriction effect might have been detected even by the informants (consulted by the reviewers) who found (7) to be fine.

in-law and when he wants to ask a favor of her and nobody else is around that he might ask for help, he can talk to his dog so that she can ‘overhear’ what he has to say. In the present terms, the man treats the pet as the addressed hearer (pretending that the dog can hear and understand what he says) and his mother-in-law, though being the actual receiver of his message, is considered an overhearer.

Thus, under the romantic situation suggested by Arisaka, the individual standing next to the speaker is not an addressed hearer but an overhearer and at the same time the speaker is picturing the same person in his mind and talking aloud to the image of her in his self-talk. The latter version of her, namely the imaginary one and not the one physically standing beside him, is the addressed non-hearer.

This effect suggests that these wish sentences allow second person pronouns only if they are addressed non-hearers, which is much the same effect found in Korean self-addressed questions, which in turn means that the notion of second person should be further investigated.

5. Embedding Wish Sentences

Crucially, embedding wish sentences results in the cancellation of the person restriction, making it possible to have an addressed hearer.

- (8) (The speaker talks to the addressee, looking her in the eye.)
- a. Kare-wa [hayaku kimi to boku-no hazimeteno kekkon
 he-TOP soon you and I-GEN first.time wedding
 kinenbi-ni nar-e to] negatta yo
 anniversary-COP.ADV become-WISH REPORT wished PRT
 ‘He wished that it would be the first wedding anniversary for you (=the addressed hearer)
 and me (=the speaker) soon.’
 - b. Kare-wa [dare-no kimoti-ga kimi-ni todok-e to] negatta no?
 I-TOP who-GEN this feeling-NOM you-to reach-WISH REPORT wished C
 ‘Whose feeling did he wish would reach you (=the addressed hearer)?’

The examples in (8) can be uttered in situations which involve the hearer, who the speaker directly addresses, looking her in the eye.

6. An Analysis

In this section, I suggest a structure for the wish sentence in Japanese. The person restriction, namely the obligatory absence of the hearer (rather than the addressee) in this construction in the root environment, can only be captured by referring to the notion of the hearer. Its cancellation effect in the embedded context, which allows the presence of the hearer, strongly suggests that the matrix clause dominating the wish sentence involves Hearer. Given this, I assume the following.

- (9) a. Sentence structure involves Speaker and Hearer in Speech Act Phrase (SAP) above CP.⁵
 (Speas and Tenny 2003, Haegeman and Hill 2012, Miyagawa 2017, among others)
- b. Second person pronouns such as *kimi* are inherently addressees.
 - c. Second person pronouns function as hearers only when they are bound by Hearer.
 (cf. Baker 2008)

⁵ An additional assumption would be that overhearers are not syntactically represented.

- (iii) Boku-wa kimi-ni sutekina hito-ga awarare-mas-u yooni to inotta yo
I-TOP you-LOC wonderful person-NOM appear-POLITE-PRES yooni REPORT payed PRT
'I prayed that a wonderful person would appear before you.'

regarded by Ceong and Saxon (2013) as the C-head (or the Type-head in their terminology) rather than being part of SAP (or ForceP in their terminology). This means that *-nun-ci* questions are just interrogative clauses, lacking any person-related information unlike hearer-addressed questions and self-addressed questions.

There is a complementizer *-ko*, which can embed a question on a par with the Japanese complementizer *-to* and the Spanish counterpart *que*, but it seems to be able to only embed a hearer-addressed question headed by *-nya* (Yoo 2000). In short, the cancellation effect of the person restriction caused by embedding cannot be ascertained regarding Korean self-addressed questions. Thus, Japanese wish sentences, which can be embedded, contribute to a deeper understanding of licensing of second person pronouns.

7. Conclusion

This paper dealt with the behavior of wish sentences in Japanese, which display a certain person restriction effect. It showed that second person pronouns can be non-hearers. I suggested that this is possible when the pronouns are not bound by Hearer, which is based on Baker's (2008) approach to person pronouns. This supports the Baker's insight and at the same time shows that it needs to be slightly modified.

Studies that argue for the existence of SAP typically deal with phenomena that directly suggest the syntactic presence of Hearer, one representative case being allocutive agreement as discussed in Miyagawa (2017). The present study, on the other hand, examines the construction that denies its presence, thereby supporting the view of Hearer as a syntactic element in an opposite way. One immediate question that arises is how the findings here might be related to the more prevailing approach, which would have to be left for future research.

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Multiple Foci and Lack of Island Effect in Tagalog*

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1. Introduction

The syntactic literature on Tagalog mentions two types of focus constructions: DP focus and non-DP focus, as in (1) (cf. Aldridge 2002, Mercado 2004, Hsieh 2020 a.o.).

- (1) Ni-luto ni Tom ang sisig sa kusina noong Lingo.
 PV.Pfv-cook Gen Tom Nom sisig Obl kitchen last Sunday
 ‘Tom cooked sisig in the kitchen last Sunday.’

The basic word order in declarative clauses in Tagalog is predicate-initial, as in (1). It is widely assumed that the formation of focus constructions in Tagalog is conditioned on whether a DP or a non-DP is focused (Aldridge 2002, Mercado 2004, Hsieh 2020). We take a brief look at these different properties of DP focus and non-DP focus in Section 2. Otani (2021) shows that two non-DPs can move to a focus position in focus constructions, while DPs cannot. Following Otani (2021), in this paper, we call the appearance of two non-DPs in a focus position *multiple foci*. In Section 3, we closely examine multiple foci and report that this cannot be addressed by a base generalization analysis nor simple leftward movement analysis because multiple foci in Tagalog show some idiosyncratic behaviors. For example, there is no particular word order between focus phrases; only non-DPs can be focused; and island effects are ignored. To capture these differences from single-focus constructions, we argue that multiple foci are derived via double sideward movement in Section 4. In Section 5, we argue that the unavailability of multiple DP focus constructions in Tagalog is derived from Multiple Case Checking in comparison with Japanese multiple-focus constructions, which allows multiple-DP focus in addition to multiple-non-DP focus. Section 6 concludes this paper.

2. Single Focus: DP and non-DP

It is observed that Tagalog has two types of focus constructions (Mercado 2004, Hsieh 2020). If a DP is targeted for focus, a pseudo-cleft structure must be used. The structure involves a copula clause where the predicate is a referential DP and the remnant is a headless relative clause, as shown in (2a). Conversely, if a non-DP is targeted for focus, the non-DP moves to a

*We are immensely grateful to Yuto Hirayama, Ryoichiro Kobayashi, Masako Maeda, Kenta Mizutani, Kazushige Moriyama, and Koji Sugisaki for insightful comments. We would also like to thank the audience at SIOGG 24 and the LCCC research group at Osaka University. All remaining errors are of course our own.

clause-peripheral position, as illustrated in (2b).

(2) a. DP Focus

[[_{Pred} Ang sisig] [_{RC} *(ang) ni-luto ni Tom sa kusina noong
Nom sisig Nom PV.Pfv-cook Gen Tom Obl Kitchen last
Lingo]]
Sunday
Lit. '[What Tom cooked in the kitchen last Sunday] was [sisig]'

b. non-DP Focus

[_{CP} [_{PP} Sa kusina]_i (*ang) ni-luto ni Tom ang sisig _{t_i} noong Lingo]
Obl kitchen Nom PV.PFV-cook Gen Tom Nom sisig last Sunday
'It was in the kitchen that Tom cooked sisig last Sunday'

One diagnostic to distinguish the two focus constructions is the presence or absence of the determiner *ang* between the focus phrase and the remnant clause. In (2a), the determiner *ang* is obligatory between the DP *ang sisig* in the sentence initial position and the remainder of the sentence, which we call a presupposition. In (2b), the determiner is not allowed to appear between the fronted non-DP and the remnant clause, where the non-DP *sa kusina* moves to the sentence initial position, which is assumed to function as a focus position (Hsieh 2020). In a DP focus, a pseudo-cleft analysis is advanced based on similarity with a headless relative clause, as in (3).

(3) Headless relative clause

- a. Ma-bait [ang nali-ligo sa ilog].
Adj-kind Nom AV.IMPF-bathe Obl river
'[The one that is bathing in the river] is gentle'
- b. K<um>a-kain ng bulaklak [ang nali-ligo sa ilog].
AV.IMPF-eat Gen flower Nom AV.IMPF-bathe Obl river
'[The one that is bathing in the river] eats flowers.'
- c. T<in>awang ng magsasaka [ang nali-ligo sa ilog].
<PFV>call Gen farmer Nom AV.IMPF-bathe Obl river
'The farmer called (out to) [the one that is bathing in the river]' (Hsieh 2020)

Since the determiner *ang* marks DP, it can be seen on a subject of copula clauses as in (3a); moreover, only the headless relative clause in the argument position can be marked with *ang* as in (3b, c). This case property of *ang* explains why the presupposition of a DP focus—and not that of a non-DP focus—needs the obligatory *ang* marking. This signals that the presupposition of the DP focus is an argument (subject) of the copula clause, while that of the non-DP focus is not.

Other data with the clitics in Tagalog also help us distinguish the two types of focus constructions. It is observed that the clitics must occur after the first constituent in a clause (cf. Kroeger 1993, Aldridge 2002, Hsieh 2020).

- (4) a. Alam ni Tom [na niluto ko sa kusina noong Lingo ang
Pres.know Gen Tom Lk PV.PFV-cook 1sg.gen Obl kitchen last Sunday Nom
sisig]
sisig

‘Tom knows that I cooked sisig in the kitchen last Sunday’

- b.* Alam ni Tom [na niluto sa kusina noong Linggo ko ang
 Pres.know Gen Tom Lk PV.PFV-cook Obl kitchen last Sunday 1sg.gen Nom
 sisig]
 sisig
 ‘Tom knows that I cooked sisig in the kitchen last Sunday’

The clitic *ko*, which functions as a first-person pronoun, appears after the clause-initial verb, as shown in (4a). Conversely, the sentence in (4b) is ungrammatical when the clitic is placed after the constituents, such as noun phrases, and the clitic *ko* is located not after the first constituent of the clause. It is assumed that these kinds of clitics in Tagalog must encliticize onto the first constituent of a clause (second-position clitics). Furthermore, the domain of clitic placement is clause-bound, as in (5).

- (5) Tuma-takbo {**ko*} [_{RC} ang babae=ng [k<in>ausap {*ko*} kanina]]
 AV.Impf-run 1sg.Gen nom woman=Lk [<PV.Pfv>talk 1sg.Gen earlier]
 ‘The woman [who I spoke to earlier] is running’ (Hsieh 2020)

The clitic can appear inside the relative clause but cannot appear outside of the base-generated clause. With this in mind, let us turn to the focus constructions in (6).

- (6) a. DP
 [Ang pusa=ng ito] {**ko*} [_{RC} ang i-b<in>igay {*ko*} kay Inday.]
 Nom cat=LK this 1sg.Gen Nom CV-PFVgive 1sg.Gen Obl Inday
 ‘What I gave to Inday was this cat’
 b. non-DP
 [Kay Inday] {*ko*} i-b<in>igay {**ko*} ang pusa=ng ito.
 Obl Inday 1sg.Gen CV-PFVgive 1sg.Gen Nom cat=LK this
 ‘It was to Inday that I gave this cat’ (Hsieh 2020)

In the DP focus in (6a), clitics must follow the embedded predicate. This pattern of clitic placement is parallel to what we saw in (5) with relative clauses, suggesting that the focused DP appears outside the domain of the clitic placement in the presuppositional clause. In contrast, in the non-DP focus in (6b), clitics must follow the focused constituent. This behavior implies that the focused non-DP appears in the same domain as the clitics in a clause.

Finally, the test to distinguish DP foci and non-DP foci comes from weak crossover effects. According to Richards (1991), weak crossover effects appear with non-DP foci but not with DP foci.

- (7) a. DP foci
 Sino₁ ang b<in>igy-an ng kanya_{1/2}=ng ama ng pera?
 Who.Nom Nom <PFV>give-LV Gen 3sg.Obl=LK father Gen money
 Lit. ‘The one who their_{1/2} father give the money to is who₁?’
 b. non-DP foci
 Kanino₁ i-b<in>igay ng kanya_{*1/2}=ng ama ang pera?
 Who.Obl CV-<PFV>give Gen 3sg.Obl=LK father Nom money
 Lit. ‘Whom₁ did their_{*1/2} father give the money to?’ (Hsieh 2020)

The third-person plural pronoun is located in between the focus phrase and its base position, which is its possible trace position. The weak crossover effect occurs when a movement takes place over a co-indexed pronoun, which makes the sentence ungrammatical. In (7a), the pronoun can refer to the focus phrase “*who*,” while the same interpretation is not allowed in (7b), and the only possible reference of the pronoun is the NP, which appears in the context outside of the same sentence. This signals that the weak crossover effect can be observed only with the non-DP focus, and the movement of the focus takes place not in the DP focus but in the non-DP focus. The interim summary is illustrated below.

(8) Single Focus

- a. Pseudo cleft (DP)
[DP(Pred) Foc] [DP/Subj ang [CP V...]]
- b. Focus Fronting (non-DP)
[CP [PP/AP Foc]_i [IP V ... *t*₁ ...]]

3. Multiple foci

In this section, we introduce some data of multiple foci. As with the single non-DP elements, Otani (2021) observes that two non-DP elements can move to the focus position, as in (9).

- (9) a. [Ni-luto] ko ang sisig sa kusina noong Linggo.
PV.PFV-cook 1sg.Gen Nom sisig Obl kitchen last Sunday
'I cooked sisig in the kitchen last Sunday.'
- b. [Sa kusina₁ noong Linggo₂] ko ni-luto ang sisig *t*₁ *t*₂.
Obl kitchen last Sunday 1sg.Gen PV.PFV-cook Nom sisig
'It was [in the kitchen last Sunday] that I cooked sisig.'
- c. [noong Linggo₂ Sa kusina₁] ko ni-luto ang sisig *t*₁ *t*₂.
last Sunday Obl kitchen 1sg.Gen PV.PFV-cook Nom sisig
'It was [in the kitchen last Sunday] that I cooked sisig.'

The sentence in (9a) shows the underlying structure, and two elements move to the focus position in (9b). The word order of the focus phrases can be reversed, as shown in (9c). The important thing is that multiple foci do not have a DP focus, as in (10).

- (10) *[Ang sisig ni Tom]₁ [ang ni-luto *t*₂ sa kusina noong Linggo].
Nom sisig Gen Tom Nom PV.PFV-cook Obl kitchen last Sunday
Lit. 'What cooked in the kitchen last Sunday was Tom sisig.'

The agent (*ni Tom*) and theme (*ang sisig*) of the verb (*ni-luto*) are focused, and the sentence is ungrammatical. More than one element is not allowed to appear in a focus position in the DP foci. Moreover, multiple foci become ungrammatical with the single DP element in the focus position together with a single non-DP element, as in (11).

- (11) *Kay Pedro₁ ang pera₂ iniwan ni Maria *t*₁ *t*₂
Obl Pedro ang money leave.TT.PRF. ng Maria
Lit. 'It was with Pedro₁ money₂ that Maria left *t*₁ *t*₂' (Mercado 2004)

In (11), a DP and a non-DP are located in a focus position, and this sentence is ungrammatical, which indicates that multiple foci target only non-DP phrases in Tagalog. With multiple foci, one may wonder whether this construction is derived by a double application of a simple leftward movement. However, we show data problematic for the analysis of double application of movement, as seen in (12).

- (12) a. Single non-DP focus out of a relative clause island
 *[**Sa kusina₁**]kilala ni Tom [RC ang lalaki=ng nag-luto ng sisig *t₁*
 Obl kitchen know Gen Tom [RC Nom man=Lk AV.PFV-cook Gen sisig
 noong Linggo]
 last Sunday]
 Lit: '[In the kitchen₁] Tom knows [the man who cooked sisig *t₁* last Sunday].'
 b. Multiple non-DP foci out of a relative clause island
 [**sa kusina₁ noong Linggo₂**] kilala ni Tom [RC ang lalaki=ng
 Obl kitchen last Sunday know Gen Tom Nom man=C
 nag-luto ng sisig *t₁ t₂*]
 AV.PFV-cook Gen sisig
 Lit: '[In the kitchen₁] [last Sunday₂] Tom knows [the man who cooked sisig *t₁ t₂*].'

In (12a), the PP *sa kusina* is extracted from a relative clause, causing ungrammaticality. In contrast, when the two PPs *sa kusina* and *noong Linggo* move out of the relative clause, the sentence is acceptable, as shown in (12b). The above data suggest that the single non-DP focus construction in Tagalog shows island effects, while the multiple foci do not.

One may also wonder whether the multiple foci are base-generated in sentence-initial position rather than through movement from the island clause. However, we show supporting evidence indicating that the multiple focused elements do undergo movement. The example is depicted below with the reflexive *sarili* 'self'.

- (13) a. Nag-luto si Tom₁ ng adobo [para sa kanyang sarili₁][noong Linggo].
 AV.PFV-cook Nom Tom Gen adobo [for Obl Poss self] [last Sunday]
 Lit: 'Tom₁ cooked adobo [for himself₁] [last Sunday].'
 b. [Para sa kanyang sarili₁][noong Linggo] nag-luto si Tom₁ ng adobo.
 [for Obl Poss self] [last Sunday] AV.PFV-cook Nom Tom Gen adobo
 Lit: 'It was [for himself₁] [last Sunday] that Tom₁ cooked adobo.'

In the base structure (13a) without any movement, the reflexive *sarili* can refer to *Tom*. The possibility of co-reference between them shows that the antecedent should c-command the reflexive. In (13b), although the reflexive proceeds *Tom*, *Tom* can become an antecedent for the reflexive. If the focus phrases were base-generated at the sentence-initial position, one would incorrectly predict that co-reference is impossible, contrary to fact. The availability of the bound reading indicates that the focus elements are connected to their original position by means of movement, yielding reconstruction effects. (13b) shows that the focus elements are related with their original positions by movement.

In this section, we overviewed the properties of multiple focus in Tagalog. In the next section, we attempt to explain the properties by adopting a double sideward movement analysis (Takano 2020).

4. Double Sideward Movement Analysis

So far, we have shown the impossibility of the analysis for multiple foci examined in the previous section. Following Takano (2020), we propose that the Tagalog multiple foci are derived via External Merge (EM) instead of Internal Merge (IM) to capture these idiosyncratic behaviors of the multiple foci. Takano (2020) observes that multiple foci in Japanese clefts are derived from double sideward movement (cf. Hornstein 2001). This is because the Japanese multiple clefts do not obey the island effect, while the focused phrases show reconstruction effects, indicating that the phrases do undergo movement, as with the data in Tagalog. The Japanese counterparts are illustrated below. Note that no distinction is made between DPs and non-DPs in Japanese. We discuss the difference between languages in Section 5.

(14) a. Single focus

[Presupposition Ken-ga Mari-ni ageta no]-wa [Focus hon-o] da
 [Ken-Nom Mari-Dat gave NM]-Top book-Acc Cop
 ‘It is [a book] that [Ken gave to Mari]’

b. Multiple foci

[Presupposition Ken-ga ageta no]-wa [Focus Mari-ni hon-o] da
 [Ken-Nom gave NM]-Top Mari-Dat book-Acc Cop
 Lit. ‘It is [a book to Mari] that [Ken gave]’

In (14a), which is a single-focus construction, it is assumed that the focus phrase *hon* ‘book’ is base-generated in the presupposition clause before the movement to the focus position (Hoji 1987, Fukaya and Hoji 1999, Kuroda 1999, Hiraiwa and Ishihara 2002). (14b) shows the possibility of multiple DPs in a focus position in Japanese (Koizumi 1995, 2000, Takano 2002, Hiraiwa and Ishihara 2002, 2012). As with the behavior of Tagalog multiple foci, Takano (2020) reports that even though Japanese multiple focus elements do undergo movement from a relative clause, Japanese multiple focus is immune to the island effect. Let us consider the following examples:

(15) Island effect

a. Single cleft

?*[Ken-ga [hon-o ageta hito]-o sagasiteiru no]-wa Masao-ni da
 [Ken-Nom[book-Acc gave person]-Acc searching NM]-Top Masao-Dat Cop
 Lit. ‘It is Masao that Ken is looking for a person who gave a book’

b. Multiple clefts

[Ken-ga [Mari-ga ageta toiu uwasa]-o sinjiteiru no]-wa Masao-ni
 [Ken.-Nom [Mari-Nom gave C rumor]-Acc believe NM]-Top Masao-Dat
 hon-o da.
 book-Acc Cop
 Lit. ‘It is [to Masao a book] that Ken believes the rumor that Mari gave’

(16) Reflexive “*jibunjishin* (myself)”

[Ken-ga [daremo₁-ga ageta toiu uwasa]-o sinjiteiru no]-wa jibunjishin₁-no
 [Ken-Nom[everyone-Nom gave C rumor]-Acc believe NM]-Top self-Gen
 hahaoya-ni hon-o da
 mother-Dat book-Acc Cop
 Lit. ‘It is [to self₁’s mother a book] that Ken believes the rumor that everyone₁ gave’

(Takano 2020)

While the single-focus construction in (15a) is ungrammatical with the extraction out of the island, the multiple-focus construction in (15b) is grammatical. As seen in (16), the reflexive *jibunjishin* ‘myself’ is located at a higher position than the antecedent *daremo* ‘everyone’, but the reflexive has a co-indexed interpretation with its antecedent. The availability of the bound reading indicates that the focus element *zibun-no hahaoya-ni* ‘self-GEN mother-DAT’ has a relationship with its base-generated position by means of movement. From these data, Takano (2020) argues that Japanese multiple clefts are derived by double sideward movement. It is generally assumed that a standard movement involves IM, while a sideward movement is related to EM. The point is that only IM exhibits an island sensitivity.

Following Takano (2020), we claim that the analysis of double sideward movement can apply not only to Japanese multiple clefts but also to multiple foci. We show how multiple foci are derived below.

- (17) Target Sentence
 sa kusina₁ noong Linggo₂ kilala ni Tom [Ang lalaki=ng nag-luto ng
 Obl kitchen last Sunday Pres.know Gen Tom [Nom man=LK AV.PFV-cook ng
 sisig *t*₁ *t*₂]
 sisig]
 Lit. ‘It was in the kitchen last Sunday that Tom knows the man who cooked sisig’

- (18) Derivation of Double Sideward Movement
 a. SO1 = [_{VP} cooked ng-sisig Obl-kitchen last Sunday]
 b. SO1 = [_{VP} cooked ng-sisig Obl-kitchen last Sunday]
 SO2 = [_{NP} Obl-kitchen last Sunday] (Double Sideward Movement)
 c. SO1 = [_{FocP} [Obl-kitchen last Sunday] know Tom...] (Merge of SO1 and SO2)

The derivation of multiple foci in (17) is illustrated in (18). When the VP in the relative clause is created as in (18a), EM applies to *Obl-kitchen* and *last Sunday*. As a result, a new single constituent (SO2; [*Obl-kitchen, last Sunday*]) is formed, while *Obl-kitchen* and *last Sunday* leave their copy inside SO1, as shown in (18b). Since the two elements go to another syntactic objects, Takano calls this movement double sideward movement. Then, when SO1 is built up to FocP (CP), the single constituent (SO2) externally merges to the FocP of SO1, as in (18c). The point here is that the double sideward movement of the two elements does not cross a relative clause; therefore, it does not induce island effects.

Under the analysis of the double sideward movement, we can explain the reason why a single non-DP element cannot be extracted from a relative clause. According to Takano, the crucial assumption on double sideward movement is that at least two syntactic elements must be targeted for it in the same domain. Double sideward movement involves External Merge, which is a merger of two independent syntactic objects. Since single-focus constructions involve only one element, double sideward movement cannot be applied to single-focus constructions, which is why a single non-DP element cannot be extracted from relative clauses, while multiple non-DPs can undergo movement from islands.

Furthermore, Takano assumes that multiple foci must constitute a single constituent. In Tagalog multiple foci, it can be observed that the multiple non-DPs in a focus position become a single constituent as below:

- (19) Single Focus
 Ni-luto ko ang sisig sa kusina noong Linggo.
 PV.PFV-cook 1sg.ng Nom sisig Obl kitchen last Sunday
 ‘I cooked sisig in the kitchen last Sunday.’
- (20) Multiple Foci
- a. [Sa kusina noong Linggo] ko ni-luto ang sisig.
 [Obl kitchen last Sunday] 1sg.ng PV.PFV-cook Nom sisig
 Lit. ‘It was in the kitchen last Sunday that I cooked sisig.’
 - b. [noong Linggo Sa kusina] ko ni-luto ang sisig.
 [last Sunday Obl kitchen] 1sg.ng PV.PFV-cook Nom sisig
 Lit. ‘It was last Sunday in the kitchen that I cooked sisig.’

As with Section 2, we utilize the second position clitic *ko*, which must occur after the first constituent in the clause. While the sentence with single focus in (19) shows that the clitic must appear after the sentence-initial focus phrase, this can appear only after the multiple foci in (20). This signals that the multiple PPs (APs) “*Obl kitchen last Sunday*” in the sentence-initial focus position form a single constituent; thus, the clitic attaches to this single constituent. With this analysis, we can explain the idiosyncratic behaviors of the multiple foci, including the absence of the island effect and the reconstruction effect.

5. Further Research

Takano (2020) proposes that multiple elements in a focus position are allowed only in a language that does not have obligatory ϕ -feature agreement between arguments and functional heads. Although Japanese seems to be similar to Tagalog regarding the disappearance of obligatory ϕ -feature agreement and of island effects in multiple foci, there is a striking difference: Japanese permits multiple DPs in a focus position, while Tagalog does not. To explain the issue, following Béjar and Massam (1999) and Hsieh (2020), we propose that whether multiple DPs can appear in a focus position depends on the availability of Multiple Case Checking (MCC). In some languages such as Hungarian and Niuean, it appears that a DP that must be assigned abstract Case at a base position must receive additional Case at a landing site when it undergoes movement. While a DP in Tagalog permits MCC (Hsieh 2020), a DP in Japanese does not. Assuming that focus position in Tagalog is an A'-position where a DP cannot be assigned an additional Case, the two DPs in Tagalog cannot move to the focus position. On the other hand, the movement of two DPs to the focus position is possible in Japanese because the DPs move with a Case that is assigned at a base position. Thus, the availability of multiple foci can be explained by our proposal, assuming Takano's (2020) generalization.

6. Summary

In this paper, we reported the novel observation on the focus construction in Tagalog. Like Japanese focus constructions (e.g., Cleft, Right dislocation, and Sluicing), Tagalog multiple foci have some idiosyncratic behaviors in comparison to the single-focus construction. One is the absence of the island effect, which means that multiple foci are not derived from simple leftward movement; the other is the reconstruction effect, which indicates the presence of the trace of the movement. To capture this property, the movement approach must be avoided while the movement trace still exists. Following Takano (2020), we propose the double sideward movement approach, which involves

External Merge and not Internal Merge. The island effect is a constraint on internal merge; thus, this operation does not cause ungrammaticality as in the case of the single focus. In addition, this is a kind of movement that leaves a trace in its base position. Thus, different properties between single focus and multiple foci can be captured by adopting the double sideward movement approach.

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Weakening cartography: On the formal foundation of functional hierarchies

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1. Introduction

Syntactic cartography (henceforth cartography) is a branch of generative syntax about the fine-grained hierarchical organization of functional categories. According to Shlonsky and Bocci (2019), its aim “is to draw maps of the structures of syntactic constituents, characterize their functional structure, and study the array and hierarchy of syntactically relevant features.” The cartographic approach to natural language syntax grew out of generativists’ interest in the 1990s in X’-style functional projections and their “splitting,” such as Pollock’s (1989) split-IP and Rizzi’s (1997) split-CP. For recent overviews, see the above-mentioned Shlonsky and Bocci (2019) as well as Rizzi and Cinque (2016).

My goal in this short paper is to revisit the formal foundation of cartography from a mathematical order-theoretic perspective. My discussion is mainly conceptual, but I hope the results here can help prepare the ground for more empirical inquiries in future research. Following this introduction, I will first examine the assumptions of classical cartography in a formally explicit way (§2) and then discuss two of its design problems (§3). After that, I will review two existing studies attempting to “save” cartography by weakening its axioms (§4) and present a new proposal combining their main ideas (§5). Finally, I will briefly discuss the bigger picture of my proposal (§6).

2. Classical cartography, formally

By “classical cartography,” I mean the framework established in the seminal works mentioned above. On the classical view, functional hierarchies are categorial sequences, as in (1).

- (1) a. [(Integrated) nonrestrictive relative clauses [Universal quantifiers [Demonstratives [...
[Numeral classifiers [... [Material AP [Classificatory APs [Proper NP [**Common NP**]]]]]]]]

b. [Force [Top* [Int [Top* [Foc [... [Mood_{eval} [Mood_{evid} [Mod_{epis} [Tense_{pst/fut} [Mod_{nec} [Aspect_{hab}
[...] Voice_{pass} [**Verb**]]]]]]]]]]]]]]]]]]]]] (adapted from Rizzi and Cinque 2016)

Each categorial sequence of this sort is the extended projection of a lexical category. Thus, it is usually assumed that there is a cartographic hierarchy for each of the four major parts of speech: V, N, A, and P. Based on this assumption, we can work with the following formal definition:

Definition 1. Each functional hierarchy $\mathbf{FH}_{\mathcal{A}}$ is a sequence given rise to by a binary relation $\mathbf{R}_{\mathcal{A}}$ on the categories of a major part of speech $\mathcal{A}$.

The binary relation in question is usually taken to be functional selection. Thus, for two categories X

and Y of the major part of speech $\mathcal{A}$, $\mathbf{R}_{\mathcal{A}}(X, Y)$ holds if and only if X functionally selects Y in syntactic derivation. This selection-based binary relation is not free but must obey the axioms below based on the assumptions of classical cartography:

- (2) a. Irreflexivity: $\forall X \in \mathcal{A}, \neg \mathbf{R}_{\mathcal{A}}(X, X)$
- b. Asymmetry: $\forall X, Y \in \mathcal{A}, \mathbf{R}_{\mathcal{A}}(X, Y) \Rightarrow \neg \mathbf{R}_{\mathcal{A}}(Y, X)$
- c. Transitivity: $\forall X, Y, Z \in \mathcal{A}, \mathbf{R}_{\mathcal{A}}(X, Y) \wedge \mathbf{R}_{\mathcal{A}}(Y, Z) \Rightarrow \mathbf{R}_{\mathcal{A}}(X, Z)$
- d. Totality: $\forall X, Y \in \mathcal{A}, \mathbf{R}_{\mathcal{A}}(X, Y) \vee \mathbf{R}_{\mathcal{A}}(Y, X)$

These axioms together make a cartographic hierarchy into a *strict total order*. In particular, transitivity has been heavily relied on in the development of classical cartography, irreflexivity is self-evident, and totality has always been taken for granted. Asymmetry requires a bit more clarification, since flexibly positioned categories have been observed since the early days of cartography, such as the iterating Top^* in (1b). However, the asymmetry axiom can be maintained to the extent that closer examination can reveal subtle syntacticosemantic distinctions between iterating categories, in the same way as the multiple Split-IP categories in (1b) are assigned distinctive subscripts. For instance, Benincà and Poletto (2004) argue that the multiple Top^* s above are in fact nonidentical.

3. Design problems of classical cartography

Classical cartography is problematic in design in multiple aspects. In this section, I focus on two most serious problems: transitivity failure (§3.1) and totality failure (§3.2).

3.1. Transitivity failure

Transitivity failure is a problem of classical cartography that has been repeatedly brought up in the literature. This failure occurs when given categories X, Y, Z of a major part of speech $\mathcal{A}$, $\mathbf{R}_{\mathcal{A}}(X, Y)$ and $\mathbf{R}_{\mathcal{A}}(Y, Z)$ do not necessarily lead to $\mathbf{R}_{\mathcal{A}}(X, Z)$. For example, Nilsen (2003) observes that in Norwegian, while the adverbs *muligens* ‘possibly’ and *alltid* ‘always’ respectively precede and follow the negation adverb *ikke* ‘not’, they can appear in the reversed order between themselves, as in (3a–c). This situation is formally represented in (3d).

- (3) a. *Ståle har muligens ikke / *ikke muligens spist hvetekakene sine.* [Norwegian]
S has possibly not eaten the-wheaties his
‘Stanley possibly hasn’t eaten his wheaties.’
- b. *Ståle har *alltid ikke / ikke alltid spist hvetekakene sine.*
S has not always eaten the-wheaties his
‘Stanley hadn’t always eaten his wheaties.’
- c. *Dette er et morsomt, gratis spill hvor spillerne alltid muligens er et klikk fra å vinne \$1000!*
this is a fun free game where the-players always possibly are one click from to win \$1000
(Nilsen 2003: 10–11)
‘This is a fun, free game where you’re always possibly a click away from winning \$1000!’
- d. $\mathbf{R}_V(\mathbf{H}(\text{possibly}), \text{Neg}) \wedge \mathbf{R}_V(\text{Neg}, \mathbf{H}(\text{always})) \wedge \mathbf{R}_V(\mathbf{H}(\text{always}), \mathbf{H}(\text{possibly}))$
($\mathbf{H}(e)$ is the head of the projection hosting the expression e , say, as its Spec)

Similarly, van Craenenbroeck (2006) observes that in Venetian, while embedded *wh*-phrases and

phrases that have gone through clitic left dislocation (CLLD) respectively precede and follow the complementizer *che* ‘that’, they can only appear in the reversed order between themselves regardless of the position of the complementizer, as in (4a–c). Assuming that *wh*-phrases, *che*, and CLLD-ed phrases are respectively hosted by Focus, C, and Topic projections, we can formally state this situation as (4d).

- (4) a. *Me domando chi che / *che chi* Nane ga visto al marcà. [Venetian]
 me I.ask who that Nane has seen at.the market
 ‘I wonder who Nane saw at the market.’
 b. *Me dispiase che a Marco / *a Marco che i ghe gabia ditto cussi.*
 me is.sorry that to Marco they to.him have.SUBJ told so
 ‘I am sorry that they said so to Marco.’
 c. **Me domando a chi (che) el premio Nobel (che) i ghe lo podarà dar.*
 me I.ask to who that the prize Nobel that they to.him it could give
 ‘I wonder to whom they could give the Nobel Prize.’ (van Craenenbroeck 2006: 53–54)
 d. $R_V(\text{Focus}, C) \wedge R_V(C, \text{Topic}) \wedge R_V(\text{Topic}, \text{Focus})$

An additional case of transitivity failure is that in the split-IP domain of Imbabura Quechua, which is reported in Bruening (2019). In this head-final language, while the desiderative suffix *-naya-* and the progressive suffix *-ju-* respectively precede and follow the first-person suffix *-wa-*, they can appear in two different orders themselves, as in (5a–b). Assuming that the three morphemes respectively head three projections DesP, Agr₁P, and ProgP, we can formally state this situation as (5c).

- (5) a. *miku-naya-wa-ju-n* [Imbabura Quechua]
 eat-DES-1-PROG-3
 ‘I was wanting to eat.’
 b. *miku-ju-naya-wa-n*
 eat-PROG-DES-1-3
 ‘I wanted to be eating.’ (adapted from Bruening 2019: 4)
 c. $R_V(\text{Prog}, \text{Agr}_1) \wedge R_V(\text{Agr}_1, \text{Des}) \wedge R_V(\text{Prog}, \text{Des}) \wedge R_V(\text{Des}, \text{Prog})$

Note that due to the head-finality of Imbabura Quechua, the linear affixal orders in (5a–b) are the mirror image of the selection-based binary relation instances in (5c).

One could potentially argue away some or even all of the documented cases of transitivity failure by resorting to additional derivational means (e.g., van Craenenbroeck 2006) or a more dynamic view of syntactic derivation (e.g., Zwart 2009). But the problem of the transitivity axiom is arguably more than just counterexamples. Its deeper trouble, which cannot be argued away, is that selection itself is not a transitive relation. This is clearly reflected in the Imbabura Quechua case above, where *-ju-naya-*, *-naya-wa-*, and *-ju-naya-wa-* are all allowed, but not **-ju-wa-*. This means that while $H(-wa-)$ selects $H(-naya-)$ and $H(-naya-)$ selects $H(-ju-)$, $H(-wa-)$ does not select $H(-ju-)$. If selection itself is nontransitive, the binary relation defined by it cannot be transitive either.

Related to the above is the “problem of plenitude,” as Larson (2021) puts it. Due to the inherent nontransitivity of functional selection, cartographic hierarchies can only exist in their full forms, with no omissible or skippable categories. But this gives rise to a plenitude of empty, uninterpreted categories in most concrete derivations. Larson illustrates this with the phrase *large wide board*, which must have the verbose structure in (6a) rather than the truncated structure in (6b).

- (6) a. $[_{\text{sizeP}} \text{large} [_{\text{lengthP}} [_{\text{heightP}} [_{\text{speedP}} [_{\text{depthP}} [_{\text{widthP}} \text{wide} [_{\text{NP}} \text{board}]]]]]]]]$
 b. $*[_{\text{sizeP}} \text{large} [_{\text{widthP}} \text{wide} [_{\text{NP}} \text{board}]]]]$ (adapted from Larson 2021: 249)

Given the empirical commonality of transitivity failure and the counterminimalist nature of the problem of plenitude, the most natural conclusion to draw here is that either the transitivity axiom is wrong, or the selection-based definition of the binary relation **R** is.

3.2. Totality failure

While previous concerns about the formal foundation of cartography mostly target the transitivity axiom, Song (2019: Chapter 5) further notices that the totality axiom in classical cartography is also problematic, based on the observation that some categories belong to the same functional hierarchy but never co-occur by design and hence cannot be part of the binary relation defining their ambient hierarchy.

A familiar scenario of this sort is the alternation between ϕ -complete and defective categories in Chomsky (2001), such as T_{comp} vs. T_{def} and $v_{\text{comp}} (= v^*)$ vs. $v_{\text{def}} (= v)$. A ϕ -complete category and its defective counterpart cannot co-occur in the same projection line—that is, without functional hierarchy—restarting strategies like subordination. See (7) for an illustration (for expository convenience I omit the subscript “comp” for ϕ -complete categories).

- (7) a. $[_{\text{TP}} \text{the committee } T [_{v^*P} v^* \text{awarded several prizes}]]$
 b. $[_{\text{TP}} \text{several prizes}_i T [_{vP} \text{are awarded } t_i]]$
 c. $[_{\text{TP}} \text{several prizes}_i T [_{vP} \text{are likely } [_{T_{\text{def}}P} \text{to } [_{vP} \text{be awarded } t_i]]]]$ (based on Chomsky 2001: 7)

As we can see, only one of v^* and v can appear in a simple monoclausal structure like that in (7a) or (7b). In the biclausal structure in (7c), there are both T and T_{def} , but these are in two separate projection lines, one in the matrix clause and the other in the infinitival clause. Thus, for any category, only one of its ϕ -complete and defective versions can be fit into a classical cartographic hierarchy.

Another counter-totally scenario in minimalist syntax involves “flavored” categorizers, in the sense of Distributed Morphology (Halle and Marantz 1993 et seq.). See (8) for some examples.

- (8) a. Folli and Harley (2005): v_{do} , v_{cause} , v_{become}
 b. Lowenstamm (2008): n_{I} (MASC), n_{II} (FEM), n_{III} (NEU), n_{IV} (other)

To the extent that these are bona fide categorizers—namely, functional categories that merge with and categorize roots—they cannot co-occur in the same projection line, since each root can only be categorized once in the same categorization cycle or workspace.¹ This situation is clearer in (8b), for a noun can only be of a single gender in any specific derivation. Take German for example.

- (9) $[_{N_{\text{masc}}} n_{\text{I}} \sqrt{\text{ZUG}}]$ ‘train’, $[_{N_{\text{fem}}} n_{\text{II}} \sqrt{\text{WAND}}]$ ‘wall’, $[_{N_{\text{neu}}} n_{\text{III}} \sqrt{\text{BUCH}}]$ ‘book’

Some German nouns have more than one gender, with different senses, but even those nouns can only have a single gender/sense in a specific use. For instance, it is impossible to use *See* simultaneously as masculine (meaning ‘lake’) and feminine (meaning ‘sea’). Thus, the four flavors of n in (8b) are in strictly complementary distribution and cannot co-exist in the same classical cartographic hierarchy.

¹ On this view, recategorization scenarios like $category_{N-ize_{V-er_N}}$ necessarily involve multiple cycles.

Things are less clear in (8a), since the various little ν s are often not used as true categorizers (in that they do not categorize roots) in the literature but merely employed to introduce eventuality layers (see, e.g., Cuervo 2003). Song (2019: 164) calls this the “dummy verbalizer pitfall.” Such eventuality-introducing categories can be fit into the same functional hierarchy, but then “categorizer” becomes a misnomer, and an alternative model like that in Ramchand (2008) is methodologically preferable.²

In sum, however the binary relation $\mathbf{R}$ for a cartographic functional hierarchy is defined, it should have room for alternating categories like the above. Formally speaking, such categories are *incomparable elements* in a binary relation:

$$(10) \exists X, Y \in \mathcal{A}, \neg \mathbf{R}_{\mathcal{A}}(X, Y) \wedge \neg \mathbf{R}_{\mathcal{A}}(Y, X)$$

4. Saving by weakening

Since both design problems mentioned above are about the nature of the binary relation underlying functional hierarchies, to find solutions we can revisit the binary relation itself. And given the shared bane of the two failures—namely, some axiom is too restrictive—the revisiting in question should be some sort of weakening. Two attempts have been made in the literature to “save” cartography in this way. I briefly review them in this section.

4.1. Song (2019): partial order

Song (2019) weakens the binary relation from a strict total order to a *partial order*.

Definition 2. A partial order $\leq$ on a set P is a binary relation contained in $P \times P$, such that

- $\forall p \in P, p \leq p$ (reflexivity),
- $\forall p, q, r \in P$, if $p \leq q$ and $q \leq r$, then $p \leq r$ (transitivity),
- $\forall p, q \in P$, if $p \leq q$ and $q \leq p$, then $p = q$ (antisymmetry).

Comparing these axioms with those in (2), we can see that Song (2019) has removed totality, toggled irreflexivity, and changed asymmetry to antisymmetry. Apart from the third move, which is not triggered by the problems in §3 but is a concomitant of the partial order view itself (and in effect bans order-theoretic cycles from functional hierarchies), both the first and the second move directly address the problems in §3.

The removal of totality is meant to allow cartographic hierarchies to accommodate incomparable categories, as illustrated in Figure 1, where X , Y , Z , and W are categories, and the subscripts a and b mark two complementary flavors of Y . As we can see, both Y_a and Y_b are normally ordered with respect to other categories in the hierarchy, yet they are unordered with respect to each other. Importantly, this scope-based hierarchy should be understood as a structure in the ontology of categories rather than a syntactic object assembled in concrete derivations. This shift of perspective is key to Song’s model.

² Ramchand simply calls the eventuality layers Init, Proc, and Res, without using the term “categorizer” at all.

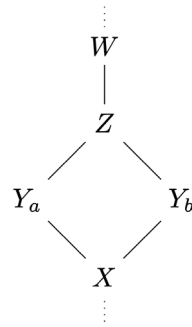


Figure 1 A functional hierarchy with flavored categories (Song 2019: 39)

The toggling of irreflexivity also follows from said perspective shift, which is more exactly a change in the defining criterion for the binary relation underlying cartographic functional hierarchies—from a selection-based perspective to a scope-based one. The definition below is based on Song (2019: 146).

Definition 3. For any categories X , Y of a major part of speech $\mathcal{A}$, if Y functionally selects X in syntactic derivation, then X can fall in the functional selectional scope of Y in the background ontology of syntactic categories, written $X \sqsubseteq Y$. The latter criterion defines functional hierarchies.

The notation $\sqsubseteq$ can be read “has a scope smaller than or equal to.” The change of perspective may sound like a mere rewording, but it frees us from the shackles of selection. First, since any category has a scope (smaller than or) equal to itself, $\sqsubseteq$ is naturally reflexive. Second, since scoping is just an ontological/ representational concept but not a derivational operation (unlike selection), it is safely transitive and free from the problem of plenitude. Thus, the structure in (6b), repeated below as (11), is perfectly allowed in a scope-based version of cartography.

(11) [_{sizeP} large [_{widthP} wide [_{NP} board]]]

However many categories there are between *sizeP* and *widthP* in the adjectival hierarchy, the statement $\text{width} \sqsubseteq \text{size}$ (i.e., that *width* has a scope smaller than or equal to *size*) independently holds, without the mediation of those intervening categories.

As mentioned above, the key feature of Song’s (2019) model is the explicit separation of derivational and ontological issues in syntactic theory. Another feature of this model is that it has a unified defining criterion ($\sqsubseteq$) for all **R**s, with the different cartographic hierarchies merely differing in the major part of speech they belong to. In addition, each **R** in this model is defined for an entire cartographic hierarchy.

4.2. Larson (2021): total preorder

While Song’s (2019) model still largely keeps to the basic format of classical cartography, Larson’s (2021) model deviates from that format to a much greater degree. Larson shifts the locus of the order relations underlying cartographic hierarchies from categories to features, which do not project their own heads but are collectively borne by a few pivotal heads (e.g., *C*, *D*). Each such collection of features is equipped with a *total preorder*, which is again weaker than the strict total order in classical cartography.

Definition 4. A total preorder $\leq$ on a set P is a binary relation contained in $P \times P$, such that

- $\forall p \in P, p \leq p$ (reflexivity),
- $\forall p, q, r \in P$, if $p \leq q$ and $q \leq r$, then $p \leq r$ (transitivity),
- $\forall p, q \in P, p \leq q$ or $q \leq p$ (totality).

Larson's toggling of the irreflexivity axiom in classical cartography also follows from a change in the defining criterion for the order relation. Specifically, he also abandons the selection-based view in favor of a safely transitive criterion (such that no problem of plenitude arises). But unlike Song, who merely redefines selection as selectional scope comparison, Larson leaves the ordering criterion open and relativizes it to each cartographic zone (e.g., CP, IP). For instance, the ordering criterion for the adjectival zone is cognitive subjectivity (à la Scontras et al. 2017): the less subjective an adjective is, the closer it is to the head noun, and so the lower it is in its ambient cartographic hierarchy. See (12) for an illustration.

(12) $D_{\{... ([color]/[material], [size])...\}}$

(adapted from Larson 2021: 257/262)

Larson (2021) uses the parenthesis notation (a, b, c) for the preorder $a \leq b \leq c$ and uses the slash notation a/b for $a \leq b \wedge b \leq a$, which is made possible by the absence of asymmetry/antisymmetry in this model. The ordered feature set in (12), which Larson calls a “proset,” gives rise to an actual adjectival sequence (e.g., *a small furry gray mouse*) by a series of derivational steps involving D and its light counterpart d , which are procedurally ordered by virtue of the proset. I abstract away from the technical details due to space limitations. See (13) for another example.

(13) $E_{\{... ([fin], [top]/[foc], [force])...\}}$

(adapted from Larson 2021: 264)

These are the split-CP categories from Rizzi (1997), recast in Larson (2021) as features in a proset borne by the pivotal category E (for “expression”), which Larson uses instead of the conventional label C . This proset-bearing E , together with its light counterpart e , gives rise to the cartographic sequence of left-periphery elements. Note that while the cartographic features themselves live in some fixed-length orders in the background ontology, the actual prosets occurring in concrete derivations are not invariant. Although Larson does not make this fully clear, what feature is included and what is not is presumably a matter of lexical selection (at the lexical array-forming stage). What matters for the model is that any features selected into the prosets would fall in their predetermined order in the ontology.

A major advantage of Larson's (2021) model, which distinguishes it from both classical cartography and Song's (2019) model, is that it has room for some bona fide cases of transitivity failure—that is, cases of flexible ordering that cannot be argued away by derivational means, such as the existence of both color < material and material < color in the adjectival zone (e.g., *a furry gray mouse* and *a gray furry mouse*).³ As mentioned above, Larson's solution is to allow cycles in the order relation by removing the asymmetry axiom (and not introducing antisymmetry). However, like classical cartography, Larson's model has no room for incomparable categories, probably because those categories are not his empirical focus. And due to the lack of a unified ordering criterion, it might actually encounter difficulty in finding appropriate cognitive factors to define the miscellaneous feature prosets. For instance, Larson does not specify what the ordering criterion in (13) is but merely

3 Larson (2021) also treats the flexible ordering of Topic and Focus as a case of true flexible ordering, hence the slash notation in (13). However, as Larson points out in his footnote 17 (p.263), this is a debatable issue.

assumes its existence.

5. A middle-way proposal

The shared merit of Song’s (2019) and Larson’s (2021) weakening of classical cartography is that both models are rid of the “selection pitfall” described in §3. Two direct consequences of this merit are the transitivity and the reflexivity axiom. However, the two models also each have their disadvantages. Song’s (2019) model has room for incomparable elements but not for truly flexibly ordered elements, and the opposite is true for Larson’s (2021) model. If possible, we want to have the best of both worlds, and that is what I will propose below.

Definition 5. Weak cartographic hypothesis (WCH) All functional hierarchies are *preorders*. Some of them are furthermore total preorders, partial orders, or linear orders.

The above definition utilizes the “strength” relation between various order relations, as in Figure 2. From the bottom up, the weakest kind of order relation is just a plain preorder (reflexive, transitive). There are two ways to strengthen a preorder, either by making it total or by making it partial (via banning cycles). Finally, we can make both order relations even stronger by combining their properties and getting a linear order (aka total order or chain). The formal definitions of these order relations can be found in any introduction to mathematical order theory (e.g., Schröder 2016).

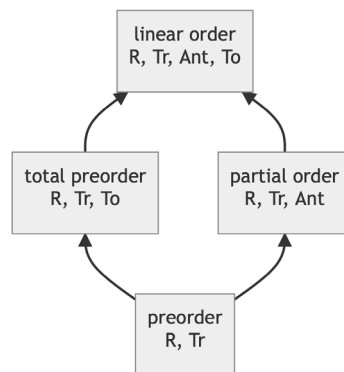


Figure 2 Four order relations ordered by their “strengths”
(R = reflexive, Tr = transitive, To = total, Ant = antisymmetric)

For simplicity’s sake, I follow classical cartography and Song (2019) and impose the order relations thus defined on categories, but a Larsonian, feature-based implementation is also plausible. On the weakened definition of cartography, what distinguishes the category-based and the feature-based implementation is no longer their handling of the problems in §3—since both can handle them—but factors from other dimensions, such as economy.

On the WCH, functional hierarchies may take any of the four forms below. As usual, I use capital letters X, Y, Z, ... to denote syntactic categories. And for expository convenience, I write $X \rightarrow Y$ for $X \sqsubseteq Y$ and use $\{X, Y\}$ to mean that X and Y are incomparable.

1. The chain (i.e., linear order):
... $X \rightarrow Y \rightarrow Z \rightarrow W \rightarrow V$...
2. The connected directed graph or digraph, with incomparable elements (i.e., preorder):

- ... $X \rightarrow Y \sqsubseteq Z \rightarrow \{W1, W2\} \rightarrow V$...
3. The connected digraph, without incomparable elements (i.e., total preorder):
... $X \rightarrow Y \sqsubseteq Z \rightarrow W \sqsubseteq V$...
 4. The directed acyclic graph or DAG (i.e., partial order):
... $X \rightarrow \{Y1, Y2, Y3\} \rightarrow Z \rightarrow \{W1, W2\} \rightarrow V$...

Functional (sub)hierarchies are typically chains, especially if we strive for a highly fine-grained level of description, with the subtle differences between alleged iterable categories being taken into account (as in Benincà and Poletto 2004). Hence, the classical view is fine in many or even most cases, and linguists whose immediate concerns are order-theoretically nonexceptional (i.e., with no incomparable categories or bona fide order-theoretic cycles) may conveniently stick to classical cartography. It is only when the empirical domain at hand manifests exceptional ordering patterns that the WCH becomes truly useful.

6. The bigger picture

In this paper, I examined the formal foundation of cartography from an order-theoretic perspective. Cartographic functional hierarchies in their classical conception are strict total orders. But this classical view is flawed and suffers from multiple problems, such as transitivity failure and totality failure. Song (2019) and Larson (2021) have attempted to free cartography from these problems by weakening its underlying order relation, respectively to partial orders and total preorders. My proposal in this paper (i.e., the weak cartographic hypothesis) is an eclectic combination of these two ideas.

So far, we have focused on individual functional hierarchies. But the WCH further supports a big-picture organization of the entire categorial inventory. Consider the two individual hierarchies in (14), which are respectively defined by the order relations $\mathbf{R}_{\mathcal{A}}$ and $\mathbf{R}_{\mathcal{B}}$, with $\mathcal{A}$ and $\mathcal{B}$ being two major parts of speech.

- (14) a. $\mathcal{A}: \dots X \rightarrow \{Y1, Y2\} \rightarrow Z \rightarrow W \dots$
 b. $\mathcal{B}: \dots X \sqsubseteq Y \rightarrow Z \rightarrow W \dots$

Assuming the omitted parts of the two hierarchies also conform to the patterns displayed in (14), $\mathcal{A}$ and $\mathcal{B}$ are respectively a partial order and a total preorder. But since both types of order relation are just strengthened preorders (see Figure 2), $\mathcal{A}$ and $\mathcal{B}$ by definition are still preorders. The same is true for all four possible forms of functional hierarchies in §5. This state of affairs leads to the following big picture of functional hierarchies:

Definition 6. The various functional hierarchies of a language can join into a single preorder, which may be called a “superhierarchy.”

This big-picture unification only works if all functional hierarchies share a single ordering criterion. Thus, between Song’s (2019) and Larson’s (2021) model, it is only compatible with the former, where the uniform ordering criterion is functional selectional scope. With this superhierarchical view, we can continue to formalize cartography at higher orders. For instance, we can now study the order-theoretic connections (e.g., monotone functions) across functional hierarchies. Song (2019: Chapter 6) explores this direction with the aid of mathematical category theory.

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Get + to-infinitive construction in German and the diversity of restructuring

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1. Introduction

Some infinitival complements in German show “restructuring” properties (cf. e.g., Rizzi 1978, Wurmbrand 2003, Cinque 2006), i.e. the transparency for normally clause-bound operations. Such restructuring infinitives form a mono-clausal structure with the matrix embedding verb. While as a common strategy to derive restructuring effects, it is assumed that restructuring infinitives have a smaller structure, the precise size of the infinitives has been disputed. Haider (2010, 2021), for example, argues that the embedded and the matrix verb form a single complex verb. Wurmbrand (2003, 2007, 2015), however, argues that infinitives project their own verbal phrases, which are smaller than a CP. Complex verb approaches are undermined by the fact that mono-clausality is obtained even in VP-fronting or VP-extraposition structures, where the infinitive has an independent phrasal structure. At the same time, the unification of the lexical contents of embedded and embedding verbs, which is a necessary consequence of complex verb formation, still deserves serious consideration. Whereas Wurmbrand (2003, 2007) emphasizes that the infinitive has an independent argument and event structure, we show another type of construction in which the argument/event structures of the embedded and embedding verbs are unified, as if they were a single verb. The construction in question contains the verb *bekommen* (“get”) and the infinitive with *zu* (“to”), as shown in (1). Semantically, the infinitive *zu hören* (“to hear”) and *bekommen* share both the subject *ich* (“I”) and the accusative object *einige Dinge* (“some things”).

- (1) [...]dass ich endlich einige Dinge zu hören bekomme.
 that I finally some things.ACC to hear get
 “that I finally get to hear some things.” (Jäger 2013:157, translation added by authors)

In this *get + to-infinitive* construction (henceforth, GIC), *bekommen* retains its argument/event structure. Moreover, it selects for an infinitive that has a matching structure and lexical content with *bekommen*, so that they can constitute a single complex event. We argue that this matching found in GIC is comparable to that found in the light verb constructions in Marathi, and the analysis proposed for them by Ozarkar and Ramchand (2018) can be applied to GIC as well.

The properties of GIC offer an interesting insight into the lexical and functional nature of restructuring embedding verbs. In particular, *bekommen* in GIC shares both of the properties of functional and lexical embedding verbs in Wurmbrand 2003, 2004. However, the proposed analysis can account for this mixed property of GIC and integrate it into Wurmbrand’s system.

The paper is structured as follows. In section 2, we show the properties of GIC, focusing on the matching effects between *bekommen* and the infinitive. Then, in section 3, we introduce Ozarkar and Ramchand's (2018) analysis of Marathi light verb construction, and apply it to GIC. In section 4, we discuss how the proposed structure is integrated into Wurmbrand's (2003, 2004) functional/lexical classification. Section 5 concludes the paper.

2. Properties of GIC

GIC has a restructuring, mono-clausal structure. For example, in (2a), the accusative object *die Wunderstücke* ('the wonderful pieces') can be scrambled before the subject *niemand* ('no one'). Moreover, it is possible to front the verbal complex *Zu sehen bekommen* stranding all other non-verbal elements (2b), which is also a common diagnostic for restructuring (cf. e.g., Haider 2010).

- (2) a. Daß bis vor kurzem die Wunderstücke_i trotzdem niemand [_{t_i} zu sehen] bekam,
that until before short the wonderful.pieces.ACC nevertheless no.one.NOM to see got.
 "That nevertheless no one got to see these wonderful pieces until recently,"
 (Berliner Morgenpost, 17.06.1998)
- b. Zu sehen bekommen haben ihn bis anhin allerdings nur wenige,
to see gotten have him.ACC until now however only few.NOM
 "Only a few people have seen it (=a beaver) so far, however." (St. Galler Tagblatt 14.04.2008)

An important aspect of GIC is that the verbs that can appear as the infinitive are highly restricted. According to Jäger's (2013) corpus-based study, 49 verbs appear in GIC, 25 of which present only one occurrence. The 11 verbs that have more than 10 occurrences are listed below:

Verb	<i>sehen</i> ("see")	<i>hören</i> ("hear")	<i>spüren</i> ("feel")	<i>essen</i> ("eat")	<i>lesen</i> ("read")	<i>fassen</i> ("grasp")	<i>fühlen</i> ("feel")	<i>trinken</i> ("drink")	<i>kaufen</i> ("buy")	<i>kosten</i> ("taste")	<i>fressen</i> ("eat")
Σ	370	285	173	96	46	44	32	19	13	11	10

(Table 1. Jäger 2013: 70, Table 12)

The most prominent class of verbs are perception verbs, such as *sehen* ('see'), *hören* ('hear'), *spüren* ('feel'), and *fühlen* ('feel'). The second largest class is consumption verbs such as *essen* ('eat'), *lesen* ('read'), *trinken* ('drink'), *kaufen* ('buy'), *kosten* ('taste'), and *fressen* ('eat').¹ The third class contains a small number of agentive verbs represented by *fassen* ('grasp'). All classes of verbs have some properties in common with the embedding verb *bekommen*. Firstly, they are transitive verbs that take an accusative object. Secondly, they express a process, the effects of which are directed to the actor. For example, just like *bekommen* expresses a transfer of an object towards the recipient, perception verbs express the transfer of sensory information towards the experiencer. Moreover, *bekommen* and the infinitive also seem to match in agentivity. *Bekommen* takes a non-agentive subject with recipient theta role in the meaning of reception, but has also an agentive usage, in which it expresses an effort of an intentional agent to obtain something. According to Jäger (2013), *bekommen* in the former meaning can embed a perception verb, because of the conceptual affinity between reception and perception. Accordingly, only non-agentive perception verbs can appear in GIC, as mentioned by Haider (2010: 256). The agentive counterparts of *sehen* ('see') and *hören* ('hear'), i.e., *beobachten* ('watch') and *belauschen* ('listen in to'), respectively, cannot appear in

¹ However, as discussed in Section 3.3, there is a complication regarding GIC with this class of verbs.

GIC.

- (3) *Du bekommst es nicht zu beobachten / belauschen.
 you.NOM get it.ACC not to watch listen.in.to
 “You do not manage to watch/listen in to it.” (Haider 2010: 256, slightly modified)

Bekommen in combination with agentive verbs such as *fassen* (“grasp”) is its agentive variant. This claim is supported by the fact that *kriegen* (“get”), the colloquial counterpart of *bekommen*, can be passivized if it is combined with *fassen*, although neither *kriegen* nor *bekommen* can be passivized when used as the main verb (Haider 2021: 8, footnote 16). Whereas such an example seems to be extremely rare, we found an example on the internet:

- (4) 195-205 konnte von mir zu fassen gekriegt werden.²
 195-205 could by me to grasp gotten be
 “(PDF-data of pages) 195-205 (of a document) could be gotten by me.”

Therefore, *bekommen* seems to select for an infinitival verb that has matching properties in terms of transitivity, directedness towards the actor, and agentivity.

In GIC, *bekommen* as well as the infinitive contribute to the event structure of the whole construction. For instance, *bekommen* in the meaning of reception implies an external actor, from which an object is transferred. This event concept is retained in GIC. Therefore, the sentence without *bekommen* (5b) is degraded compared to that with *bekommen* (5a) in the context where the speaker reads out a piece of a play to his or her sister.

- (5) a. Der erste Mensch, der mein Stück zu hören bekommt, ist meine Schwester.
 the first person.NOM who.NOM my play.ACC to hear gets is my sister
 “The first person to hear my play is my sister.”
 b. ?Der erste Mensch, der mein Stück hört, ist meine Schwester.
 the first person.NOM who.NOM my play.ACC hears is my sister
 (Jäger 2013: 145, translation added by authors)

In this case, the auditory information is transferred towards the experiencer/recipient (= “my sister”) from an external actor (= the speaker). This implied additional causing event conducted by the external actor is contributed by *bekommen*. The telicity of GIC, however, seems not to be fully determined by *bekommen*. Whereas *bekommen* is a punctual change-of-state verb both in its agentive and non-agentive usage, it can be combined with atelic verbs as well as telic verbs. If the infinitive is an atelic perception verb, GIC is compatible with durational adverbials such as *stundenlang* (“for hours”):

- (6) Kein Einheitsbrei, den man stundenlang zu hören bekommt.³
 no same.old.same.old which.ACC one hours.long to hear gets
 “It’s not the same old same old, that one listen to for hours.”

² <https://www.wertpapier-forum.de/topic/25063-tier-1-anleihen-teufelszeug-oder-ambrosia/page/31/> (accessed on 19 October 2022)

³ <https://www.amazon.de/Beruhigenden-Kl%C3%A4nge-Hangtrommel-Gitarre-Meereswellen/dp/B003ZHVJ5A> (accessed on 13 November 2022)

However, this might not mean that the GIC in (6) as a whole is atelic and imperfective. Jäger (2013: 263f.) argues that the addition of *bekommen* renders the imperfective event of perception verbs a perfective one. Nevertheless, because the semantic component of event duration in (6), which licenses the durative adverb, is clearly contributed by the infinitive, the event structure of GIC is not determined solely by *bekommen*, but through the interaction between *bekommen* and the infinitive.

3. Analysis

In the previous section, we have shown some properties of GIC: It is a restructuring construction, *bekommen* in GIC selects for an infinitive with matching properties, and both *bekommen* and the infinitive contribute to the entire event structure of GIC. Because the argument/event structures of lexical verbs are closely connected and unified in GIC, the construction seems to involve a complex verb formation as proposed by Haider (2010). However, if we employ the analysis of Ozarkar and Ramchand (2018), we can integrate GIC into Wurmbrand's (2003, 2007) phrasal analysis.

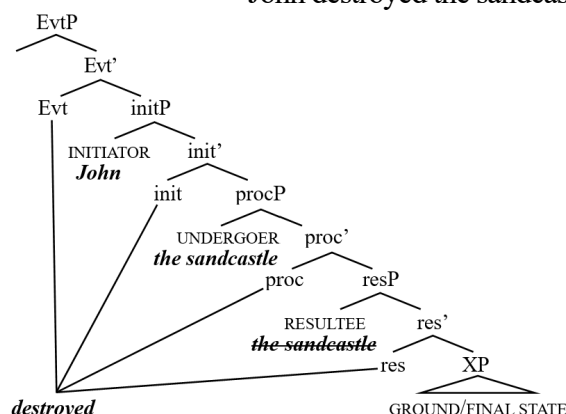
3.1 Background

Ozarkar and Ramchand (2018) analyze light verb constructions in Marathi, in which light verbs and the main verb constitute a single unified event structure, matching their argument/event structural properties. In order to deal with the interaction of the lexical properties of each verb with explicit syntactic means, they employ a constructional framework as proposed by Ramchand (2008, 2017, 2018). In this framework, the structure under ν P—EvtP in Ramchand 2017, 2018—is decomposed into several functional projections denoting subevents: *init*P (initiation phrase), denoting a causation subevent, *proc*P (process phrase), a dynamic/change subevent, and *res*P (result phrase), denoting a result subevent. The head of a higher subevent-denoting phrase embeds a lower phrase as its complement. The hierarchical relationship between the projections corresponds to the *leads-to* relationship between the denoted subevents in the semantics. That is, when *init* embeds *proc*P, it means that a causation subevent leads to a dynamic/change subevent.

The specifier position of each projection is occupied by an actant, for which the event property denoted by the projection holds. For example, the holder of the property of the causing subevent, which leads to a dynamic/change subevent, is called *INITIATOR*. If a single argument occupies several specifier positions, such as *Spec,procP* and *Spec,resP*, it receives a complex thematic role of *UNDERGOER-RESULTEE*.

In this system, a verb is regarded as the morphological realization of a series of heads such as *init*, *proc*, and *res*. A lexical verb is specified for the categorical features, which determine whether the structure involves all or a subset of the above-mentioned projections. For example, the verb *destroy* has the features $\langle \text{Evt}, \text{init}, \text{proc}, \text{res} \rangle$, and the structure in (7).

(7) John destroyed the sandcastle.



In the syntax, *destroy* is inserted in res, proc, init, and Evt. Its internal argument occupies the specifiers of resP and procP, which have the thematic roles of UNDERGOER-RESULTTEE. The external argument, having the INITIATOR role, is inserted in Spec,initP.⁴ Therefore, the informal semantic interpretation of the tree in (7) is as follows: An initiator (*John*) initiates a causation subevent (e_1). Then, e_1 leads to a dynamic/change subevent (e_2) that affects an undergoer (*the sandcastle*). Then, e_2 leads to a result subevent (e_3) that involves some final state (the destroyed state) of a resultee (*the sandcastle*).

3.2 Matching in light verb constructions in Marathi

Whereas the structure presented in (7) is that of a single verb (*destroy*), Ozarkar and Ramchand (2018) analyze the structure of a complex predicate based on the verbal decomposition of Ramchand (2008, 2017, 2018). They deal with Marathi complex predicates, in which the light verb and the main verb unifies their conceptual contents, and the light verb imposes selectional restrictions on the main verb, so that their formal features, such as agentivity and telicity, are matched.

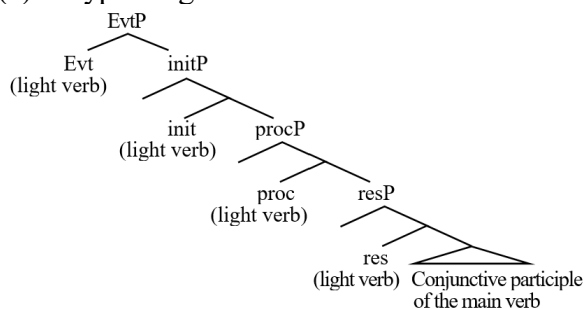
In particular, light verbs can be divided into several types depending on the degree to which selectional restrictions are placed on the main verb and the degree to which they determine the formal features of the entire complex predicate. For example, type A light verbs, such as *tak* (“drop”) and *ye* (“come”), match with the main verbs in agentivity and telicity. Thus, an agentive and telic light verb *tak* can only be combined with an agentive and telic main verb, and likewise a non-agentive and telic light verb *ye* only with a non-agentive and telic main verb. Type B light verbs, such as *de* (“give”) and *ghe* (“take”), however, do not match in telicity. Telic light verbs *de* and *ghe* thus can be combined with both telic and atelic main verbs. Instead, in addition to agentivity, these verbs also match with the main verb in directionality. That is, the light verb *de* “can combine with only those transitive verbs in which the effect of the agent’s action is transferable to some other entity” (Ozarkar & Ramchand, 2018: 14). Therefore, they cannot combine with those main verbs that express some process with an inward direction, such as ingestion, learning, perception/cognition. Instead, these verbs are selected by the light verb *ghe*, which is characterized by the matching inward direction.

Ozarkar and Ramchand (2018) integrate this matching found in type A and B light verbs into Ramchand’s (2008, 2017, 2018) system as follows: the light verb constructs verbal decomposition

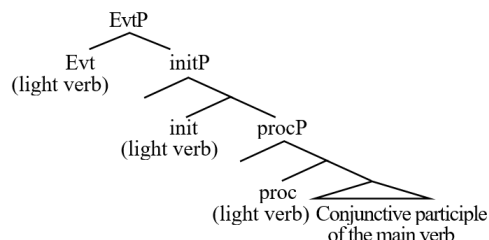
⁴ Ramchand (2018: 79, 89), as opposed to Ramchand (2008), argued that the external argument is introduced by the head Evt, but the existence of the agent is somehow dependent on the init projection denoting a causation subevent. Because this complication is orthogonal to the present discussion, we simply assume here that the external argument with the initiator theta role is introduced by init, and agentivity is also encoded in this head.

structures as in (7) in line with its event structural features, as it does in its main verb usage. The main verb, which appears in the form of conjunctive participle, is complemented to the light verb. Constructions with a type A light verb thus have a structure as in (8a):

(8) a. Type A light verb



b. Type B light verb



(Ozarkar & Ramchand 2018: 21f.)

In structure (8a), it is the light verb that determines the whole of the event structure. Crucially, however, in this type of complementation, the main verbs must be matched with the light verb in their formal event-structural features. That is, the main verb must duplicate the features lexicalized by the light verb, namely $\langle Evt, init, proc, res \rangle$ in (8a). If the light verb is non-agentive and lacks the $\langle init \rangle$ feature, the main verb must also have the corresponding features $\langle Evt, proc, res \rangle$. Because all type A light verbs are telic and have $\langle res \rangle$, so does the main verb. This matching of structural features accounts for the obligatory agentivity and telicity matching found in type A light verbs.

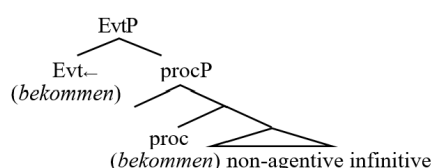
Type B light verbs differ from type A light verbs in that they only lexicalize the structure down to $procP$, as shown in (8b). Whether the whole structure ends up with $procP$ or $resP$ is thus determined by the main verb in the form of the conjunctive participle. In the former case, the resulting complex predicate is atelic, and in the latter case, it is telic. As mentioned above, type B light verbs also match with the main verb in directionality. Ozarkar and Ramchand (2018: 21f.) implement this matching by encoding the directionality in the $init$ head, which is indicated as $\langle init \rightarrow \rangle$ (outward direction) or $\langle init \leftarrow \rangle$ (inward direction). The main verb thus must have an $init$ with a matching directionality as that of the light verb.

In this way, Ozarkar and Ramchand (2018) analyze the matching found in light verb constructions in Marathi in terms of featural matching between the light verb and the main verb. Furthermore, different degrees of matching found in constructions with type A and B light verbs is treated as the difference in the lexicalization of the structure by the light verb: whereas type A light verbs lexicalize the whole of the complex verb's event structure, type B light verbs lexicalize the structure down to $proc$. In the latter case, the structure below $proc$ is determined by the main verb.

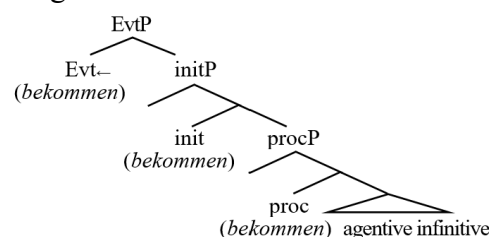
3.3 Matching in GIC

As mentioned in section 2, *bekommen* in GIC matches with the infinitive in several syntactic and semantic properties: transitivity, inward direction of the action, and agentivity. However, there is no matching in telicity, as *bekommen* as a telic verb can embed both telic and atelic infinitives. With these properties, *bekommen* resembles type B light verbs in Marathi as described above. We assume therefore the following structures for GIC with a non-agentive (9a) and an agentive (9b) infinitive:

(9) a. non-agentive infinitive



b. agentive infinitive



As in the case of type B light verbs, *bekommen* only lexicalizes the structure down to *proc*, although *bekommen* is a change-of-state verb that presumably has the features $\langle \text{Evt}, (\text{init}), \text{proc}, \text{res} \rangle$. The infinitive is generated as the complement of the *proc* head. The non-agentive use of *bekommen* thus lexicalizes $\langle \text{Evt}, \text{proc} \rangle$, and in its agentive use it lexicalizes $\langle \text{Evt}, \text{init}, \text{proc} \rangle$. Because *bekommen* and the infinitive constitutes a single structure up to *EvtP*, which is normally constituted by a single verb (cf. (7)), the internal and the external arguments are shared by both *bekommen* and the infinitive. Accordingly, transitivity also has to be matched between them. Inward directionality is also encoded, so that the infinitive and *bekommen* match in directionality. However, it cannot be encoded in the *init* head, because *bekommen* in its non-agentive use does not have $\langle \text{init} \rangle$, and neither does the infinitive. We thus suppose that the directionality is encoded on the *Evt* head, as indicated in (9), which does not seem incompatible with the original analysis of Ozarkar and Ramchand (2018).

However, GIC differs from type B verbs in an important point: In GIC with perception verbs, the infinitives do not seem to duplicate all of the lexicalized features of *bekommen*, but only the subset of them. According to Rothmayr (2009), non-agentive perception verbs in German, such as *sehen* (“see”), *hören* (“hear”), *spüren* (“feel”), and *fühlen* (“feel”), are genuine stative verbs without any eventive feature (cf. “Kimian states” of Maienborn 2003). They contain neither a process/change-of-state feature ($\langle \text{proc} \rangle$) nor a causation feature ($\langle \text{init} \rangle$). The only feature that these verbs plausibly have is $\langle \text{Evt} \rangle$, and they thus do not fully match with the feature of *bekommen*, $\langle \text{Evt}, \text{proc} \rangle$. Therefore, we assume that the constraint is that features of the infinitive must constitute a subset of those of *bekommen*, so that they can be unified into the event structure mainly constructed by *bekommen*.⁵

Despite these differences, the featural matching analysis proposed by Ozarkar and Ramchand (2018) seems to account for the matching behavior between the infinitive and *bekommen* in GIC: Because they construct a structure that is otherwise constructed by a single verb, their arguments are shared and the complex predicate as a whole has a unified argument structure. This leads to matching in transitivity. Because directionality is encoded on the *Evt* head, and the infinitive and *bekommen* share the $\langle \text{Evt} \rangle$ feature, *bekommen* selects for a verb expressing inward direction. The matching in agentivity is also accounted for similarly, but with some complication. As shown in (9), there are two possible structures for GIC, depending on the two meanings of *bekommen*. The non-agentive *bekommen* represented in (9a) expresses a subject-externally caused event of getting something, while the agentive *bekommen* represented in (9b) expresses an event of acquiring or achieving something with the effort of the agentive subject. The former *bekommen* cannot be combined with verbs containing $\langle \text{init} \rangle$, and the agentive perception verbs, such as *beobachten*

⁵ Loosening the restriction in this way might be necessary in the original analysis of Ozarkar and Ramchand (2018). This is because a type B light verb *ghe* (“take”), which is agentive and has an $\langle \text{init} \rangle$ feature, may embed some main verbs, such as *səməz* (“understand”), which take an experiencer-subject and do not have an $\langle \text{init} \rangle$ feature (see Ozarkar & Ramchand 2018: 15, Table 2). According to Ozarkar (2014: 214f.), whereas such verbs are usually non-agentive, they become agentive when combined with *ghe*. The same may be true for GICs containing perception verbs, but details need to be further investigated.

(“watch”) or *belauschen* (“listen in to”), are thus incompatible with it, as shown in (3). The latter *bekommen* is, however, compatible with agentive verbs. The most representative case is GIC with *fassen* (“grasp”), which is almost synonymous in meaning with the agentive *bekommen*, expressing obtaining something with an effort. A question that arises here is whether agentive perception verbs are combined with the agentive *bekommen*. We consider that these verbs are in principle compatible with the agentive *bekommen*, and we indeed find such examples.

(10) (The goshawk is a shy woodland bird)

den Naturfreunde meist nur mit etwas Glück im Flug zu beobachten bekommen⁶
which.ACC nature.lovers.NOM mostly only with some luck in flight to watch get
 “which nature lovers usually get to observe in flight only with some luck”

In (10), it is clear that the event of watching the bird is caused by an intentional agent who makes an effort to do so. In such cases, an agentive perception verb *beobachten* is combined with the agentive *bekommen*.⁷

Finally, we briefly discuss GIC with consumption verbs. We must admit that it is less clear to us which *bekommen* in (9) these verbs are combined with. This is because the infinitives that fall under this class often seem to function not as infinitival complements of *bekommen*, but rather as modifiers expressing purposive meaning, such as “(to get something) in order to eat/read/drink it.” In this regard, Jäger (2013) and Dekalo (2017) point out that *bekommen* in GIC with these verbs is characterized by its meaning in main verb usage, “to receive something.” Indeed, because consumption verbs normally take concrete entities as their objects, which can also be interpreted as the object of the main verb *bekommen*, it is difficult to find out whether *bekommen* is used as an auxiliary or as the main verb when it appears with these verbs. However, there are examples that clearly do not involve a concrete receiving event, as shown in (11) with the infinitive *kosten* (“taste”).

(11) Proben seiner Mängel und seiner Vorzüge
samples.ACC his shortcomings.GEN and his merits.GEN
 bekam man bei der Weill-Premiere der Staatsoper zu kosten.
got one at the Weill premiere.DAT the State.Opera.GEN to taste
 “One got to experience samples of his shortcomings and merits at the Weill premiere in the State Opera.”
 (Jäger 2013: 150, translation added by authors)

Here, the abstract object “samples of his shortcomings and merits” cannot be interpreted as the object of the main verb *bekommen*. Interestingly, in (11), *kosten* seems to have a non-agentive meaning that can be translated as “experience.” One can hardly detect an agentive intention of the subject. Rather, the tasting event is caused by some external actor, and the subject of *kosten* is interpreted as an experiencer, as with the case with GIC with non-agentive perception verbs. Such examples may thus be regarded as an instantiation of the structure (9a), rather than (9b), though a more detailed analysis would require a more extensive study of usages.

⁶ https://www.artenschutz-steigerwald.de/de/Tiere/20995/Habicht_-_Vogel_des_Jahres_2015/ (accessed on 14 November 2022)

⁷ We suppose that the example (3) is rated ungrammatical by Haider (2010) because he interprets *bekommen* in its non-agentive meaning. In addition, the ungrammaticality can be due to the lesser familiarity of examples as (3) compared to those examples with non-agentive perception verbs. As shown by the corpus studies of Jäger (2013) and Dekalo (2017), the non-agentive *bekommen*, which is mainly combined with non-agentive perception verbs, is quantitatively superior to the agentive *bekommen*.

This mixed property of GIC with respect to functional/lexical classification, however, can be integrated to Wurmbrand's (2003) system, if we apply the analysis of Ozarkar and Ramchand (2018) to GIC. In their analysis, the light verb and the main verb constitute a single lexical event structure, which is completed at the EvtP in the framework of Ramchand (2017, 2018). Therefore, although Ozarkar and Ramchand (2018) do not discuss a detailed internal structure of the main verb, it must have a structure at least smaller than an EvtP, so that there is only one lexical event domain. If GIC also contains a single EvtP constituted by *bekommen* and the infinitive, *bekommen* is similar to functional restructuring predicates in that it does not constitute a distinct EvtP from the infinitive. In

contrast, in recent works of Wurmbrand (2015), lexical restructuring predicates embed complements with at least a structure up to VoiceP, which can be identified with the EvtP in Ramchand (2017, 2018). Therefore, lexical restructuring predicates constitute a distinct EvtP from that of their complements. This independence of the complements seems to affect the optionality of restructuring as well as the possibility of extraposition. *Bekommen* in GIC is, however, located within the lexical domain, within the EvtP, and in that sense it is lexical. In contrast, functional restructuring predicates occupy higher functional heads above the EvtP, so that they do not contribute to argument- and event-structural properties.⁸

5. Concluding remarks

In this paper, we presented a structural analysis of a construction containing *bekommen* and an infinitive (GIC). Focusing on the matching between *bekommen* and the infinitive in some syntactic and semantic properties, we apply a featural matching analysis proposed by Ozarkar and Ramchand (2018) to GIC. This analysis also accounts for the mixed properties of *bekommen* in GIC regarding its functional/lexical classification in Wurmbrand 2003, 2004.

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⁸ As pointed out by an anonymous reviewer, Wurmbrand (2003) also provides the classification in (11) with an intermediate class called “semi-functional restructuring predicates.” This class includes motion verbs, perception verbs, and causatives. However, this class of verbs differ from *bekommen* both empirically and theoretically. Firstly, they do not show matching effects between the infinitive as found in GIC. Secondly, their structural position is higher than *bekommen* in GIC. Wurmbrand (2003) argues that they occupy a voice/aspect head, which is functional but still located within the thematic domain. *Bekommen* and the infinitive in GIC, however, are combined within the structure below the vP, which is decomposed in Ramchand’s (2008, 2018) framework into several functional projections. We are grateful to the anonymous reviewer for bringing this point to our attention and giving us the opportunity to consider it.

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The first author's work was supported by JSPS KAKENHI Grant Number JP21J21764. We are grateful to the referees of SICOGG 24 and the participants of the poster session for their valuable comments. All remaining errors are our own.

Two Types of Instrument-like Causers in Japanese*

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1. Introduction

Instrument phrases imply the existence of a human agent. This implication is absent from anticausatives, so they are generally incompatible with instrument phrases (Alexiadou et al., 2015). However, in some languages (e.g., Greek, Korean, and Japanese) instrument phrases can co-occur with anticausatives (e.g., Kageyama, 1996; Matsumoto, 2000; Alexiadou et al., 2006; Kim, 2009). In this paper, we are concerned with instrument phrases co-occurring with anticausatives in Japanese. In Japanese, instruments are introduced by the particle *de*, which will be glossed as _{DE}.

- | | | | | |
|-----|------|--|----------|--------------------------------------|
| (1) | a.?? | <u>Kagi-de</u> | doa-ga | ai-ta. |
| | | key-DE | door-NOM | open _(intr.) -PAST |
| | | “*The door opened with a key.” | | |
| | b. | <u>Denshikii-de</u> | doa-ga | ai-ta. |
| | | electronic.key-DE | door-NOM | open _(intr.) -PAST |
| | | “*The door opened with an electronic key.” | | |
| | c. | <u>Sono kagi-de</u> | doa-ga | <i>kantanni</i> ai-ta. |
| | | the key-DE | door-NOM | easily open _(intr.) -PAST |
| | | “*The door opened easily with the key.” | | |

All the sentences in (1) include the co-occurrence of a *de*-phrase and the anticausative verb *aku* “to open_(intr.).” Sentence (1a) is anomalous, whereas sentences (1b) and (1c) are acceptable. In the system of Alexiadou et al. (2006, 2015), as shown in (2), instrument phrases are licensed by the Voice head that has an agentive feature, which is absent in the syntactic structure of anticausative verbs.

- (2) [(Voice) [CAUS [Root]]] (Alexiadou et al. (2006))

Anticausatives are assumed to have no implicit external agent, so they usually cannot co-occur with instrument phrases. The unacceptability of (1a) naturally follows from the absence of the agentive Voice head in the syntactic structure of the anticausative verb *aku* ‘to

* I appreciate the audience who shared their questions, comments and invaluable ideas. This work was supported by JSPS KAKENHI Grant-in-Aid for Young Scientists (B) Grant Number 16K21380.

open_(intr.),” but the acceptable sentences in (1b) and (1c) are problematic in this system. Regarding instrument phrases that can co-occur with anticausatives in Greek, Alexiadou et al. (2006) argued that such instrument phrases can be regarded as INSTRUMENT CAUSERS (i.e., instruments that can be conceived of as acting on their own, once the agent has applied or introduced them (Kamp and Rossdeutscher, 1994:144)), and that instrument phrases introducing INSTRUMENT CAUSERS are licensed by the CAUS head. Following their analysis, this paper argues that the *de*-phrases in (1b) and (1c) can be regarded as causer phrases that are licensed by CAUS. Further, I propose that such causer phrases can be divided into two types: those exemplified by the *de*-phrase in (1b) and those exemplified by the *de*-phrase in (1c). INSTRUMENT CAUSERS mentioned by Alexiadou et al. (2006) correspond to the former type but not the latter. Therefore, I will use the umbrella term “instrument-like causers” to refer to both types of causer phrases hereinafter. *De*-phrases referring to pure instruments (i.e., instruments that must be permanently controlled by a human agent), such as *kagi-de* in (1a), imply the intervention of a human agent, so they must be licensed by the agentive Voice head. However, *de*-phrases referring to instrument-like causers, such as *denshikii-de* in (1b) and *sono kagi-de* in (1c), can co-occur with anticausatives when the instrument is conceived of as acting on its own (see section 2) or the intervention of a human agent is backgrounded (see section 3).

2. (1b)-type instrument-like causers: INSTRUMENT CAUSERS

Kamp and Rossdeutscher (1994: 144–145) proposed two types of instruments, which they called INSTRUMENT CAUSERS and (PURE) INSTRUMENTS:¹

- (3) INSTRUMENT CAUSERS: Instruments that can be conceived of as acting on their own, once the agent has applied or introduced them.
 PURE INSTRUMENTS: Instruments whose action is conceived of as strictly auxiliary to that of the agent employing them.

INSTRUMENT CAUSERS can be exemplified by *mit Kamille* “with chamomile” in (4b). Once chamomile has been introduced into the body, it can cure the patient without further intervention of a human agent. PURE INSTRUMENTS, in contrast, can be exemplified by *mit dem Skalpell* “with the scalpel” in (4a). A scalpel requires a human agent who handles it when a doctor cures a patient. INSTRUMENT CAUSERS can surface as the subject of the corresponding causative verbs, as in (5b), whereas PURE INSTRUMENTS cannot, as in (5a).

- (4) a. Der Arzt heilte den Patienten mit dem Skalpell.
 “The doctor cured the patient with his scalpel.”
 b. Der Arzt heilte den Patienten mit Kamille.
 “The doctor cured the patient with camomile.”

¹ Alexiadou and Schäfer (2006a) coined the term PURE INSTRUMENT. Kamp and Rossdeutscher (1994) refer to them simply as INSTRUMENTS. In this paper, I use the terminology PURE INSTRUMENT to avoid confusion with *instrument* in a general sense.

- (5) a.# Das Skalpell heilte den Patienten.
 ‘#The scalpel cured the patient.’
 b. Die Kamille heilte den Patienten.
 “‘The camomile cured the patient”
 (Kamp and Rossdeutscher (1994: 143–144), the mark # is added)

In Greek, anticausatives can sometimes co-occur with instrument phrases. Following Kamp and Rossdeutscher’s (1994) distinction between two types of instruments, Alexiadou and Anagnostopoulou (2009) explained why Greek anticausatives can sometimes license instrument phrases. In Greek, causers and instruments are both introduced by the same preposition, *me*. Alexiadou and Anagnostopoulou (2009) argued that instrument phrases that are compatible with Greek anticausatives can be regarded as INSTRUMENT CAUSERS which can become the subject of corresponding causative verbs.

- (6) a. Ta mallia mu stegnosan me to pistolaki.
 the hair my dried-Act with the hair-dryer
 “*My hair dried with the hair dryer.”
 b. To pistolaki stegnose ta mallia.
 the hair-dryer dried-Act the hair
- (7) a.* O tixos asprise me to Pinelo.
 the wall whitened-Act with the paint-brush
 b.* To pinelo asprise ton tixo.
 the paint-brush whitened-Act the wall
 (Alexiadou and Anagnostopoulou (2009: 7–8))

The sentence pair in (6) shows that the anticausative *stegnosan* “dried-Act” is compatible with the instrument phrase *me to pistolaki* “with the hair-dryer” and that the instrument *to pistolaki* “the hair-dryer” can become the subject of the corresponding causative verb *stegnose* “dried-Act.” The anticausative *asprise* “whitened-Act,” however, does not go along with the instrument phrase *me to pinelo* “with the paint-brush,” and the corresponding causative verb *asprise* “whitened-Act” cannot take the instrument *to pinelo* “the paint-brush” as subject, as indicated by the sentence pair in (7). This contrast led Alexiadou and Anagnostopoulou (2009) to argue that the instruments *to pistolaki* “the hair-dryer” in (6a) and *to pinelo* “the paint-brush” in (7a) could be regarded as an INSTRUMENT CAUSER and a PURE INSTRUMENT, respectively.

Alexiadou et al. (2006) proposed that change-of-state verbs can be syntactically decomposed into several components such as Voice and CAUS and have the following core structure:

- (8) [Voice [CAUS [Root]]]

Voice is responsible for the introduction of the external argument and has features related to agentivity (Kratzer, 1996). CAUS introduces a causal relationship between a causing event and a resultant state denoted by the verbal root and an internal argument. In this system, adjunct PPs are licensed by functional heads that bear the relevant semantic features. Since instruments presuppose the existence of agents who use them, instrument PPs are licensed by

the Voice head that contains agentive features (i.e., Voice [+AG]). In other words, PURE INSTRUMENT PPs must be licensed by Voice [+AG]. CAUS, however, is responsible for causer PPs. Causer NPs can be realized as an external argument if the Voice head does not have agentive features (i.e., Voice [-AG]). INSTRUMENT CAUSERS have properties of both causers and instruments, so INSTRUMENT CAUSER PPs can be licensed by either Voice [+AG] or CAUS.

The instrument PP *me to pistolaki* “with the hair-dryer” in (6a) refers to an INSTRUMENT CAUSER, so it can co-occur with an anticausative verb. The instrument PP *me to pinelo* “with the paint-brush” in (7a), however, denotes a PURE INSTRUMENT, so it cannot co-occur with an anticausative verb.

Alexiadou and Schäfer (2006a) argued that English also distinguishes between INSTRUMENT CAUSERS and PURE INSTRUMENTS, and that the former are licensed in contexts in which prototypical causers are licensed.

- (9)
- | | | |
|----|---|------------------------------|
| a. | The window broke from the storm. | <i>Force</i> |
| b. | The window broke from the falling axe. | <i>“eventive instrument”</i> |
| c. | The window broke from the thrown stone. | <i>“eventive instrument”</i> |
| d. | The air quality improved from the humidifier. | <i>Machine</i> |
- (Alexiadou et al. (2006: 46))

When combined with change-of-state anticausative verbs, *from* phrases typically introduce causers, as shown in (9a). The NPs *the falling axe* and *the thrown stone* in (9b, c) refer to instruments that invoke eventive interpretations due to the modifiers. Sentence (9d) shows that the machine *the humidifier* can be interpreted as a causer because it can be conceived of as acting on its own.

Like the Greek preposition *me*, the particle *de* in Japanese is multifunctional and can introduce instruments and causers among many other categories. The instrument in the *de*-phrase in (1b), repeated here as (10b), refers to a mechanical device that can act on its own, so it can be regarded as an INSTRUMENT CAUSER. The instrument included in the *de*-phrase in (1a), repeated here as (10a), by contrast, requires a higher degree of control by a human agent to open a door, so it can be regarded as a PURE INSTRUMENT. The contrast in (10) shows that the *de*-phrase referring to an INSTRUMENT CAUSER is compatible with an anticausative verb, whereas the *de*-phrase referring to a PURE INSTRUMENT is not.

- (10)
- | | | | | |
|------|--|----------|-------------------------------|----------|
| a.?? | <u>Kagi-de</u> | doa-ga | ai-ta. | |
| | key-DE | door-NOM | open _(intr.) -PAST | |
| | “*The door opened with a key.” | | | |
| | | | | (= (1a)) |
| b. | <u>Denshikii-de</u> | doa-ga | ai-ta. | |
| | electronic.key-DE | door-NOM | open _(intr.) -PAST | |
| | “*The door opened with an electronic key.” | | | |
| | | | | (= (1b)) |

Although inanimate nouns are generally unacceptable as the subject of causative verbs in Japanese, INSTRUMENT CAUSER subjects (e.g., *denshikii* “electronic key”) are much more acceptable than inanimate noun subjects that refer to PURE INSTRUMENTS (e.g., *kagi* “key”), as in (11).

- (11) { *Kagi-ga/^(?)Denshikii-ga } doa-o ake-ta.
 key-NOM/electronic.key-NOM door-ACC open_(tr.)-PAST
 “{A key/An electronic key} opened the door.”

In this way, similar to Greek instrument PPs, Japanese instrument PPs can be divided into INSTRUMENT CAUSER PPs and PURE INSTRUMENT PPs. Only the former can co-occur with anticausatives, and INSTRUMENT CAUSER NPs are more acceptable than PURE INSTRUMENT NPs as subjects of causative verbs. Therefore, the same theoretical explanation proposed by Alexiadou et al. (2006) in the case of Greek can be applied to the (in)compatibility of instrument PPs in (10).

Alexiadou and Schäfer (2006a) stated that INSTRUMENT CAUSER subjects are like natural forces in that they are conceptualized as eventive (i.e., acting on their own), and they are contrasted with another type of instrument, FOCUSED PURE INSTRUMENTS.

3. (1c)-type instrument-like causers: FOCUSED PURE INSTRUMENT

In contrast to INSTRUMENT CAUSERS, PURE INSTRUMENTS such as knives and sticks must be controlled by a human agent and cannot act on their own. Such PURE INSTRUMENTS can also occur as the subject of causative verbs in some cases, but causative sentences with a PURE INSTRUMENT subject require some pragmatic support such as contrastive focus, as exemplified by (12).

- (12) a.?(?) The key opened the door.
 b. THIS key opened the door.
 c. The KEY opened the door.
 d. The key OPENED the door.
 e. The key opened THIS door.

(Alexiadou and Schäfer (2006a: 45))

Other languages, such as German, Dutch, and Greek, also exhibit the same phenomenon, as shown by the following examples.

- (13) a.# To klidi anikse tin porta.
 ‘The key opened the door.’
 b. Afto to klidi anikse tin porta.
 ‘This the key opened the door.’
 c. To kokino klidi anikse tin porta.
 ‘The red key opened the door.’

Greek (Alexiadou and Schäfer (2006b: 10))

In example (13a), the PURE INSTRUMENT subject is anomalous because it receives no contrastive focus. By contrast, the PURE INSTRUMENT subjects in examples (13b, c) are emphasized by a demonstrative or an adjective, and these sentences are acceptable. Alexiadou and Schäfer (2006a) argued that such a contrastive focus underscores the existence of the relationship in which the event’s occurrence is in a non-trivial way dependent on a property of the instruments and that PURE INSTRUMENT subjects of causative verbs can be regarded as agents and are licensed by Voice [+AG].

(14) {*Kagi-ga/?Kono kagi-ga} doa-o ake-ta.
key-NOM/this.key-NOM door-ACC open_(tr.)-PAST
‘{A key/This key} opened the door.’
(Xiong (2009:165), the acceptability judgment is mine)

(15) Doa-o ake-ta-no-wa kono kagi-da.
door-ACC open_(tr.)-PAST-NOM-TOP this key-COP
'It is this key that opened the door.'

(16)* The door opened from **this** key. (Alexiadou and Schäfer (2006b: 13))

(17) a. I porta anikse me to klidi.
The door opened-Act with the key
'*The door opened with the key'

b. To vazo espase me ena sfiri.
The vase broke-Act with a hammer
'*The vase broke with a hammer'

c. To pani skistike me to psalidi.
the cloth tore-Nact with the scissors
'*The cloth tore with the scissors.'

Greek (Anagnostopoulou and Iatridou (2007: 30–31))

(18) a.?? Kagi-de doa-ga ai-ta.
key-DE door-NOM open_(intr.)-PAST
‘*The door opened with a key.’

a’. Sono kagi-de doa-ga *kantanni* ai-ta.
the key-DE door-NOM easily open_(intr.)-PAST
‘*The door opened easily with the key.’

- b.?? Tonkachi-de kabin-ga ware-ta.
hammer-DE vase-NOM break_(intr.)-PAST
‘*The vase broke with a hammer.’
- b’. Sono tonkachi-de kabin-ga *konagonani* ware-ta.
the hammer-DE vase-NOM into.pieces break_(intr.)-PAST
‘*The vase broke into pieces with the hammer.’
- c.?? Hasami-de nuno-ga sake-ta.
scissors-DE cloth-NOM split_(intr.)-PAST
‘*The cloth split with scissors.’
- c’. Sono hasami-de nuno-ga *mapputatsuni* sake-ta.
the scissors-DE cloth-NOM into.two split_(intr.)-PAST
‘*The cloth split into two with the scissors.’

Japanese

I argue that this fact indicates that FOCUSED PURE INSTRUMENT PPs are licensed by CAUS in Greek and Japanese. In (18a’), the *de*-phrase receives a contrastive focus, and the adverb *kantanni* “easily” emphasizes the ease with which the door opens. The contrastive focus and the adverb underscore the crucial responsibility of the PURE INSTRUMENT *sono kagi* “the key” for bringing about the event and background the existence of a human agent, making the *de*-phrase closer to a causer phrase. As a result, the FOCUSED PURE INSTRUMENT PP can be licensed by CAUS, and the sentence is acceptable. Sentence (18a), however, involves no such pragmatic support, so the agent intervention implied by a *de*-phrase cannot be backgrounded, and this sentence is unacceptable. In sentences (18b’) and (18c’), likewise, the contrastive focus is put on the FOCUSED PURE INSTRUMENT PPs, and the adverbs specify the result state of the theme argument. These elements serve to background the existence of a human agent by foregrounding the property of the FOCUSED PURE INSTRUMENTS and the result state of the change-of-state events. Sentences (18b) and (18c) receive no such pragmatic support, so the unfocused PURE INSTRUMENT PPs cannot be licensed by CAUS, and the sentences are unacceptable.

Why do only Greek and Japanese allow the co-occurrence of anticausatives and FOCUSED PURE INSTRUMENT PPs? The explanation provided by Alexiadou et al. (2006) for the availability of INSTRUMENT CAUSERS, which possess the dual properties of causer and instrument, can possibly be applied to this phenomenon, too. The Greek preposition *me* introduces causers as well as instruments. Alexiadou et al. (2006) explained that this multi-functionality of *me* makes it possible for INSTRUMENT CAUSER PPs to co-occur with anticausatives in Greek. The same is true of Japanese because the particle *de* is also multifunctional and can introduce causers as well as instruments. In fact, Japanese anticausatives are compatible with INSTRUMENT CAUSER PPs. The compatibility of FOCUSED PURE INSTRUMENT PPs with anticausatives in Greek and Japanese can be explained in the same way. FOCUSED PURE INSTRUMENTS also possess the dual properties of causer and instrument: FOCUSED PURE INSTRUMENTS are similar to instruments in that they must be controlled by a human agent, and they also behave like causers in that an agent intervention must be backgrounded. In this way, the multi-functionality of the Greek preposition *me* and the Japanese particle *de* allow for the co-occurrence of anticausatives and FOCUSED PURE INSTRUMENT PPs.

4. Conclusion

In this paper, I have dealt with two types of *de*-phrases (INSTRUMENT CAUSER PPs and FOCUSED PURE INSTRUMENT PPs) co-occurring with anticausatives in Japanese and argued that they are licensed by CAUS but not Voice [+AG]. *De*-phrases denoting unfocused PURE INSTRUMENTS, by contrast, require the involvement of a human agent and hence must be licensed by Voice [+AG], so they cannot co-occur with anticausatives because anticausatives lack Voice [+AG].²

Scholars have noted that Japanese allows a wider range of causative verbs to alternate with anticausatives than English or other languages. The causative verb *plant*, for example, does not have an anticausative counterpart in English, but *ueru* “to plant_(tr.)” can be alternated with the anticausative counterpart *uwaru* “to be planted” in Japanese. Kageyama (1996) and Matsumoto (2000) assumed that (some) Japanese anticausatives can contain information about the intervention of an external agent at the level of lexical semantic structure, and this information allows for the co-occurrence of anticausatives and instrument phrases. This paper, however, has shown that not all instrument phrases are compatible with anticausatives in Japanese; INSTRUMENT CAUSER PPs and FOCUSED PURE INSTRUMENT PPs, but not unfocused PURE INSTRUMENT PPs, can co-occur with anticausatives. The former two types possess the dual properties of causer and instrument, so they can occur in the contexts in which no Voice [+AG] is involved. The latter are pure instruments, so they must be licensed by Voice [+AG]. The fact that only INSTRUMENT CAUSER PPs and FOCUSED PURE INSTRUMENT PPs can co-occur with anticausatives suggests that anticausatives involve no Voice [+AG] in Japanese. The absence of Voice [+AG] in the syntactic structure of Japanese anticausatives is corroborated by the fact that anticausatives cannot co-occur with agentive adverbs (e.g., *wazato* “deliberately”) and rationale clauses (e.g., *kuuki-o ireru tameni* “to let in some fresh

² Scrambling also affects the acceptability of the sentences in (1). The sentence in (1a), for example, becomes more acceptable in its unscrambled word order, as in (i).

- (i)? Doa-ga kagi-de ai-ta.
 door-NOM key-DE open(intr.)-PAST
 “*The door opened with a key.”

In this sentence, the *de*-phrase occurs in the unscrambled position. Since scrambled phrases need to receive some focus or emphasis, the low acceptability of (1a) can be at least partially attributed to the fact that the scrambled *de*-phrase *kagi-de* “with a key” is non-specific and cannot be the focus of the scrambled sentence; the sentences in (1b) and (1c), by contrast, are acceptable because the scrambled *de*-phrases are more specific and can be the focus of the scrambled sentences.

It is also noteworthy that the co-occurrence of a non-specific *de*-phrase and an anticausative verb is acceptable in the generic sentence in (ii).

- (ii) Doa-wa kagi-de ak-u.
 door-TOP key-DE open(intr.)-PRES
 “#Doors open with a key.”

This sentence describes that doors have the general characteristic that they can be opened with a key. Since this sentence focuses on a characteristic possessed by doors, the involvement of a human agent who uses the key is backgrounded. As a result, the *de*-phrase in (ii) can be licensed by CAUS and can co-occur with an anticausative verb.

air”), which are tests employed to demonstrate the syntactic presence or absence of an implicit external agent (Alexiadou et al., 2015). Thus, this paper sheds new light on the syntactic structure of Japanese anticausatives from the perspective of instrument-like causers.

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Quantificational force of Classifier Reduplication Yi-CL-CL in Mandarin Chinese

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1. Introduction

Classifier reduplication in Mandarin is said to express plural meaning, be it abundant plural or universal plural (Zhang 2013). This study sets out to explore the distribution and quantificational force of the construction yi-CL-CL-NP ‘one-Classifier-Classifier-NP’. This paper is organized as follows. Section 2 investigates the distribution and the quantificational force of yi-CL-CL by comparing its distribution with universal quantifier *mei-CL-NP* ‘every NP’ and definite plurals *zhexie-NP* ‘these NP’. A series of tests show that the quantificational property of yi-CL-CL varies across the syntactic environment it appears in. Section 3 proposes a descriptive generalization based on the observations we made in the previous section. The generalization is that yi-CL-CL is deficient on its own and needs to be licensed by some operator outside of it. We propose that yi-CL-CL contains a covert event variable which can be bound by different types of operators. Section 4 investigates the interaction between yi-CL-CL and the distributive-like quantifier *dou* and reviews the representative views on *dou* in the previous literature. This not only provides support for our hypothesis on yi-CL-CL but also sheds light on the analysis of *dou*. Section 5 concludes.

2. The Puzzle on Distribution

In this section, we are going to investigate the distribution pattern of yi-CL-CL in details. We will compare its distribution with two other noun phrases: universal quantification *mei-CL-NP* ‘every NP’ and definite plurals *zhexie-NP* ‘these NP’. The reason I am comparing these structures together is to see whether the quantificational force of yi-CL-CL patterns with the universal quantifier phrase or with the definite plurals. The puzzling issue you will see in what follows is that yi-CL-CL patterns with universal quantifiers in some tests whereas patterns with definite plurals in others. Now, let’s start with the first test.

2.1 Post-verbal Object Position

In the first diagnostic as shown in (1), three types of noun phrases are put in the post-verbal position. This test shows us two things. First, yi-CL-CL can appear in a post-verbal object position. Second, yi-CL-CL patterns with the definite plural in that it does not convey maximal reading expressed by *mei-CL NP*. It is worth pointing out although both (1b) and (1c) are non-maximal, there is difference in their meaning. In (1b), yi-CL-CL can imply that the cities were destroyed one by one or one after another, while (1c) does not express this meaning.

- (1) a. *Diren cuihui le mei-zuo chengshi.* (Maximal meaning)
 Enemy destroy Asp every-CL city
 ‘The enemy has destroyed every city.’
- b. *Diren cuihui le yi-zuo-zuo chengshi* (Non-maximal)
 Enemy destroy Asp one-CL-CL city
 ‘The enemy has destroyed one city after another.’
- c. *Diren cuihui le zhe-xie chengshi* (Non-maximal)
 Enemy destroy Asp these city
 ‘The enemy has destroyed these city’

2.2 Quantifier-sensitive Expressions

Quantifier-sensitive expressions can be used as tests for the quantificational force of a determiner phrase (Carlson 1981). The examples below demonstrate that a universal quantifier like *every* is compatible with the quantifier-sensitive approximative *almost*, but *yi-CL-CL* is not, as shown in the contrast between (2a) and (2b).

The particle *dou* in these sentences can be puzzling to readers. We will explicate the function of *dou* in section 4. For the current purpose, *dou* in (2a) could be regarded as a distributive operator which distributes the property denoted by the VP after it to the plural individuals denoted by the noun before it. *Dou* in (2c) could be regarded as being similar to English *all* after the noun phrase. From this test, we see that *yi-CL-CL* patterns with the definite plural *zhexie-NP*.

- (2) a. *jihu mei-ge xuesheng dou kaoshang le daxue*
 Almost every-CL student Distributive be admitted Asp university
 ‘Almost every student was admitted into a university.’
- b. **jihu yi-ge-ge xuesheng dou kaoshang le daxue*
 Almost yi-CL-CL student DOU be admitted to Asp university
 Intended ‘Almost every student was admitted to a university.’
- c. **jihu zhexie xuesheng dou kaoshang le daxue*
 Almost these student ALL be admitted to Asp university
 Intended ‘Almost all these students were admitted to a university.’

One may wonder whether (2b) and (2c) are ungrammatical for different reasons. It is known that in many languages numeral *one* is often used to express indefinite meaning. If *yi-CL-CL* is also an indefinite expression because it contains the numeral *yi* ‘one’, then (2b) is ungrammatical because indefinites are incompatible with *dou* ‘all’. To rule out this possibility, we use the example in (3) to show that *yi-CL-CL* can occur with *dou*. In fact, when *dou* is absent in (3), the sentence would become ungrammatical.

- (3) *yi-ge-ge xuesheng dou kaoshang le daxue*
 yi-CL-CL student DOU be admitted to Asp university
 ‘Every student was admitted to a university.’

The piece of data in (3) shows that (2b) is ungrammatical simply because *jihu* ‘almost’ is incompatible with *yi-CL-CL*. The same is true with (2c). Therefore, this test shows that *yi-CL-CL* patterns with the definite plural.

According to Lee and Horn (1994), *almost* modifies high scalar and universal expressions. In Giannakidou & Cheng (2006), they mentioned in passing that the distributivity interpretation is generally at odds with *almost*. They did not provide specific evidence or arguments to support such analysis as it is not central to their paper. Descriptively, yi-CL-CL indeed conveys a strong sense of distributivity, though how to define distributivity formally is another important issue. Besides, compared with the universal quantifier *mei-CL-NP*, yi-CL-CL is not the highest in the scale in that it does not denote the maximal interpretation of the noun phrase on its own.

2.3 Partitives

In English, universal quantifiers cannot be used in partitives but definite plurals can. In the example below, a definite plural *the boxes* can occur in the partitive construction *many of NP* while universal quantifiers *every boxes* cannot.

- (4) a. Many of **the boxes** were stolen.
 b. *Many of **every boxes** were stolen.

Liu (2021) applies the above test to Mandarin as shown in (4a) and (4b). As we can see, Liu treats *NP- henduo* ‘NP-many’ as the counterpart of English partitives *many of NP*. Whether they are truly equivalent to each other can be a debatable issue. Since it is not the core question of the current paper, we accept the validity of this test for now and leave this issue for future research. The important thing is that this test demonstrates the distinct behaviour between definite plurals and universal quantifiers. What’s more, we can see in (5c) that yi-CL-CL no longer patterns with *mei-NP* ‘every-NP’ this time.

- (5) a. **zhexie** xuesheng **henduo** dou xihuan xiaoshuo
 These students most DOU like novel
 ‘Most of these students like novels.’
 b. ***mei-ge** xuesheng **henduo** dou xihuan xiaoshuo
 Every student most DOU like novel
 ‘Most of the every student like novels.’
 c. ***yi-ge-ge** xuesheng **henduo** dou xihuan xiaoshuo
 Yi-CL-CL student most DOU like novel
 ‘Most of the students like novels.’

2.4 Scope Interactions

Let me start by introducing Liu’s (2021) logic of test on scope interactions. Liu’s test is based on three assumptions. First, universal quantifier *mei* ‘every’ is base generated in the specifier position of a phrase headed by *dou*, i.e. *mei* is spec *dou* Phrase. Second, the quantifier can be moved to other places of the sentence, but it has to reconstruct to spec *dou* Phrase to get interpreted. The second assumption is the General Condition on Scope Interpretation proposed in Huang (1982), the content of which is repeated below:

- (6) **The General Condition on Scope Interpretation**

Suppose A and B are both QPs or both Q-NPs or Q-expressions, then if A c-commands B at SS, A also c-commands B at LF. (Huang 1982: 220)

The prediction we could get from these assumptions is: if there is another quantifier intervening between *mei* and *dou*, the sentence would be ungrammatical. This is because the intervening quantifier stops the reconstruction of *mei* to the spec *dou* Phrase position, leading to the interpretation failure. Now, let's look at the specific examples shown in (7).

- (7) a. **bushi mei-ge** xuesheng **dou** xihuan yuyanxue
 Not-be every student DOU like linguistics
 'Not every student likes linguistics.' (Neg>∀>dou)
- b. ***mei-ge** xuesheng **bushi dou** xihuan yuyanxue
 every student not-be DOU like linguistics
 Intended: 'Not every student likes linguistics' (*∀>Neg>dou)

In (7), there are two quantifiers, the negative quantifier *bu* 'not', and the universal quantifier *mei* 'every'. When the negative quantifier is between *mei* and *dou* as in (7b), the sentence is ungrammatical because the reconstruction of *mei* to spec *dou* is intervened by the negative quantifier *bu* 'not'. If we apply the same test to definite plurals, which is supposed to be referential and non-quantificational, then the position of the negative quantifier would not matter. This is exactly the case. As shown in (8), the position of the negative quantifier would not influence the grammaticality of the sentence.

- (8) a. **bushi zhexie** xuesheng **dou** xihuan yuanyanxue
 Not-be these student DOU like linguistics
 'Not all these students like linguistics.' (Neg>Definite plural>dou)
- b. **zhexie** xuesheng **bushi dou** xihuan yuyanxue
 These student not-be DOU like linguistics
 'Not all these students like linguistics.' (Definite plural>Neg>dou)

Now, let's apply the same test to see whether *yi*-CL-CL patterns with definite plurals or universal quantifier phrases. The point here is that (9) shows that *yi*-CL-CL behaves in line with universal quantifiers as in (7). The intervention of another quantificational expression influences our judgement of the sentence, unlike definite plurals. This test seems to indicate that *yi*-CL-CL is not referential and has quantificational force.

- (9) a. **bushi yi-ge-ge** xuesheng **dou** xihuan yuyanxue
 Not-be yi-CL-CL student DOU like linguistics
 'Not every student like linguistics.' (Neg>yi-CL-CL >dou)
- b. ***yi-ge-ge** xuesheng **bushi dou** xihuan yuyanxue
 yi-CL-CL student bushi DOU like linguistics
 Intended: 'Not every student like linguistics.' (*yi-CL-CL>Neg>dou)

2.5 Quantifier-internal Anaphora

In English, only genuine distributive universals licence sentence-internal readings of singular different (Carlson 1987; Brasoveanu 2011; Bumford 2015). Let's start with English examples first. In (10a), *every* licenses a sentence internal reading of singular different. In other words, *different* here means that the book read by every boy is different. In contrast, in (10b), the sentence internal reading of singular different is unavailable. The word *different* in (10b) means that the boys read a book that is different from a book that they read before. To express the same meaning as (10a), bare plurals could be used as shown in (10c).

- (10) a. Every boy reads a different book.
 b. The boys read a different book.
 c. The boys read different books.

The same pattern is found in Mandarin, too. In (11a), the natural interpretation is that the book each professor bought is different from each other. In (10b), however, the reading is that these professors bought the same book which is different from the book they bought last time.

- (11) a. **mei-ge** jiaoshou dou mai le yi-ben butongde shu
 Every professor DOU buy Asp one-CL different book
 'Every professor bought a different book (from each other).'
 b. **zhexie** jiaoshou dou mai le yi-ben butongde shu
 These professor DOU buy Asp one-CL different book
 'These professors bought a different book.'

Now, let's apply this test to Yi-CL-CL. Interestingly, this time, it patterns with neither of them. First, it is hard for (12) to get the sentence-internal reading of singular different as in (10a). It is also different from (10b) because (12) does not mean that these students bought the same book. The meaning of (12) is a combination of (10a) and (10b). It is like the event of 'buying a different book' is distributed across the subject 'yi-CL-CL student'.

- (12) **yi-ge-ge** xuesheng dou mai le yi-ben butongde shu
 Yi-CL-CL student DOU buy Asp one-CL different book
 'Almost all these student bought a book different from the one they bought last time.'

This leads to another observation of a difference between yi-CL-CL and *mei-CL-NP*. To make things simpler, we use sentences where *dou* is not obligatory to illustrate the point. (13a) is perfectly fine while (13b) is bad. It is actually very hard to process what (13b) means. The general description of structures like (13a) is that it contains indefinite phrase such as quantity phrase in the post-verbal object position (Huang 1996; Sun 2018). When there are indefinite expressions in the predicate, *mei-CL-NP* can occur without *dou*, otherwise *dou* is mostly required when *mei-CL-NP* appears. For now, the contrast in (13) indicates that yi-CL-CL does not behave in the same way as a universal quantifier.

- (13) a. **mei-ge** xuesheng jie le wu-ben-shu
 Every student borrow Asp five-CL-book
 'Every student borrowed five books.'

- b. ***yi-CL-CL** xuesheng jie le wu-ben-shu
 Yi-CL-CL student borrow Asp five-CL-book
 Impossible to process the meaning.

One reviewer asked whether (13b) gets any better when *dou* is added. This is a crucial point. It indeed saves the sentence from ungrammaticality by adding *dou* as shown in (14b).

- (14) a. **mei-ge** xuesheng **dou** jie le wu-ben-shu
 Every student DOU borrow Asp five-CL-book
 ‘Every student borrowed five books.’
 b. **yi-CL-CL** xuesheng **dou** jie le wu-ben-shu
 Yi-CL-CL student DOU borrow Asp five-CL-book
 ‘Almost all these students borrowed five books.’

To summarize again, one crucial difference between *mei-CL-NP* and *yi-CL-CL-NP* is that it is hard for the latter to appear with a pure quantity phrase without *dou*. Compared with definite plurals, we have the following comparison.

- (15) a. **mei-ge** xuesheng mai le san-ben-shu (distributive)
 Every student buy Asp three-CL-book
 ‘Every student bought three books.’
 b. **zhexie** xuesheng mai le san-ben-shu (collective)
 These student buy Asp three-CL-book
 ‘These students bought three books.’
 c. ***yi-ge-ge** xuesheng mai le san-ben-shu (ungrammatical)
 yi-CL-CL studentbuy buy Asp three-CL-book
 Intended: ‘Every student bought three books.’

It is clear to see that *yi-CL-CL* patterns neither with universal quantifier and definite plurals when there is quantity phrase in post verbal objects. Interestingly, if we *add* *dou* to those sentences, they will have the same distributive meaning as demonstrated below in (16). Adding *dou* not only changes the collective reading in (15b) to the distributive reading in (16b), but also renders (15c) grammatical.

- (16) a. **mei-ge** xuesheng **dou** mai le san-ben-shu (distributive)
 Every student DOU buy Asp three-CL-book
 ‘Every student bought three books.’
 b. **zhexie** xuesheng **dou** mai le san-ben-shu (distributive)
 These student DOU buy Asp three-CL-book
 ‘These students all bought three books.’
 c. **yi-ge-ge** xuesheng **dou** mai le san-ben-shu (distributive)
 yi-CL-CL studentbuy DOU buy Asp three-CL-book
 Intended: ‘Almost all these students bought three books.’

What is interesting to the current paper is that the pattern of *yi-CL-CL* is exactly the opposite to the distribution restriction on *mei...dou*. For *yi-CL-CL*, when there is indefinite phrase in the predicate, such as quantity phrase as in (16c), *dou* is obligatory. When there is no indefinite

phrase in the object position, *dou* is optional. The *mei...* (*dou*) construction exhibits the opposite pattern. A question that is worth exploring is how to account for the distinct requirement of *dou* posed by *mei-CL-NP* and *yi-CL-CL NP*.

2.6 Interim Summary

In this section, we use five tests to show the distribution of *yi-CL-CL* compared with universal quantifier phrase *mei-CL-NP* ‘every-NP’ and definite plurals *zhexie-NP* ‘these NP’. The pattern is summarized in the chart (17) below. If we follow Liu (2021) and assume that *mei-CL-NP* is a true universal quantifier and the definite plural is referential and does not have quantificational force, then the puzzle is: what is the quantificational force of *yi-CL-CL*?

(17) Distribution pattern of *yi-CL-CL*

		Mei-CL-NP (universal)	Zhexie-NP (definite plural)	Yi-CL-CL-NP
a.	Maximality	maximal	Non-maximal definite reading	Non-maximal Indefinite reading
b.	Quantifier sensitive expression <i>jihu</i> ‘almost’	Grammatical (almost every)	Ungrammatical (*almost these)	Ungrammatical (*almost yi-CL-CL)
c.	Partitives <i>henduo</i> ‘many of’	Ungrammatical (*many of every)	Grammatical (many of these)	Ungrammatical (*many of yi-CL-CL)
d.	Intervention of other quantifiers between <i>mei</i> and DOU	Ungrammatical (*Every-not-DOU)	Grammatical (these-not-DOU)	Ungrammatical (*yi-CL-CL-not-DOU)
e.	Quantifier internal anaphora or quantity phrase in objects	Distributive meaning	Collective meaning	*Ungrammatical (Unable to process the meaning unless <i>dou</i> is in the sentence.)

3. Proposal

Although we have found different distribution patterns of *yi-CL-CL* in the aforementioned tests, we cannot account for all these properties in this paper. Instead, in what follows, we will only focus on the property (a) (d) and (e) summarized in (17) and leave the other properties for future research.

For now, we hypothesize that *yi-CL-CL* contains a variable that requires licensing from operators. When *yi-CL-CL* appears in the object position of a predicate, it denotes an indefinite reading. This is not surprising because according to Li (2014) and Tsai (1994), the existential closure in Chinese is as low as VP. Therefore, the variable in *yi-CL-CL* is bound by the existential closure outside VP, thus being interpreted as indefinite. (17d) shows that *yi-CL-CL* has quantificational force. From (17e), we can see that when *yi-CL-CL* is in the subject position, it requires the license of the distributive-like operator *dou*. These observations seem to indicate that *yi-CL-CL* is deficient on its own and requires some licensing outside the noun phrase. In

the following section, we summarize three major views or analysis on *dou* to see whether it is feasible to analyze *dou* as a licenser or a variable.

4. Literature on *Dou*

As shown in the previous section, the grammaticality of structures involving yi-CL-CL has a close relation with the (non-)occurrence of *dou*. Therefore, this section summarizes three major views on *dou*.

4.1 *Dou* as an Maximality Operator

Giannakidou & Cheng (2006) initiated the analysis of treating *dou* as a maximality operator which restricts the domain of Free Choice Items (henceforth FCI) like *renhe* ‘any’ or *na-CL-NP* ‘which NP’ in Mandarin. They compare Mandarin *dou* with the Greek definite article in sentences consisting of FCI Items. It is worth mentioning that in their paper, Giannakidou & Cheng only focused on constructions the FCI-licensor use of *dou* and explicitly said that they were not sure about whether the same analysis could be applied to the scalar use of *dou*. Giannakidou & Cheng argue that *na-CL-NP* can be used as an intensional FCI and the function of the maximality operator *dou* is to pick out the largest plurality in the intensional domain of the noun phrase. The maximality operator *dou* also provides definiteness and existence meaning to the whole structure.

Xiang (2008) further develops Giannakidou & Cheng (2006)’s maximality analysis of *dou* to provide a unified treatment of for its distributive use and scalar use. Xiang (2008) proposed that *dou*’s maximization operation is performed at the level of covers or degrees introduced by the noun phrases in the domain of *dou*. When the noun phrase introduces covers, the maximality operator selects the maximal plural individual that includes all the covers. When the noun phrase introduces degree of unlikelihood, *dou* selects most unlikely individual giving rise to the scalar interpretation.

Giannakidou & Cheng (2006) and Xiang (2008) both treat *dou* as an operator which exerts maximality over the nominal domain. In what follows, we will summarize a different view put forward by Feng and Pan (2022) which argues that *dou* is a universal quantifier exerting influence on the VP domain rather than the NP domain.

4.2 *Dou* as a Universal Quantifier

Dou is a versatile element. Instead of analyzing these uses of *dou* as different lexical entries, Feng and Pan (2022) proposed that *dou* has a core meaning, i.e. universal quantifier, and *dou* can be mapped to different composition of domains giving rise to various interpretational effects including distributivity, scalarity, exhaustivity, etc. Different from Lin (1996, 1998) who analyzes *dou* as a generalized distributive operator, Feng and Pan treat distributivity as one type of effects of the universal force. Feng and Pan also mention that *dou* is a binary quantifier, meaning that it relates the VP property with every individual in the alternatives introduced by the noun phrase.

4.3 *Dou* as a Distributivity and Maximality Operator

As we mentioned earlier, Liu (2021) treats *mei-CL-NP* as a true universal quantifier. He argues that *dou* is both a distributivity operator and a maximality operator.

- (18) San-ge xuesheng dou mai le wu-ben-shu
 Three-CL student DOU buy Asp five-CL-book
 ‘The three students each bought five books.’

According to Liu, *dou* equals to maximality plus distributivity. The appearance of *dou* presupposes that the noun phrase adjacent to it is the strongest expression among its alternatives. That is why in (18), the quantity phrase *three students* became definite. In the meantime, the distributivity of *dou* renders the collective reading impossible.

Liu also uses the concept of Question Under Discussion (QUD in Roberts 2012; Büring 2003). The QUD for a universal expression is whether the statement is true for each individual instantiation and each individual alternative needs to be checked. In this case, individual alternatives are relevant and that is when *dou* is needed. Liu uses the following example to show the contrast.

- (19) At a second-hand bookstore
 a. Owner: mei-ben shu mai shi yuan
 every-CL book sell ten RMB
 ‘Every book is 10 RMB.’
 b. Customer: zhe-ben ne?
 this-CL question particle
 ‘What about this one?’
 c. Owner: mei-ben shu dou mai shi yuan
 every-CL book DOU sell ten RMB
 ‘EVERY book is 10 RMB’

In (19a), it is more natural to use *mei* without *dou*. According to Liu, this is because the focus is on the price, not on the individual book. When the customer asked about another book’s price, the focus shifted on the price of the individual book. That’s why in the owner’s second answer, *dou* is added.

4.4 Implications on *Dou*

A comprehensive evaluation of literature on *dou* is clearly out of the scope of the current paper. However, we prefer the analysis of Liu’s (2021) analysis of *dou* over the other two views. Based on the data we show in section 2, we can see that the occurrence of *dou* does not guarantee a universal reading. For instance, in (14) repeated below as (20), although *dou* renders (20b) grammatical, yi-CL-CL is quasi universal reading rather than real universal reading. There is nuance of interpretation between (20a) and (20b). What’s more, the absence of *dou* does not cancel the universal reading. For instance, the omission of *dou* in (20a) does not affect the universal reading at all. Therefore, it seems problematic to analyse *dou* as a universal quantifier. As for the argumentation against the analysis of *dou* as an definite iota operator, please see Feng and Pan (2022).

- (20) a. **mei-ge** xuesheng (**dou**) jie le wu-ben-shu
 Every student DOU borrow Asp five-CL-book
 ‘Every student borrowed five books.’
- b. **yi-CL-CL** xuesheng **dou** jie le wu-ben-shu
 Yi-CL-CL student DOU borrow Asp five-CL-book
 ‘Almost all these students borrowed five books.’

5. Conclusion

To summarize, this study found that yi-CL-CL exhibits different quantificational forces depending on the contexts it appears in. Through a series of tests, this paper shows that the quantificational force of yi-CL-CL depends on the type of operator it occurs with. To account for the distribution of yi-CL-CL, the current study hypothesizes that yi-CL-CL has a covert event variable in it required to be bound. The event variable can be bound in various ways such as existential closure inside VP and the distributive-like quantifier *dou*. This gives rise to different interpretation possibilities of yi-CL-CL, including indefinite reading in the object position and universal quantifier reading when it appears with *dou*. This paper also favours Liu’s (2021) analysis of *dou* by treating it as a distributive and maximality operator rather than a universal quantifier.

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Deriving Directionality Parameters from Functional Typing

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This study (Times New Roman, 12pt) The Functional Typing Hypothesis (FTH) (Author 2018a, 2018b) turns the idea of feature- uninterpretability on its head, by hypothesizing that bundles of so-called uninterpretable ϕ -features are actually interpreted as variables at the CI interface, just like pronominal bundles of ϕ -features are (Evans 1980), and that the uninterpretable elements are actually the functional heads like T, v, and C. The FTH assumes that such heads, when null, denote bare λ -operators that are the equivalent of vacuous quantifiers. Such bare operators must find a variable to bind at the CI interface or the structure containing them will violate Full Interpretation (FI) at that interface. For convergence, the CHL must provide the heads denoting such bare operators with a bundle of agreement features, which then can be interpreted as a variable at the CI interface. I call this procedure functional typing (FT). To functionally type a head, the CHL must internally Merge a set of morphological features (e.g., ϕ -features) of some nominal in the domain of the given head on that very head. This is illustrated in the structure in (1).

- (1) [TP T ϕ s [vP Sub ϕ s [v' Vj-v ϕ o eats VP Obj ϕ o tj]]]

In (1) T has been typed with the ϕ -features of the subject and the V-v complex has been typed with the ϕ -features of the object. Internal merge of ϕ -features for FT solves the problem of uninterpretable functional heads, but it creates problems for both the CI and SM interface that must be solved somehow (see Author 2018b). Focusing on the SM interface, the problem is the following. If (1) is linearized, a violation of the LCA will ensue since the same set of ϕ -features appear in two different positions. Author (2018b) argues that after FT, the CHL probes the domain of the functionally typed head to check any copy of ϕ -feature agreeing with the head.

This “checking” procedure is different from the checking procedure of Chomsky (1993, 1995). Checked copies are licensed to be deleted at the SM interface up to recoverability. But deletion cannot just affect the ϕ -features of the associate: that violates the phonological integrity of the associate and the Not Tampering condition (NTC). Deletion of the entire associate DP, without raising, violates the Principle of Recoverability of Deletion (PRD) since the material associated with the restriction of the DP will not be recoverable. The problem is solved if, after checking, the entire subject and object DPs are internally merged in [Spec, TP] and [Spec, vP] respectively, as in (2), and the phonology deletes one of the checked copies.

- (2) [HP Sub ϕ s T ϕ s [vP Obj ϕ o Sub ϕ s [v' Vj-v ϕ eats VP Obj ϕ o tj]]]

Which copy should the phonology delete? If we assume that the ϕ -feature bundle has a hierarchical structure, and that case is usually the highest feature in the bundle, given Baker's (1988) Mirror Principle and the fact that Case is further away from the root than the other ϕ -features (Greenberg

1966), we can provide an answer to the previous question and at the same time derive so-called directionality parameters from case considerations. Suppose that languages with no morphological case systems, like English, just have a single abstract syncretic case, but that languages with case systems actually have the cases associated with the morphological markings (e.g., NOM, etc.). If so, then for a language like English, after FT of T, the CHL will probe the domain of T for agreeing bundles to check. It will check the Obj and the Sub copies alike, based on the fact that the highest feature in the ϕ -feature bundles of those DPs is the same: generic syncretic Case. Suppose now that the deletion procedure at the SM interface is based on an algorithm like that in (3), implemented while scanning the string of terminals from left to right.

- (3) Delete any checked copy that follows another checked copy

If the deletion procedure is based on something like (3), then in (2) the left most copy of the subject, in the higher phase, although checked prior to raising, will not be deleted, as it does not follow any other checked copy. The copies of the object and subject in the outer and inner [Spec, vP], however, will be deleted since they have been checked by T and they both follow the copy of the raised subject. This is shown in (4), deletion indicated with strikethrough font.

- (4) [HP Sub ϕ s T ϕ s [vP Obj ϕ o Sub ϕ s [v' Vj-v ϕ eats VP Obj ϕ o tj]]]

In the vP-phase, however, there is only one copy of the object left: the one in the trace position. Since there are no other preceding checked copies in the phase, the deletion procedure does not apply, in line with the algorithm in (3). Pronunciation of the structure in (4) results in the SVO word order. We therefore derive the SVO order from the impact of the Case property of the bundle of ϕ -features. If we assume now that in languages with case systems, the distinctions among the different morphological cases is real, a natural assumption is that when the highest feature in the ϕ -feature bundle of the subject (e.g. NOM) types T, and the CHL probes the domain of T looking for NOM, it will not find any agreeing copy other than the one in the vP-internal copy of the subject: the highest feature in the ϕ -bundle of the object will have accusative morphology. In the higher phase, the deletion procedure will be able to delete the lower copy of the subject, since it follows the checked copy in [Spec, TP]. In the lower phase, the procedure will be able to delete the copy in the trace position, since it follows the copy in [Spec, vP], but not the latter copy, since that does not follow other agreeing checked copies in the same phase.

Pronunciation of (4) under such conditions will result in the order SOV. We therefore derive the SVO and SOV orders from properties of the Case system: no directionality parameter is needed. Deriving directionality from Case is a welcome outcome in light of Greenberg's (1966) Universal 41, which essentially says that if a language has the SOV word order as a dominant order, then that language "almost always has a case system." The approach makes it possible to explore the question of whether other parameters are derivable from the FTH and the structure of agreeing bundles of features.

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Complex Nominals within Labeling Theory

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1. Empirical Background

As is well known, Left Branch Extraction (LBE) can apply in, e.g., most Slavic (Czech, Polish, Russian, Serbo-Croatian, Slovenian) languages (1). By contrast, languages like English and Italian are subject to the Left Branch Condition (LBC, Ross 1986), (3), i.e., DET-categories (DET=demonstrative, wh-word, possessor...) obligatorily pied-pipe the nominal residue, cf. the contrast between (2)-a and (2)-b. (The Dutch *wat-voor*-construction and its German *was-für* counterpart (cf. Corver 2006, Leu 2008) require a separate discussion.)

- (1) a. [Č'ju knigu]i čitaješ ti?
 whose book you-are-reading
 b. Č'jui čitaješ [ti knigu]?
 whose you-are-reading book
 ‘Whose book are you reading?’ (Russian, Ross 1986:145ff)
- (2) a. *Whose_i are you reading [t_i book]? b. [Whose book]_i are you reading t_i?
- (3) Left Branch Condition - No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

An equally well-known generalization maintains that LBE-languages feature no articles (Uriagereka 1988, Corver 1992, Bošković 2005) and optionally allow the addition of a DET- category, cf. (4). By contrast, “DP-languages” obligatorily require the presence of a DET- category, cf. (5) (Stowell 1991, Longobardi 1994), including articles.

- (4) ... no (èta) mašin-a byla očen' dorogoj
 but DET car-NOM was very expensive
 ‘but the car was very expensive’ (Russian, Czardybon 2017 :86)
- (5) John met *(the/a) president of a mining company yesterday. (Stowell 1991:37)

The contrast is commonly cast in terms of differential settings of the values of an NP-/DP- parameter (Bošković 2005 et seq). While the proposal of this parameter sparked an insightful industry of research, problems include that subsequent studies directly undermine its validity and criteria, e.g., by proposing DP-analyses for NP-languages (cf. Syed and Simpson’s 2017 study on Bangla nominal phrases).

2. Observation

All the mentioned article-less LBE-languages feature morphologically rich nominal case and gender/declension class inflection, while all the article languages observing the LBC feature morphologically poorly inflecting nouns. Even for a language like German, Müller (2002) ends up with as little as the one form in the paradigm of nominal inflection in the left table (the two forms of weak masculine noun inflection being a separate matter). Compare this to four forms in Russian nominal inflection classes I, III and IV (from Müller 2004) in the right table, which does not even consider instrumental and locative case yet.

Ger	M.SG <i>Tisch</i> (‘table’)	N.SG <i>Buch</i> (‘book’)	F.SG <i>Tür</i> (‘door’)	Ru	M.SG <i>zavod</i> (‘factory’)	N.SG <i>mest</i> (‘place’)	F.SG <i>tetrad</i> (‘notebook’)
NOM				NOM		-o	
ACC				ACC		-o	
DAT				DAT	-u	-u	-i
GEN	-(e)s	-(e)s		GEN	-a	-a	-i

3. New Analysis

The analysis is couched in the framework by Chomsky (2013, 2015/POP(+)) in which the structure building operation Merge applies optionally (i.e., freely), whilst phase-by-phase transferred syntactic representations meet 3rd factor principles of efficient computation (Minimal Search) and interface conditions. One of the latter is that every syntactic object requires a label. POP proposes that this requirement is achieved in a computationally efficient manner by the Labeling Algorithm LA. The first step in the derivation involves a category-neutral root R and a categorizer K (POP: 47) introducing an asymmetry: While R does not, K bears grammatical features and is thus identified by the LA. Thus, a nominal phrase comprises the nominalizing head n and R (cf., e.g. Borer 2005) yielding $\{n, R\} = \alpha$. How is the optional and the obligatory empirical pattern (1)/(2)/(4)/(5) captured? This talk seeks to capture it in terms of “strength” and “weakness” for the identification by the LA (cf. POP+ on strong and weak T). It makes the novel proposal that this notion carries over to nominal inflection, cf. (6), in which richness and poverty of nominal inflection is labeling-relevant:

- (6) The Nominal Strength Parameter
 a. weak n/nwk: English, Italian, German ... b. strong n/nstr: Czech, Polish, Russian ...

Following Sag, Wasow & Bender (2003) and Chomsky (2007: 25-26), DET-categories are internally complex, i.e., phrasal, here represented as DP (not to be confused with the DP- hypothesis where DP dominates NP, cf. Abney 1986 et seq). Given (6)-b, the LA unproblematically identifies α ’s label as nP in nstr-languages, because in contrast to nstr, nwk is “too weak” to label by itself (cf. POP+ on Italian vs. English T). Consequently, no DP is required in nstr-languages as shown in (7), where the verb selects either [DP nPstr] or nPstr. By contrast, [nwk R] requires modification, otherwise the verb selects an unlabeled unit. Set-Merge of DP comes to the rescue “supporting” nwk when the LA searches for α ’s label as shown in (8). The LA finds the shared feature borne by nwk and D.

- (7) $\{V, \{\alpha = nP (DP), \{nstr, R\}\}\}$ (8) $\{V, \{\alpha * (DP), \{nwk, R\}\}\}$

Rich noun inflection languages feature *nstr* and do not require a DET-category (while optionally allowing it). By contrast, *nwk*-languages require a DET-category, providing a new solution to the puzzle in (5). What is label of the nominal unit? Languages like German provide evidence that LA finds at least ϕ -features: Number and gender (and Case) are shared between the DP and *n*, here tentatively given as *f*:

(9) The label of {DP=*the*, nP=*president*} is $\langle f, f \rangle$, where *n* and *D* bear *f* and agree wrt *f*.

An important consequence of (6) is that we can unify the EPP-effect within the nominal domain with ECP-effects (cf. POP+ for the corresponding unification within the clause): LBE is permitted in *nstr*-languages: No matter if DP is present, absent, or extracted, the LA finds *nstr*. As shown in (10), LBE does not obviate the labelability of α : *nstr* requires no “support.” This contrasts with the situation in (12): Since the trace of DP is invisible for the LA (cf. POP, Epstein et al. 2020) within α and since *nwk* is crucially too weak to label, LBE leaves α unlabeled, thus violating the labeling requirement. Consequently, the labeling requirement in conjunction with (6)-a deduces the LBC (3).

(10) $DP_i \dots \{ \alpha = nP \ t_i, \{ n_{str}, R \} \}$ (11) $*DP_i \dots \{ \alpha = ? \ t_i \{ n_{wk}, R \} \}$

During the talk affixal definiteness markers in Danish and Swedish will be considered and subsumed under (6)-a. They thus disallow LBE and require the presence of an XP in the sister position of $\square$. The definiteness suffix is identified with *n*wk*. Danish *hest-en* (horse-DEF, ‘the horse’) is analyzed as in (12)-a, where DP is silent, and the definiteness suffix shows up as an agreement reflex between *n** and *D* (cf. Epstein et al 2020 for “SPEC-head” agree by Minimal Search). Demonstratives are analyzed as DPs. When they are Merged, *n** has to remain silent (cf. (12)-b). Swedish, by contrast, represents the nominal analogue of “doubly filled Comp” (cf. Rizzi (1997:283) for similar complementarity effects in the C-domain and rare DFC-cases).

(12) a. $[\langle f, f \rangle \ DP = \emptyset \ [n^*_{wk} = -en \ R = hest]]$ b. $[\langle f, f \rangle \ DP = den \ [n^*_{wk} = \emptyset \ R = hest]]$

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Two types of FinP-V2 in German

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In recent years, the idea has consolidated in cartographically-oriented syntax that languages with a grammaticalized Verb-Second (V2) rule may fall into the group of so-called “ForceP-V2” or of “FinP-V2” systems (Poletto 2013, Wolfe 2016, De Clercq & Haegeman (2018)).

The former entail a derivation of the type illustrated in (1a), in which the finite verb cyclically moves to Force° after leaving a trace in Fin° – thereby inducing a “bottleneck effect” (Cardinaletti 2010, Haegeman 1996, Hsu 2017, Roberts 2004) –, while the pre-verbal constituent is raised from its middle-field base-generation site to Spec,ForceP via Spec,FinP. This operationalization is derived from the fact that ForceP-V2 languages are supposed not to allow for any exceptions to the V2 constraint, which is why ForceP, the highest clause-internal projection in the Rizgian (1997) Split CP, is taken to be the landing site of both elements. The term “FinP-V2 language”, on the other hand, refers to a derivation in which both the verb and the XP in initial position target the lowest left-peripheral projection, FinP, as their landing site (1b). This pertains to the possibility of having V3 or similar patterns involving a larger portion of the C-domain under specific conditions:

- (1) a. [ForceP XP_i [Force° V_{fin}_x] ... [FinP t_i [Fin° t_x [TP t_i ... t_x]]]] (ForceP V2)
b. [ForceP [Force°] ... [FinP XP_i [Fin° V_{fin}_x [TP t_i ... t_x]]]] (FinP V2)

Differently e.g. from Old Romance, other Germanic varieties like Cimbrian or Kiezdeutsch, as well as older stages of the German language, which are assumed to exhibit a relaxed (“low”) V2, contemporary German is generally classified as a strict (“high”) V2 system with a ForceP-V2 rule. This is taken to be corroborated by the ungrammaticality of linearizations like (2a) and (2b), showing that neither two arguments nor a frame-setting constituent followed by an argument seem to possibly be hosted in the left periphery:

- (2) a. *Der Hans die Maria hat gestern getroffen.
the.NOM Hans the.ACCMaria has yesterday met
b. *Gestern der Hans hat die Maria getroffen.
yesterday the.NOM Hans has the.ACCMaria met
(int.): (‘Hans met Maria yesterday.’)

In this paper, I propose a novel taxonomy of V2 in (present-day) German that is based on two premises: (i) both distributionally and interpretively, V2 is not a uniform rule, but rather a constraint that is to be defined *locally*, i.e. there are different types of V2 that have to be related to corresponding phenomena at the syntax-semantics interface; (ii) these different types of V2 follow from different left-peripheral configurations. In particular, I contend that V2 is always a FinP phenomenon (viz.: that ForceP V2 does not exist) in German, but that there are at least two types of discernible FinP-V2 constraints that need to be postulated for this language:

- a discourse-related / information-structurally-motivated V2 (V2₁)
- a merely syntactic V2 (V2₂)

V2₁ is a generalized rule for (declarative) main clauses and involves a combination of V-to- Fin movement, (Fin° being the landing site of the finite verb) and cyclic movement of one constituent via Spec,FinP into some left-peripheral specifier (Spec,TopP, Spec,FocP, Spec,wh, etc.) attracting it in order to satisfy some discourse or information-structural feature. V2₂, instead, occurs in some types of V2 embedded clauses that do not allow for the realization of an independent speech act. In such structures, the linear order (in particular, raising of the finite verb + one XP into the C-domain) is not driven by any discourse or information-structural operation, but merely depends on the absence of an overt complementizer in C that forces these elements to move overtly. In V2₂-configurations, I assume the tree to be truncated at FinP, so that: (i) the finite verb moves to Fin° just as in V2₁, and; (ii) the XP is not able to move into some CP-specifier after satisfying the bottleneck in Spec,FinP:

- (3) a. [ForceP [TopP [XP]_i ... [FinP t_i [Fin° Vfin_x [TP t_i ... t_y]]]]] (V2₁)
 b. ~~[ForceP [TopP [FocP/whP ... [FinP [XP]_i [Fin° Vfin_y [TP t_i ... t_y]]]]]]~~ (V2₂)

The need to differentiate V2₁ from V2₂ is justified by the fact that, differently from what is generally assumed for present-day German, this language *does* exhibit V3 patterns which are, however, limited to main clauses. For instance, in (4), a left-dislocated contrastive topic (*der Mann* ‘the man’), a post-initial contrastive marker (*aber*, ‘however’), a frame-setting adjunct (the *als*-clause) and a pronominal resumptive (*der*) occur preverbally in the left periphery. In embedded clauses complementing non-assertive predicates or DPs (5), instead, V2 represents in fact a strict and inviolable rule (6):

- (4) *Der Mann aber, als er das sah, der ergriff die Flucht und rannte.*
 the man however when he that saw he took the escape and ran
 ‘The man, however, ran away when he saw this.’

- (5) a. *Ich hatte gehofft, der Mann würde die Flucht ergreifen.*
 I had hoped the man would the escape take
 ‘I hoped the man would run away.’
 b. *Die Annahme, der Mann habe die Flucht ergriffen, war gerechtfertigt.*
 the assumption the man has the escape taken was justified
 ‘The assumption that the man ran away was justified.’

- (6) a. **Ich hatte gehofft, der Mann aber, als er konnte, der würde die Flucht ergreifen.*
 I had hoped the man however when he could he would the escape take
 (int. :) ‘I hoped the man would run away when he could.’
 b. **Die Annahme, der Mann aber, als er konnte, der habe die Flucht ergriffen,*
 the assumption the man however when he could he has the escape taken
war gerechtfertigt.
 was justified
 (int. :) ‘The assumption that the man had run away (when he could) was justified.’

The data exemplarily illustrated in (4)-(6) seem to suggest, for instance, that while in main clauses the constituent in first position is able to target the projection encoding contrastivity, the same element in

the subordinate context presented above is not. Moreover, in matrix clauses the C-domain between this projection and the TP can be occupied by further material. Therefore, the distinction proposed here is advantageous for a number of reasons:

- it provides a structural explanation of the (optional) presence of linear V3 in main, but not in embedded clauses complementing (i.e. in the scope of) non-assertive predicates. In combination with the bottleneck effect, it also accounts for the ungrammaticality of the examples in (2);
- it is compatible with the identical interpretation of V2₂ and verb-final structures (note that main-clause V2₁, instead, cannot be realized by means of other linear orders).

The idea of the existence of a ForceP-V2 type in German is dismissed in the present account. Besides the empirical facts shown above for main clauses, this can also be extended to the embedded contexts in (5), since: (i) the functions associated with ForceP do not seem to be in any obvious way related to the accommodation of non-illocutive syntactic material; (ii) deriving strict embedded V2 in a Force-V2 configuration would still involve the bottleneck effect, which in turn would falsely predict the possibility of having at least left dislocations as licit constructs in these structures.

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On Vietnamese bare reflexive *mình* and the blocking effect

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Bui (2019) notes that the bare reflexive *mình* in Vietnamese can be interpreted as a long-distance anaphor as in (1a), on a par with Mandarin *ziji* (see Huang & Liu 2001 a.o.). We find that the non-local interpretation of *mình* is subject to a blocking effect (BE): while local 3rd/2nd person antecedents do not disrupt the long-distance construal of *mình* (= (1a/b)), the local 1st person antecedent does (= (1c)).

- (1) Nguyên₁ cho rằng [Tân₂ / bạn₂ / tôi₂ không nên trách mình_{1/2}].
Nguyên think Tân / you / I not should criticise self
a. ‘Nguyên₁ thinks that Tân should not criticize himself / him₁.’
b. ‘Nguyên₁ thinks that you should not criticize yourself / him₁.’
c. ‘Nguyên₁ thinks that I should not criticize myself / *him₁.’ (=blocking effect)

We argue that neither the syntactic analysis (based on cyclic agreement with subject DPs in Huang & Tang 1991) nor the pragmatic approach (based on perspectival conflicts in Huang & Liu 2001) developed for *ziji* provides an empirically adequate account for the pattern of BE of *mình*. In particular, given that the occurrence of BE results from the inconsistency of ϕ -features of potential subject antecedents under the syntactic analysis, (2a) and (2b) should pattern together in the occurrence of BE. However, this prediction is not born out.

- (2) a. Tôi₁ cho rằng [bạn₂ không nên trách mình_{1/2}].
I think you-SG not should criticise self
‘I think that you should not criticize yourself / me.’
b. Bạn₁ cho rằng [tôi₂ không nên trách mình*_{1/2}]. you-SG
think I not should criticise self
‘You think that I should not criticize myself / *you.’ (=blocking effect)

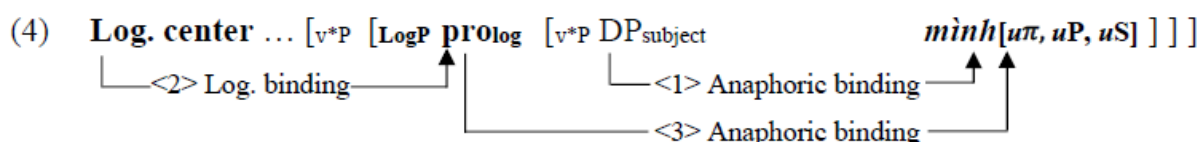
Furthermore, the pragmatic approach in Huang & Liu (2001) predicts that BE would arise even when the 1st person pronoun does not occur at a potential antecedent position. However, this prediction is not born out as evidenced by the grammatical long-distance interpretation in (3).

- (3) Nguyên₁ cho rằng [[mẹ của tôi₃]₂ đã hại mình_{1/2/*3}].
Nguyên think mother POSS me PAST hurt self
‘Nguyên₁ thinks that [my mother]₂ hurt self_{1/2} / *me.’

The gist of our proposal can be encapsulated in the derivation depicted in (4). First, *mình* is endowed

with an unvalued set of person features [$u\pi$, uP , uS], based on Béjar & Rezac's (2009) articulate structure of person features in (5). This way, our characterization of *minh* is similar to Huang & Tang's (1991) treatment of *ziji* as a 'double anaphor' in the sense that *minh* is anaphorically deficient in both π -features and its referential value. Second, following

Charnavel's (2019) analysis of exempt anaphors, we assume that the (apparent) long-distance binding of *minh* is actually mediated by an implicit logophoric pronoun (prolog merged at the vP phase edge), which acquires its value via binding by the logophoric center (=the attitude holder bearing attitude *de se* or the empathy locus) of an utterance. Third, the order of the binding operations (as indicated by the numbering in (4)) by the local antecedent and prolog faithfully matches the derivational timing by which they enter the derivation – the former has to take precedence over the later. Thus, binding by the local antecedent of different person features yields different valuation consequences of [$u\pi$, uP , uS] on *minh*, as detailed in (6). Specifically, *minh* is allowed to refer to the remote antecedents in (1a/b) because the local antecedents in (1a/b) do not completely value the feature set on *minh*, rendering *minh* referentially open to the binding by the remote antecedent (= (6a/b)). By contrast, given that *minh* is fully valued by the local 1st person antecedent in (1c)/(3) and hence is featurally specified as the speaker, it is unable to establish referential dependency with the 3rd person matrix subject.



(5) 3rd= $[\pi]$ 2nd= $[\pi, participant]$ 1st= $[\pi, participant, speaker]$

- (6)
- a. Binding by a local 3rd person antecedent: $DP_{[\pi]} \rightarrow \text{minh}_{[u\pi, uP, uS]} \rightarrow \text{minh}_{[\pi, uP, uS]}$
= Not fully valued & featurally indetermined & referentially open (as in (1a))
 - b. Binding by a local 2nd person antecedent: $DP_{[\pi, P]} \rightarrow \text{minh}_{[u\pi, uP, uS]} \rightarrow \text{minh}_{[\pi, P, uS]}$
= Not fully valued & featurally indetermined & referentially open (as in (1b))
 - c. Binding by a local 1st person antecedent $DP_{[\pi, P, S]} \rightarrow \text{minh}_{[u\pi, uP, uS]} \rightarrow \text{minh}_{[\pi, P, S]}$
= Fully valued as 1st person (=the speaker) & referentially fixed (as in (1c)/(3) = BE)

One immediate question about the derivation involving (6a/b) concerns whether the incompletely valued feature set left on *minh* causes crash of the derivation when it reaches the CI interface for interpretation. In response to this question, we follow Preminger's (2014) argument that unvalued features do not necessarily lead to crash of the derivation. Therefore, although the presence of unvalued features on *minh* triggers obligatory feature valuation operations via binding, the attempted-but-failed operations can still be fully grammatical.

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Emotive markers and polar interrogative particles in the Ikpana left periphery

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1. Synopsis

This paper provides an analysis of the syntax of particles that surface in Ikpana polar interrogative clauses. Taking a cartographic approach (e.g., Rizzi 1997, Cinque 1999), we argue that final-vowel lengthening and final emotive markers—*naa*, *lòò*, and *ĩĩ*—are all instantiations of functional heads in an articulated left periphery. These are situated relatively high in the complementizer domain: final-vowel lengthening is the realization of a high Int/Foc head, whereas matrix final particles inhabit and compete for a structurally superior position that is higher than the Force head, such as Speech Act Phrase (Speas and Tenny 2003, Haegeman & Hill 2013, Corr 2018a,b, Tsai & Yang 2022).

2. Background

Ikpana [ikpáná] (ISO 639-3: lgg) is an endangered Indigenous language spoken in southeastern Ghana (Dorvlo 2008). Morphosyntactically, Ikpana forms unmarked matrix polar interrogative clauses with a clause-final question morpheme realized as a lengthened final vowel.

- (1) jawèè a-fǎn a-ha e-tʃí-í
 good.afternoon CM-people CM-home SM-good.PRS-Q
 ‘Good afternoon. Are people at home well?’

Embedded interrogatives, however, do not utilize final vowel lengthening. Instead, they are formed with the sentence-final particle *naa*, which is part of and scopes over the embedded clause (2).

- (2) Sása ò-bú [CP té Nene ò-gá o-klòntʃí naa]
 Sasa SM-ask.PST COMP Nene SM-read.PST CM-book PRT
 ‘Sasa asked if Nene read a book.’

Importantly, embedded *naa* is like matrix vowel lengthening in that both are interpreted neutrally. *Naa* can also appear in matrix contexts; when it does, though, it is no longer neutral (3).

- (3) â-kpé u-dântʃí i-kpégò naa
 2SG-eat.PST CM-morning CM-food PRT
 ‘Have you eaten breakfast?!?’ (speaker is surprised and perhaps angry)

Matrix *naa* encodes expressive, not-at-issue meaning that is speaker-oriented, encoding the speaker’s

emotive attitude (Dorvlo 2008, Agbaku 2015). Naa thus fits the profile of a mirative (DeLancey 1997, 2001; Aikhenvald 2004, 2012) or other “emotive marker” in the sense of Rett (2021). Other similar clause-final particles that occur in Ikpana polar interrogatives are *lòò* and *ĩĩ*. Naa and *lòò* can appear in both interrogative and non-interrogative contexts, but *ĩĩ* exclusively occurs in interrogative contexts with focus (4), and has not been discussed in any prior descriptive literature on the language.

- (4) i-kpá (ka) awú bí-e ù-zí i-dzó ĩĩ
 CM-truth FOC 2SG.FOC child-DET SM-carry.PST CM-yam PRT
 ‘Is it really true that it’s your child who took the yams?’ (speaker is surprised)

The Ikpana clause-final emotive markers *naa*, *lòò*, and *ĩĩ* all encode non-neutral epistemic stances and are compatible with focus constructions, whereas final-vowel lengthening generally receives an unmarked/pragmatically neutral interpretation and is incompatible with focus.

3. Analysis

For final-vowel lengthening (-V), strict finality and incompatibility with focus can be explained if clauses with final-vowel lengthening and focus involve elements that compete for the same structurally high syntactic position. We propose that the focus head in Ikpana polar interrogatives with final lengthening is in turn attracted by the higher head *Int*⁰, as shown in.

- (5) [ForceP Force⁰ [IntP Int⁰ + Foc⁰ [FocP Foc⁰ [TP...]]]]

This guarantees the unavailability of -V in focus constructions because -V is itself a type of focus: -V has both [+Q] and [+FOC] features by virtue of head movement from Foc (the locus of the [+FOC] feature) to Int (the locus of the [+Q] feature). With respect to syntactic cartography, this proposal is in line with the notion of “structural uniformity” and the economy-motivated idea that heads are featurally simple, with “featurally complex heads arising through movement” (Shlonsky 2010: 425) resulting in a “conglomerate of features” (Cinque & Rizzi 2008: 50). To account for the strict finality constraint on final-vowel lengthening, we propose that the Int head hosting -V is endowed with an EPP feature that triggers the obligatory movement of its clausal complement into the IntP specifier position. The effect of this movement is that -V will surface clause-finally and the phonetic identity of -V will be determined by the final vowel of the clausal constituent that precedes -V in Spec, IntP.

Notably, matrix-final particles are unlike final-vowel lengthening in that they are not tied to a particular illocutionary force and encode speaker-oriented attitudes, including “emotive attitudes” (Rett 2021). Both of these properties are commonly treated as either being or being tethered to main clause phenomena, which explains why (i) *lòò* and *ĩĩ* are not found in embedded clauses, and (ii) whenever *naa* encodes a speaker’s emotive attitude, it can only be part of the matrix clause. These asymmetries again point to the key difference being the presence or absence of functional material high in the left periphery. We posit that the particles *lòò*, *naa*, and *ĩĩ* are instantiations of a single functional head situated above the ForceP projection, Speech Act Phrase, which, like the Int head occupied by -V, is endowed with an EPP feature that drives the obligatory movement of the head’s clausal complement into its specifier position, thereby yielding its clause-final linear position. Because they do not appear under the scope of the Force head, this immediately explains why the particles are not tied to a particular illocutionary force. Given that all three particles are the realization of a single head, we derive the complementary distribution of the markers as well. Due to the fact that all three

items inhabit a high functional position above Focus, we also account for the fact that they are compatible with (and sometimes licensed by) focused elements. Finally, the fact that all three particles encode non-neutral epistemic stances and speaker-oriented attitudes falls out as a consequence of the exceptionally high placement of the morphemes above ForceP in Speech Act Phrase.

4. Contributions

Our analysis lends additional support to the cartographic notion that the CP layer is highly articulated, and that speaker-oriented discourse markers inhabit some of the highest projections of the left periphery. This paper is to our knowledge the first to connect literature on mirativity to Ikpana (or any Ghana-Togo Mountain language), and it supports work on unrelated languages (e.g., Tsai & Yang 2022 for Mandarin Chinese) in connecting mirativity to the Speech Act Phrase.

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Higher numerals and Classifier-less DPs in Classifier languages

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The divide between classifier (Cl) and the non-classifier languages can be explained via two major accounts- (i) the nature of the numerals (Krifka 1995) and (ii) the nature of the nouns (Chierchia 1998a,b). According to (i), the numerals in a non-classifier language have an inherent measure function that helps them directly quantify nouns, while in a classifier language, the numerals lack this property. They need a classifier for measuring nominals. The second account changes the focus of the variation and suggests that the nouns' nature differentiates a classifier from a non-classifier language. In a classifier language, all nouns are mass nouns, and they need a classifier for individuation, which the non-classifier languages do not require.

However, there are specific constructions within classifier languages that do not need or prefer a classifier. The question then arises what license this absence of classifiers in these languages. Is it the numeral or a noun that triggers such absence? The present paper discusses this question by taking up novel data from Eastern Indo-Aryan (EIA) classifier languages like Maithili and Bajjika, compared with the sister language Bangla. It also discusses the meso-level variation between Bangla on the one hand and Maithili and Bajjika on the other regarding such classifier-less DP constructions.

The numeral classifier languages are noted for their obligatory presence of a classifier in a numerical DP structure (as in Japanese, seen in 1).

- (1) a. *ichi*(-rin)-no hana*
 one Cl-gen flower
 'One flower' (Sudo, 2016, p.2)

Similarly, Maithili, Bajjika, and Bangla are numeral classifier languages displaying an obligatory presence of a classifier in a numerical DP, irrespective of the type of the nominal (2).

- (2) a. *teen*(ta) chhoura/gaay/dandaa* (Maithili)
 three Cl boy/cow/stick
 'Three boys/cows/sticks'
 b. *teen*(go) laika/gaay/satkaa* (Bajjika)
 three Cl boy/cow/stick
 'Three boys/cows/sticks'
 c. *teen*(te) chhele/goru/laathi* (Bangla)
 three Cl boy/cow/stick
 'Three boys/cows/sticks'

Intriguingly, the classifier is either optional or prohibited in numerical constructions with higher numerals in these languages.

- (3) a. *hum-ra biyah-me teen-caar hazaar (*ta) lok ae-l chalai*
 I-gen. marriage-Loc. three-four thousand Cl guest come be.3P.perf.
 'Around 3000–4000 guests had arrived at my wedding'
- b. *hum do-sau (*ta) lok ke bajene chiaai*
 I three-hundred Cl man Acc. call. be.1sg.perf.
 'I have called 200 people' (Maithili)
- (4) a. *hum-ra shaadi me teen-caar hazaar (*go) aadmi ae-l rahai*
 I-gen. marriage-Loc. three-four thousand Cl guest come be.3P.perf.
 'Around 3000–4000 guests had arrived at my wedding'
- b. *hum do-sau (*go) aadmi ke bola liye ha*
 I two-hundred Cl man Acc.call. be.1sg.perf.
 'I have called 200 people' (Bajjika)
- (5) a. *ama-r biye-te teen-caar hajar (*jon) lok eschilo*
 I-gen. marriage-Loc. three-four thousand Cl guest come.3P.perf.
 'Around 3000–4000 guests had arrived at my wedding'
- b. *do-sho (*jon) lok dekechi*
 two-hundred Cl man call.1sg.perf.
 '(I) have called 200 people' (Bangla)

The paper suggests that the properties of numerals play a role in this. From the cognitive perspective, the higher numerals refer to an approximate reading of a large numeric quantity that does not require individuation (cf. Hiraiwa 2017). The unavailability of individuation reading in DP with such numerals blocks classifiers' appearance in such structures. The recent studies in the generative literature also consider numerals to be the culprit behind the absence of classifiers. Bale & Coon (2014) opines that the presence of classifiers depends on the nature of the numerals and not the nouns, thereby enforcing Krifka's (1995) claim. If the numeral has the measure function inherent, it can modify the noun directly. Otherwise, it needs a classifier. Yu-Lam (2020) suggests that higher numerals like 'thousands' behave like a measure word and do not co-occur with classifiers in Mandarin. These numerals have the inherent measure function but have not been yet grammaticalized into strict measure words. Therefore the classifier can optionally occur with such numerals.

The current work proposes that the higher numerals in EIA classifier languages also have similar differences in their behavior and properties to the lower numerals. The higher numerals display an inherent measure function and can directly quantify the noun. Since it is not strictly a measure word yet, it still allows classifiers optionally when individuated quantity is referred to, as can be seen in Bangla (6). Lower numerals, however, do not demonstrate such optionality.

- (6) a. *paanch-sho aam-er moddhe teen-sho ta aam poche geche*
 five-hundred mango-gen. middle three hundred Cl mango rot be.perf.
 'Out of five hundred mangoes, three hundred of them have got rotten'

Interestingly, this optionality in the occurrence of the classifiers with higher numerals is absent in Maithili (7) and Bajjika (8). The classifier cannot appear with a higher numeral even for an individuated or a partitive reference.

- (7) a. *pan-sau aam me sa teen-sau (*ta) aam bhau gelai*

five-hundred mango. Loc. from three-hundred Cl mango rot be.perf.
 'Out of five hundred mangoes, three hundred of them have got rotten'

- (8) a. *pan-sau aam me se teen-sau (*go) aam sar gelai*
 five-hundred mango. Loc. from three-hundred Cl mango rot be.perf.
 'Out of five hundred mangoes, three hundred of them have got rotten'

To summarise, the paper presents novel data from EIA languages and suggests that the absence of classifiers in a classifier language can be explained via the nature of the numerals. The higher numerals behave differently from the lower numerals in that the former has properties of a measure word which (optionally) blocks the appearance of the classifiers. The behavioral differences between higher and lower numerals also indicate that structurally they might occupy different positions in a classifier language (c.f. Biswas 2013, Simpson & Syed 2016). A parametric variation among the EIA sister languages regarding the interaction of the higher numerals and classifiers is noted in this work as well.

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The Italian negative system: expletiveness as a consequence of the head status of negation

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This study (Times New Roman, 12pt) In this article I will focus on the system of Modern Italian negative structures showing that most of its negative system is a consequence of a crucial change that occurred in Archaic Latin: the Latin negative morpheme *nōn* (“not”), which initially displayed a maximal projection status (Gianollo, 2016-2017), became a syntactic (negative) head (*‘Spec-to-head principle / Head Preference Principle’*, cfr. van Gelderen, 2004). I will argue that such a change caused the shift from a double negation system (1a) to a negative concord one (1b), which affects the colloquial Latin and many Romance languages (and their dialects) (Ledgeway, 2012).

- (1) a. *nemo non videt* (Cic., Laelius de Amicitia 99.6. In Ernout & Thomas, 2001)
nobody not sees
‘Everyone sees’
- b. *Iura te non nociturum esse homini (...) nemini...*
swear.Imp.2nd you.Cl not to.hurt.Fut. to.be human-being.Dat. nobody.Dat.
‘Swear that you won’t harm anyone...’ (Plauto, Miles Gloriosus, 1411. In Ernout & Thomas, 2001)

Moreover, I will also propose that the shifting in the syntactic nature of the morpheme *nōn*, which has been inherited by Italian as well as by many romance languages, also determines the availability of the expletive reading of negation. More specifically, I will suggest a new generalization: only languages (and structures) displaying a negative head can allow the expletive interpretation of negation. Consider, for example, Italian, English and French:

- (2) a. *Rimarrò alla festa finché non arriva Gianni*
stay.1stSG.FUT to-the party until neg arrives John
‘I will stay at the party until John arrives’
- b. *I will stay at the party until John (*not) arrives*
- c. Je *ne* nie *pas* [que je *n’* aie ètè bien reçu] (in Muller 1978)
I NEG deny NEG that I neg have been well receive
‘I do not deny that I was received well.’

As is well known (Merchant 2001, Zeijlstra 2004), Italian *non* (“not”) is the head of a NegP and it allows expletive negation. On the other hand, English *not* is a maximal projection and, therefore, it does not allow expletive negation. French displays both a negative head (*ne*) and a maximal projection (*pas*), both constituting a single instance of negation by being generated in the same NegP (Kayne 1989). Crucially, expletive negation in the subordinate clause *‘je n’ai ètè bien reçu’* only

displays the negative head *ne*, excluding the element with the maximal projection status *pas*.

Crucially, in languages like Italian the same negative morpheme can instantiate both standard and expletive negation. Consider, among many other examples, the case of exclamatives. Exclamatives show a twofold interpretation: one in which negation is expletive (3a) and one in which it is standard (3b). In Greco's (2020) work the former was labeled "Expletive Negation Exclamative" (ENE), and the latter "Negative Exclamative" (NE):

- (3) Che cosa non ha mangiato Gianni!
 what neg/EN has eaten John
 a. 'What has John eaten!' (Expletive Negation Exclamative)
 b. 'What has not John eaten!' (Negative Exclamative)

The two structures differ grammatically. According to Grimshaw (1979) and Zanuttini and Portner (2003), exclamatives are factive and, therefore, can only be embedded under factive predicates (4a). However, focusing on a specific sub-class of factive predicates, i.e., *to know*-verbs, only the NE interpretation is possible, and the ENEs one is ruled out:

- (4) a. È incredibile [che cosa **non** abbia mangiato Gianni]!
 is incredible what neg/EN had.Subj.3rd.Sg eaten John
 . 'It is incredible what John did not eat!' (NE)
 . 'It is incredible what John ate!' (ENE)
 b. Luca **sa** [che cosa **non** ha mangiato Gianni]!
 Luke knows whatneg/EN has eaten John
 . 'Luke knows what John did not eat!' (NE)
 . '#Luke knows what John ate!' (#ENE)

The expletive reading of negation in (4b) is completely ruled out, whereas the standard one is preserved. A possible way to take into consideration the differences between NEs and ENEs is to assume a twofold derivation of negation: when the negative marker *not* is merged in the TP-domain, as it is generally assumed (Belletti 1990; Zanuttini 1997; Poletto 2008), it gives the standard negation reading; when it is merged in a higher position, i.e. the CP-domain (*à la* Laka 1990), it gives the expletive negation reading since the v*P-phase has already been closed – (phases are underlined):

- (5) a. [CP ... [v*P [X° non] ...] (NE) b. [CP ... [X° non] ... [v*P ...] (ENE)

From this point of view, the expletive reading of negation turns out to be just a reflex of the syntactic context in which the negative marker *not* is merged, suggesting, among other things, that standard and expletive negation are different instances of a unique grammatical phenomenon.

Crucially, the high position of negation in ENEs can also explain why they cannot occur under factive predicates, as with *to-know* verbs in (4b). More specifically, it has been proposed (cfr. Grewendorf 2002; Haegeman 2012) that some factive verbs select a reduced CP, leaving no space for several functional phrases, including, arguably, negation. If this is true, that means that the only available option for negation in exclamatives under *to-know* verbs is to be in the TP-domain, realizing the standard value of negation as (4b) shows.

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Introducing arguments beyond the thematic domain: Evidence from Korean case markers

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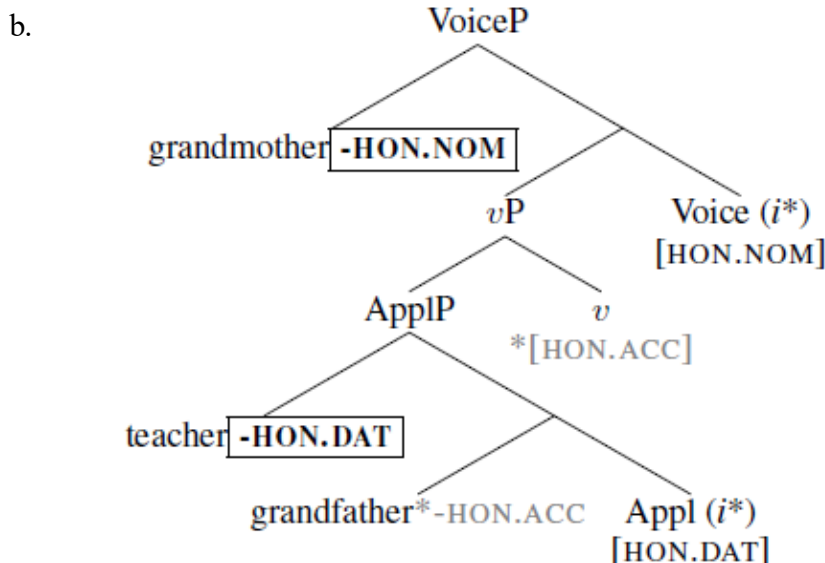
1. Puzzle and Analysis

Korean adopts a case marking system which displays overt realizations of NOM, DAT, ACC, and VOC (vocative). Some of these case markers have an honorific counterpart such as HON.NOM, HON.DAT, and HON.VOC. A question arises as to why *HON.ACC is absent in the case paradigm as shown in (1) (see Kim & Chung, 2015):

(1)	<i>i~ka</i>	NOM	<i>hanthey</i>	DAT	<i>(l)ul</i>	ACC	<i>(y)a</i>	VOC
	<i>kkeyse</i>	HON.NOM	<i>kkey</i>	HON.DAT	n/a	HON.ACC	ø	HON.VOC

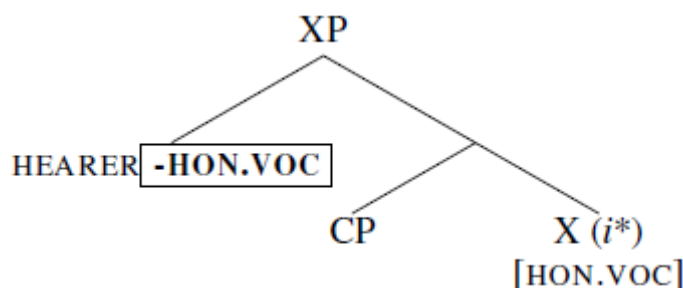
I propose that honorific case markers in Korean (i.e., HON.NOM, HON.DAT, and HON.VOC) are assigned by typical external argument-introducing heads such as Voice (Kratzer, 1996), Appl(icative) (Pylkkänen, 2008), and the recently proposed *i**, which is essentially an umbrella term for different types of external argument-introducing heads (Wood & Marantz, 2017; Marantz, 2021). Under this analysis, the absence of *HON.ACC is predicted as it cannot be assigned to an external argument:

- (2) a. halmeni-kkeyse sensayngnim-kkey halapeci-ul sokayha-si-ess-ta.
grandmother-HON.NOM teacher-HON.DAT grandfather-ACC introduce-HON-PST-DECL
'Grandmother introduced grandfather to the teacher.'



Another key prediction that the analysis makes is that the discourse participant HEARER, which is eligible for VOC (Hill, 2007; a.o.) and HON.VOC in Korean, should be represented in syntax via an external argument-introducing head such as i^* . Based on this analysis, HEARER is a part of syntax just like subjects and indirect objects (IOs), which are eligible for an honorific case assignment:

(3)



Here, I emphasize that previous analyses assuming a speech act projection over the root clause in terms of accounting for honorificity and politeness (see Miyagawa, 2017, to appear; Portner et al., 2019; Zu, 2015, 2018) do not provide an adequate explanation for the lack of *HON.ACC in (1) unless a connection between external argument-introducing heads and honorific case markers is given consideration.

2. External argument-introducing heads (i^* s) & honorificity

Previous approaches have assumed that HON.NOM and NOM are assigned in the same way (Levin 2016), possibly as allomorphs (Kim & Chung, 2015). However, Korean nominal markers are subject to morphological co-occurrence restrictions, following the template given in (4), adapted from Cho & Sells (1995). As shown in (4), HON.NOM and NOM appear in different slots in the nominal template, a fact which remains largely unexplained in previous approaches to case in Korean.

	Noun _{root}	Slot 1		Slot 2		Slot 3	
(4)		<i>kkeyse</i>	HON.NOM	<i>man</i>	‘only’	<i>i~ka</i>	NOM
		<i>kkey</i>	HON.DAT	<i>kkaci</i>	‘even’	<i>(l)ul</i>	ACC
		<i>hantey</i>	DAT			<i>(n)un</i>	TOP

NOM is also obligatory in the presence of the negated copula *anila* inducing contrastive focus (Schütze, 2001), with or without case stacking, as shown in (5). Here, switching the order of HON.NOM and NOM on *halmeni* ‘grandmother’ is not possible.

- (5) *halmeni(-kkeyse)-ka anila Yenghi-ka John-ul poa-ss-ta.*
 grandmother-HON.NOM-NOM but.not.be Yenghi-NOM John-ACC see-PST-DECL
 ‘Yenghi, not grandmother, saw John.’

I present a syntactic analysis to this mismatch which also explains the morphological distribution of these nominal markers. In particular, HON.NOM is assigned by Voice, and

NOM by T or a focus head sitting above VoiceP, which captures their relative position in (4) and (5). Choi & Harley (2019) provide independent evidence from Korean verbal suppletion that the locus of subject honorific marking is Voice. In addition to honorific case marking, Korean can also mark honorification on the verb. Choi & Harley show that the honorific-conditioned suppletion of the verb *kyey~eps~iss* ‘to exist’ bleeds suppletion conditioned by negation as well as the elsewhere form (6b, 6c) based on syntactic locality.

- (6) a. $\sqrt{\text{EXIST}} \leftrightarrow \text{kyey} / (\text{NEG}) \text{ — HON}$
 b. $\sqrt{\text{EXIST}} \leftrightarrow \text{eps} / \text{NEG} \text{ — } (*\text{HON})$
 c. $\sqrt{\text{EXIST}} \leftrightarrow \text{iss} / (*\text{NEG}) \text{ — } (*\text{HON})$ [elsewhere]

Adopting Choi & Harley’s analysis, I argue that Voice, which is realized below Neg, is responsible for honorific marking on the verb as well as on the subject. Moreover, other verbs in Korean take on their honorific form when the subject or IO is honorified. However, there seems to be no verb that is sensitive to the honorificity of the direct object (DO). This strengthens the claim that the loci of honorific features are the external argument-introducing heads such as *i** (e.g., Voice and Appl):

- (7) Verb forms sensitive to honorific subjects
 a. mek ‘to eat’~capswu ‘to eat’ (→ conditioned by the subject’s honorificity)
 b. ca ‘to sleep’~cwumwu ‘to sleep’ (→ conditioned by the subject’s honorificity)
- (8) Verb forms sensitive to honorific IOs
 a. cwu ‘to give’~tuli ‘to give’ (→ conditioned by IO’s honorificity)
 b. mwut ‘to ask’~yeccwu ‘to ask’ (→ conditioned by IO’s honorificity)

3. Implication

The analysis put forward in this work makes predictions about arguments introduced outside the thematic domain such as the speech act domain. The Korean vocative markers *ya~ø* (VOC~HON.VOC), which are realized on the discourse argument HEARER, are sensitive to the HEARER’s honorificity, as shown in (9).

- (9) a. Sarah-ya, halmeni-ka cip-ey ka-si-ess-e(*-yo).
 Sarah-VOC, grandmother-NOM house-LOC go-HON-PST-DECL-YO
 ‘Sarah, grandmother went home.’
- b. halmeni-ø, Sarah-ka cip-ey ka-ss-e-yo.
 grandmother-HON.VOC, Sarah-NOM house-LOC go-PST-DECL-YO
 ‘Grandmother, Sarah went home.’

Honorification in (9) also correlates with the presence of the politeness marker *-yo* on the verb (Choi, 2016). Based on my proposal, *-yo* is realized in *i** which is the head that introduces HEARER in (3).

Adjacency and Island Obviation in Mandarin Chinese

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Zhang (2002) argues that episodicity plays a critical role for island effects in Mandarin. For example, (1a) with the episodic VP *zhengzai xiuxi* ‘is taking a rest’ is unacceptable, showing an island effect due to the long-distance dependency between the topic NP *zhe jian fangzi* ‘this room’ and an element in a complex NP construction. In contrast, (1b) with the stative predicate *hen dou* ‘quite many’ is acceptable, mysteriously escaping the CNPC violation.

- (1) a. **Zhe jian fangzi, gangcai dasao de ren zhengzaixiuxi.* (episodic)
This CL room just.now clean MOD person PRG rest
‘This room, the person who cleaned this room just now is taking a rest.’
b. *Zhe jian fangzi, dasao de ren yiding hen duo.* (non-episodic)
This CL room clean MOD person must very many
‘This room, (the) persons who {cleaned/clean} it must be many.’ (Zhang 2002)

To explain the above contrast, Park and Park (2020) makes a promising direction by extending Han and Kim’s (2004) analysis for Double Relative Clauses in Korean and Japanese to topicalization in Mandarin, based on the similarity that both constructions avoid island violation in non-episodic eventualities. In their proposal, the lack of island effects in sentence (1b) is due to the absence of movement. The topic NP is base-generated in [Spec, TopP], and it associates with a null *pro*, which is the internal argument of the verb *dasao* ‘clean’ inside the relative clause. Since the base-generated strategy in the topic-comment construction works only in non-episodic eventualities, non-episodicity becomes a key to avoid island effects on the surface.

Even though Park and Park’s (2020) proposal seems to be on the right track, the paper itself notes one big challenge it has to face. That is, non-episodic eventualities do not always rescue sentences from island violation in Mandarin topicalization, as shown in (2)-(3):

- (2) **Luxuni, wo xihuan [ei xie] de shu.*
Luxun I like write DE book
‘Luxun, I like the books that [ei wrote].’ (Park and Park 2020)
- (3) **[Na-ge nenggan de nühair]i, [ruguo Zhangsan qu ei], ta baba cai hui gaoxing.* A
that-CL capable DE girl if Zhangsan marry his father then will happy a
‘[That skillful girl]_i, [if (and only if) Zhangsan marries to _{ei}], his father will be happy.’
(Pan 2014, but with slight revision for illustration reasons)

Comparing problematic sentences (such as (2)-(3)) with acceptable sentences (such as (1b)),

Park and Park (2020) then invites us to consider an alternative movement analysis: the topic NPs in all the sentences above move, and sentences like (1b) escape island violation because of a string vacuous movement under the linear adjacency between the topic NP and the following RC, a proposal inspired by Abe (2019) and Bachrach and Katzir (2009).

In addition to the movement proposal, the above adjacency phenomenon may receive a non-movement account, a well-known account in the literature of Mandarin topicalization: Huang's (1984) Generalized Control Rule (GCR). By GCR, an empty pronoun must associate with the closest nominal. In that analysis, the acceptance difference between sentence (1b) and sentences (2)-(3) is due to the obedience of GCR in topicalization in the former sentence, but not in the latter sentences.

Between the two possible approaches, this study will argue that the non-movement approach is more plausible. We will present further examples, showing that adjacency effects do not always exist in Mandarin topicalization or double relativization, and these unexpected sentences are better accounted for under a more detailed non-movement analysis.

First, we illustrate the violation of adjacency by sentences (4)-(5), two sentences where island effects are expected for double relativization/topicalization, but they are acceptable. In (4), Zhangsan is in between *na-ge nūhai* 'that girl' and *e*. But regardless of the presence of a NP intervener, sentence (4) is acceptable, succeeding in avoiding a CNPC problem. Likewise, *wo* 'I' in (5) does not cause a problem for the association between the topic NP *zhexie hua* 'these pictures' and *e*, a striking fact especially when compared with the unacceptance of sentence (2).

- (4) [NP [**Zhangsan** renwei [CP [NP [RC [*e*_j chuan *t_i* de] yifui] hen piaoliang] de] **na-ge nūhai_j**]]
 Zhangsan think wear DE dress very pretty DE that-CL girl
 'the girl x who [Zhangsan thinks that [NP the dress [RC that x wears] is pretty]]'
 (Hsu 2008, with notational revisio:
- (5) **Zhexie hua_i** **wo** dou mei jian-guo [CP xihuan [*e_i* de] ren.
 These picture I all not see-Asp like DE person
 'For all these pictures, I have not seen a person who likes them.' (Cheng 1991, revised)

It is unclear how to conceive possible accounts for sentences (4)-(5) under the movement approach, as it uses a linearization story for island obviation. In contrast, under the non-movement approach we may account for the acceptance of sentences (4)-(5) as follows. First, we propose that GCR may be obeyed at S-S or D-S. Moreover, before the relativization of "that girl" in sentence (4), we follow Tsai (1997), Hsu (2008), and Shyu (2014) to employ embedded topicalization, illustrated in (6). When so, we have GCR obeyed at D-S at stage 1, making sentence (4) well-formed:

- (6) [Zhangsan think [TOPP *t_j* [[NP [RC *pro_j* wear *t_i* de] clothes] very pretty]] de] that girl_j
 GCR obeyed
 Stage 1: "that girl" base-generated as the embedded topic
 Stage 2: movement of "that girl" for relativization

Second, we furthermore revise Huang's (1984) GCR as "relativized GCR", requiring that an empty pronoun associate with the closest nominal with matching lexical features. We then account for the intervening role of *wo* 'I' in (2) but not in (5), as this NP with the [+animate] feature affects [+animate] topic NPs only.

We will also propose two critical semantic claims for the topic-comment construction: (i) the

topic-comment construction requires the presupposition of the topic-picking function over the topicalized NP, and (ii) topicalization cannot be done for clauses with a propositional nature. The former explains why actually some sentences with episodic eventualities, such as sentence (7) below, are good for the topic-comment construction, in contrast with the problematic episodic sentences (like (1b)) presented in Zhang (2002).

- (7) Na-ge-reni, [pro kai tj de] chezij zhuang-dao le ren. That-CL-person,
drive DE car hit-complete perfective person
'That person, the car he drove hit someone.'

The second semantic claim explains why (4) can be rescued by embedded topicalization, but many island cases like the adjunct island in (3) or those involving appositive clauses cannot.

To sum up, our careful examination of the various cases provides a more complete picture of the well-formedness of topicalized sentences. Our analysis supports the non-movement approach for island obviation in Mandarin topicalization/double relativization, and cross-linguistically it also implies that we shall reconsider the data and analyses of Korean and Japanese Double Relative Clauses.

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A Comparative Analysis of Categorical and Gradient Grammar Models of Mandarin Phonotactics

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I carried out a nonword acceptability judgement experiment using Mandarin data to compare 3 different models of grammars (a-c) with 2 approaches to defining constraints (manual & data-driven) to find the one which can best reflect speakers' phonotactic intuitions. Thus 6 grammars (3 models * 2 approaches) are discussed in this study:

(a) categorical grammars: forms are assessed on whether they have a constraint violation or not;

(b) cumulative categorical grammar: forms are assessed based on the number of violated constraints;

(c) gradient grammar: forms are assessed based on the weight of violated constraints as determined by Hayes & Wilson's Maxent Grammar Tool (2008) and on penalty scores generated by a Phonotactic Learner (Hayes & Wilson 2008).

My research questions are:

(i) Is a gradient grammar more or less predictive of speakers' grammaticality judgements than a categorical grammar?

(ii) Is a gradient grammar derived from the Phonotactic Learner ("data driven") more or less predictive of speakers' grammaticality judgements than one derived manually ("phonologically driven")?

Gong & Zhang (2019) carried out a Mandarin nonword judgment experiment and found that systematic gaps received lower acceptability ratings than accidental gaps, allophonic gaps and tonal gaps (see also Myers & Tsay 2005; Myers 2002). The present experiment builds on Gong & Zhang (2019) and further divides the systematic gaps based on the number of constraints each token violates, the weight of those violations as determined by Hayes & Wilson's Maxent Grammar Tool (2008), and the penalty score generated by the Phonotactic Learner.

Methods: Participants: 50 Mandarin native speakers participated in this experiment online via Qualtrics. **Stimuli:** The stimuli include 1255 (C)(G)V(X) syllables in Mandarin, among which 400 are attested (Tsai 2000). **Procedures:** Each participant was presented with 81 randomized audio tokens with 0-5 constraint violations. After listening to each recorded token, the participants rated the acceptability of each syllable on a scale of 1 (完全不可能 "No, impossible") to 7 (完全可能 "Yes, definitely possible").

Data Analysis: Five factors for acceptability ratings (z scores) are included in the analyses: (1) syllable type: attested, accidental gap, systematic gap; (2) number of constraint violations based on phonological generalizations ("no"); (3) weight of violated constraints based on phonological generalizations ("weight"); (4) number of constraint violations generated in the

Phonotactic Learner (“plno”); (5) penalty score generated by the Phonotactic Learner (“penalty”).

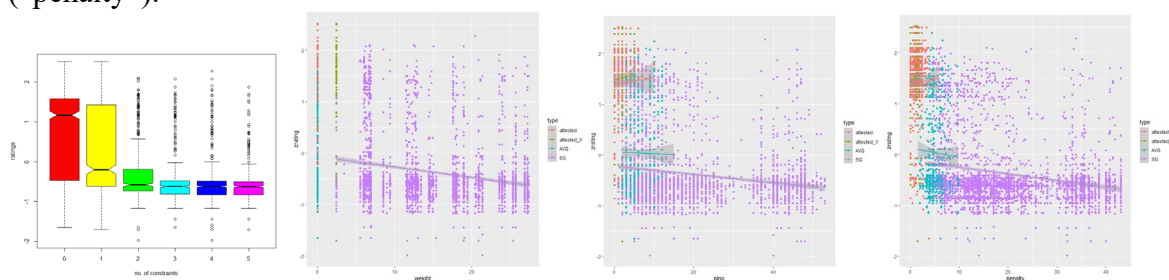


Figure 1. Effect of factors (no, weight, plno, penalty) on acceptability ratings of Mandarin monosyllables

(1) Syllable type: ANOVA analyses suggest that the syllable type significantly influence syllables' acceptability ratings ($p < 0.001$), except attested syllable with 0 violations and attested syllables with one violation ($p = 0.0263 > 0.01$). Accidental gaps with 0 violations tend to receive higher acceptability than systematic gaps ($p < 0.001$), but much lower than attested words with 0 or 1 violation. This shows that Mandarin speakers are more sensitive to syllable types than constraint violations. **(2) Number of violations of constraints based on phonological generalizations:** ANOVA analyses suggest that the acceptability ratings of syllables with 0, 1, 2 violations are significantly different from any other syllables (all $p < 0.001$). In comparison, the ratings of syllables with 3, 4, 5 violations are not significantly different from each other (all $p > 0.01$). **(3) Weight of violated constraints that were manually determined:** The acceptability ratings of syllables whose constraint violation weight is less than 10 are significantly different from any other groups of syllables (all $p < 0.001$). The ratings of syllables with a constraint violation weight of 10-15 are slightly different from syllables with a weight of 15-25 ($0.01 < p < 0.06$). For syllables with a violation weight over 15, their ratings are not significantly distinguishable from each other ($p > 0.1$). Mandarin speakers are less sensitive to the differences among syllables with higher constraint violation weight (weight > 15). **(4) Number of violations of constraints generated by the Phonotactic Learner:** Ratings of syllables with fewer than 10 violations are significantly different from any other groups of syllables (all $p < 2e-16$). Furthermore, the ratings of syllables with 11-20 violations are slightly different from any other groups (all $p < 0.05$). Syllables with 21+ violations are only slightly different ($p < 0.05$) or are indistinguishable from each other ($p > 0.1$). In other words, native speakers are not sensitive to the differences among syllables with more violations of constraints generated by the Phonotactic Learner (plno > 20). **(5) Penalty score determined by the Phonotactic Learner:** ANOVA analyses suggest that the acceptability ratings of syllables with a penalty score lower than 10 are significantly different from any other groups of syllables (all $p < 2e-16$). Likewise, the acceptability ratings of syllables with a penalty score lower than 20 are significantly different from any other groups (all $p < 0.001$). In comparison, the ratings of syllables with a penalty score higher than 20 are not significantly different from each other (all $p > 0.1$).

Summary: Compared to other factors, the effect of syllable types (1) (attested, accidental gap, systematic gap) on acceptability ratings stands out ($p < 0.001$). Both machine-driven and generalizations-based categorical grammar can predict the significant difference between the speakers' judgments on grammatical and ungrammatical syllables ($p < 0.001$). Yet neither of them can explain the gradient decreasing tendency among the ratings of the “more grammatical” syllables (threshold: no <3 , weight <15 , plno <20 , penalty <20), as the number of

violations, violation weight, and penalty increase. In contrast, both the cumulative categorical grammars ((2) “no” and (4) “plno”) and the gradient grammars ((3) “weight” and (5) “penalty”) predict the negative correlation between the ratings and the factors for all syllables. The predictions from both the manually-constructed grammars ((2) and (3)) and machine-driven grammars ((4) and (5)) are only partially accurate, because the ratings of the highly ungrammatical nonwords (no>3, weight>15, plno>20, penalty>20) are indistinguishable from each other. In summary, cumulative categorical grammars and gradient grammars are better at predicting “more grammatical” syllables, but categorical grammars can account for highly ungrammatical nonwords.

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Attachment and Prosody of Mandarin Relative Clauses

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Previous studies have shown the attachment bias of pre-nominal and post-nominal relative clauses (RCs) cross-linguistically. However, little is known whether and how Mandarin prosodic cues and attachment bias correlate. The present study aims to investigate how Mandarin speakers process the prosodic cues and interpret the syntactic attachments accordingly. In this study, we conducted (1) a survey including both Chinese relative clauses and English relative clauses to examine: (i) the attachment bias of Chinese relative clauses from Chinese speakers without prosodic cues; (ii) the influence on attachment judgment from native language Chinese (L1) to second language English (L2), and (2) an experiment exploring the correlation between prosodic cues (stress and pause) and RC attachment. In the example (a), it is ambiguous whether the RC modifies the lower NP (“*Lǐ*”) or the higher NP (“*nǚ’ér*”). Frazier (1987)’s Late Closure proposed that attachment bias towards the closest/most recent NP exists across languages. In comparison, Gilboy et al. (1995)’s Predicate Proximity Principle maintains that RCs can be attached close to a predicate, thus to the higher NP.

(a) [*Dǎ yǔmáoqiú de*]_{RC} [*Pause1*] [*Lǐ*]_{NP} [*Pause2*] *de* [*nǚ’ér*]_{NP} *shì wǒ péngyǒu*
[*play badminton COMP*]_{RC} *Lee GEN daughter is my friend. The daughter of*
Lee who plays badminton is my friend.

(1) Judgments without prosodic cues The experiment was carried out via Qualtrics online. **Stimuli:** The stimuli were 20 sentences with RCs (10 Chinese and 10 English), which were mixed with 10 Chinese fillers and 10 English fillers. 40 sentences (20 targets) were presented to the participants. The participants chose one of the two attachment choices after reading the sentences. **Participants:** 85 Mandarin speakers with English as a second language participated in this survey. **Results:** For English relative clauses, 69.96% of responses were NP low attachment, while 30.04% of responses were NP high attachment. A logistic regression shows that the lower NPs were significantly favored than the higher NPs (Intercept = -0.84, Std. Error = 0.075, z value = -11.23, $\Pr(>|z|) < 2e-16$ ***). For Chinese relative clauses, 44.91% of responses were NP low attachment, while 55.09% of responses were NP high attachment. The logistic regression shows that the higher NPs were significantly favored than the lower NPs (Intercept = 0.20, Std. Error = 0.069, z value = 2.95, $\Pr(>|z|) < 0.01$ **). In summary, Mandarin speakers tend to prefer high attachment for Chinese relative clauses, but low attachment for English ones. We conclude that for second language learners, the high attachment preference of Mandarin RCs are not significantly transferred to their English judgment. This result is compatible with Felser, et al. 's study (2003:478), in which they maintain there is no evidence

that German or Greek speakers with English as their second language transferred their L1 attachment preference in resolving English RC attachment ambiguities.

(2) Judgments with prosodic cues Two major prosodic cues were controlled: intonational breaks and stress. As exemplified in (a), the intonational break was either between the RC and the lower NP (Pause1); or between the lower NP and the higher NP (Pause2). The prosodic stress was either on the lower NP or the higher NP. **Stimuli:** 12 Mandarin sentences with 4 prosodic cues, i.e. overall 48 target sentences were recorded as audio stimuli and divided into 4 groups. Each participant listened to 12 randomized sentences and then chose one of the two NP attachments. **Participants:** 97 Mandarin speakers participated in the experiment via Qualtrics online. **Results:** (a) for targets with a pause after the relative clauses, high attachment (90.48%) was significantly more preferred than low attachment (Intercept = 2.25, Std. Error = 0.21, z value = 10.92, $\Pr(>|z|) < .001$ ***). (b) for targets with a pause after the lower NP, low attachment responses (54.04%) took a slightly higher percentage, but were not significantly more preferred than high attachment (Intercept = -0.16, Std. Error = 0.12, z value = -1.3, $\Pr(>|z|) = 0.18$); (c) for targets with the stress on the lower NP, high attachment (55.88%) is slightly more preferred than low attachment (Intercept = 0.24, Std. Error = 0.12, z value = 1.9, $\Pr(>|z|) = 0.052$.); (d) for targets with a stress on the higher NP, high attachment (79.78%) is significantly more preferred than low attachment (Intercept = 1.37, Std. Error = 0.15, z value = 9.09, $\Pr(>|z|) < 2e-16$ ***).

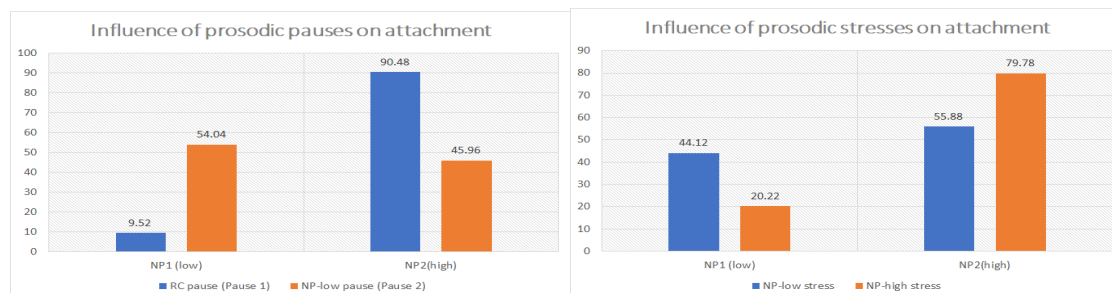


Figure 1. Effect of prosodic cues on Mandarin RC attachment

Summary The high attachment bias of Mandarin relative clauses without prosodic cues is significantly stronger than low attachment bias: a process of delaying judgment until the higher NP is identified. The survey data also suggest a low attachment bias for English RCs from Mandarin speakers' judgment, which indicates that English second language learners may resort to English lexical-semantic or formal structures, instead of Mandarin L1 Transfer. Using the results of the survey as the baseline, the experimental data further indicate that prosody affects the attachment bias. A pause immediately after relative clauses can increase the high attachment bias; while a pause after the first NP decreases the high attachment bias and leads to a slight preference towards low attachment. With respect to the prosodic stresses, a stressed higher NP increases the high attachment bias, while a stressed lower NP does not significantly result in low attachment judgment.

Overall, with or without prosodic cues, there exists a high attachment bias among Mandarin speakers, which is incompatible with Late Closure (Frazier, 1987), but predicted by the Predicate Proximity Principle (Gilboy et al. 1995). The underlying reasons can be structural. The modification arrangement (Modifier + Modifier + NP) may have emphasized the head

status of the final NP (high attachment), whereas the low NPs are more likely to be regarded as one of the modifiers.

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The Placement of WHY and Intervention & Superiority

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1. Introduction

Investigating the intervention effect (IE) of an NPI on way ‘why’ in Korean (K), Ko (2005) argues that it is base-generated in [Spec,CP]. Miyagawa (2017) more recently reconsiders what Saito (1994) dubs the additional wh-effect on naze ‘why’ in Japanese (J) to argue that it is generated in VP-adjoining position. Since Ko’s (2005) and Miyagawa’s (2017) proposals on the generation of WHY that represents way & naze cannot be correct simultaneously, we have an agenda to harmonize them. In this paper we argue à la Miyagawa (ibid.) that WHY in J/K is generated in VP-adjoined position, and departing from Ko (ibid.) that it moves overtly in the same clause to [Spec, CP] where it takes scope. Unlike J/K, Chinese WHY weishenmu takes the overt movement strategy to [Spec,CP] to do so.

2. Proposal

We assume following Beck (1995, 1996) that WHY across languages is generated in VP-adjoining position as because of what. Driven by the Earliness Principle (Pesetsky 1989), WHY moves overtly to the position where it takes scope, in the way dictated as in (1):

- (1) Generated in VP-adjoining position, WHY undergoes Move to the C domain via the strategy available to a language.

The overt placement of WHY is determined by the property of the strategy displacing it. J/K makes advantage of scrambling, and Chinese, overt movement, to dislocate it.

3. Consequences

Since scrambling tends to be optional in J/K, the overt movement of WHY is optional. The additional wh-effect on WHY inside an RC as in (2) provides convincing evidence for its in-situ placement far below [Spec,CP]. The additional argument wh-phrase in the RC of (2) saves otherwise illegitimate WHY in the same clause, allowing it to take matrix scope.

- (2) C-nun [Y-ka ?nwukwu-eykey/*M-eykey way cwu-n] chayk-ul chac-ko issni?
C-TOP Y-NOM who-to/M-to why give-REL book-ACC look+for-be+ING-Q
(Lit.) ‘Is C looking for the book that Y gave to *M/whom why?’

Since [Spec,CP] is not available to RC-internal WHY in (2), its generation and overt realization in

lower position in the structure is inevitable.

Optional scrambling of WHY to the C domain accounts for its obviation of the IE, or anti-intervention in (3a). Departing from Miyagawa (2017), we propose that WHY optionally raises overtly via scrambling from the base-generated VP-peripheral to the [Spec,CP] position in the same clause, opting to enter into feature checking with the Q-particle:

- (3) a. Amwuto way an o-ess-ni? b. Way amwuto an o-ess-ni?
 anyone why NEG come-PST-Q why anyone NEG come-PST-Q
 ‘Why didn’t anyone come?’

In Ko’s (2005) analysis, anti-intervention arises as WHY is generated in [Spec,CP] and properly interpreted in association with the Q-particle; the NPI before WHY in (3a) is scrambled, not able to function as an intervener between WHY and the Q-particle. Our analysis proceeds in the same fashion, except that WHY generated in VP-peripheral position takes an option of moving overtly via scrambling to the clause-mate [Spec,CP].

When WHY undergoes scrambling overtly to [Spec,CP], it is clause-bounded, like other adverbs in general in K/J. Its clause-bounded restriction accounts for the re-emergence of the IE for WHY in (4)-(5):

- (4) *John-un [amwuto way ku chayk-ulilk-ci-anh-ess-ta-ko] malha-ess-ni?
 John-TOP anyone why that book-ACC read-CI-NEG-PST-DCL-C say-PS-Q
 ‘What is the reason x s.t. John said that no one read that book for x?’ (Ko 2005:875)
- (5) *Amwuto [John-i way saimha-ess-ta-ko] malha-ci anh-ess-ni?
 anyone John-NOM why resign-PST-DCL-C say-CI not-PST-Q
 ‘What is the reason x s.t. no one said that John resigned for x?’ (Ko 2005:874)

The obviation of the IE does not arise in (4) and (5) because WHY cannot move overtly from the embedded clause to the matrix [Spec,CP] as a rescue from the IE. If overtly moved, WHY capitalizes on scrambling, but its overt movement is clause-bounded.

The option of scrambling is, however, not allowed for argument wh-phrases (WPs) in J/K. As reported in Hoji 1985; Kim 1989, 1991; Sohn 1995; Beck and Kim 1997, among others, the contrast between (6a) and (6b) shows that WPs in J/K display the IE.

- (6) a. {*Amwuto/*Mary-pakkey} mwues-ul mek-ci-anh-ass-ni? anyone/M.-only
 what-ACC eat-CI-NEG-PST-Q
 (Intended) ‘What did no one/only Mary eat?’
- b. Nwu-ka {amwukesto/sakwa-pakkey} mek-ci-anh-ass-ni?
 who-NOM anything/apple-only eat-CI-not-PST-Q

The contrast in IE between adjunct WHY and other argument WPs falls out since unlike the former, the latter do not undergo covert phrasal movement (Nishigauchi 1986, 1990; Pesetsky 2000), so that its overt phrasal movement cannot take place. Scrambling can apply to argument WPs, but its application in (6a) impinges on a ban on vacuous scrambling (Saito 1985).

Turning to Chinese, embedded clauses allow either word order between WHY and another

wh-phrase as in (8) as well as (7), which indicates anti-superiority:

- (7) Ni xiang-zhidao [shei weishenme mai-le shu]? (Huang 1982:525-526)
 you want-know who why buy-le book
 (a) Lit. ‘Who; do you wonder [t_l bought books why]?’
 (b) Lit. ‘*Why_l do you wonder [who bought books t_l]?’
- (8) Ni xiang-zhidao [Lisi weishenme mai-le shenme]? (Cheng and Rooryck 2002:21) a
 you want-know Lisi why buy-le what.
 (a) Lit. ‘What_l do you wonder [Lisi bought t_l why]?’
 (b) Lit. ‘*Why_l do you wonder [Lisi bought what t_l]?’

Huang (1982:545) notes that in both (7) and (8) WHY always takes embedded scope, while another wh-phrase takes matrix scope. To account for it, we assume that Chinese wh-phrases undergo overt wh-movement (Cheung 2014; Soh 2005) and their copies are deleted not at the tails but at the heads of their chains (Pesetsky 1998, 2000). Under the overt wh-movement hypothesis for Chinese wh-phrases, the ECP requires that WHY in embedded clause moves first to the embedded [Spec,CP] that hosts only one wh-phrase, and another wh-phrase cannot but move to the matrix [Spec,CP].

Unlike that in K/J, the position prior to [Spec,CP] in Chinese is grammaticalized to host the topic of a clause. Hence the following examples vary in acceptability, as noted by Jin (2020).

- (9) #Meiyou ren/Suoyoude/ ?Zhishao san-ge ren weishenme yao cizhi?
 No person/all /at.least three-CLF person why want.to resign
 ‘Why do {nobody/all/at least three want to resign?’

This pattern of behaviors for the three types of Chinese quantifiers concerning the IE follows from the varying ability for them to be construed as a topic in the outer Spec of CP in front of WHY overtly moved to the inner Spec of CP.

The unacceptability of (10a-b) indicates that anti-superiority does not hold in matrix clauses of Chinese. It also falls out in the parallel fashion as (9) as shei ‘what’ cannot serve as a topic.

- (10) a. *Shei weishenme bu lai? b. *Shei weishenme likai? who why not
 come who why leave Lit. ‘Who does not come why?’
 Lit. ‘Who left why?’

4. Conclusion

Overt movement of WHY generated in VP-peripheral position provides a principled explanation for its anti-IE and anti-superiority effects in J/K and Chinese. We will show that this system of analysis not only makes correct predictions on the interaction of WHY with other QPs/WPs, but also has far-reaching consequences for the theory of its syntax.

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MERGE, Transfer, and CED effects

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1. Introduction

Chomsky et al. (2019) embrace the concept of workspace WS, which is taken to be a stage in a syntactic derivation, and reformulate Merge as MERGE, an operation on a WS: MERGE maps $WS=[X, Y]$ to $WS'=[\{X, Y\}]$. Chomsky (2021) goes on to propose that MERGE is subject to Minimal Yield (MY) as a condition on it. MY reflects the nature of MERGE as the simplest structure-building operation and dictates that MERGE can introduce at most one new accessible item in the resulting WS. Thus, when applied to $WS = [\{\{a, b\}, c\}]$, External MERGE (EM) maps it to $WS'=[\{\{c, \{a, b\}\}\}]$, while Internal MERGE (IM) maps it to $WS'=[\{\{a, \{a, b\}\}, c\}]$. The former and the latter freshly construct $\{c, \{a, b\}\}$ and $\{a, \{a, b\}\}$, respectively, which counts as one new accessible item. The framework with MERGE and MY is beginning to provide a principled account for locality (in control constructions) and proper binding effects (cf. Chomsky 2021; Saito 2022), but it is not immediately clear how this framework is adjusted to accommodate the condition on extraction domain (CED) effects. This paper shows that the CED effects arise when an adjunct/subject phrase upon its EM to the WS is spelled out or transferred to resolve a labeling problem with it.

2. Proposal

Given the notion of recursion that any SO once derived via MERGE in a WS remains accessible to further operations (Chomsky et al. 2019), sub-extraction from the edge of the SO may be freely allowed, leaving the CED effects unexplained. To ensure the computational efficiency of MERGE, we propose (1) (defending Uriagereka's (1999) and Sheehan's (2013) thesis):

- (1) When a non-spinal phrase XP in its base-generated position incurs a labeling problem due to the [XP-YP] structure, upon its EM it undergoes Transfer to resolve the problem.

The upshot of (1) is that as the merger of a head and a phrase gets labeled at its creation, the merger of XP and YP does so analogously (Chomsky 2015; Bošković 2015, 2016, 2018). Since a non-spinal XP in its base-generated position generally does not enter into feature sharing that can solve the [XP-YP] problem with labeling, upon its EM it needs to be transferred (in addition to being moved) to do so. Constructed items inside it are then not accessible any longer, thereby their movement out of it being precluded.

3. Consequences

The proposal (1) can account for the subject and the adjunct condition effects, without any additional stipulation. First, when subject phrases are generated in [Spec,vP], movement out of them is banned since Transfer has rendered a potential extractee inside them inaccessible to later application of IM, as in (2a-b).

- (2) a. * Who₁ did [stories about t₁] terrify John? (Chomsky 1973, 92b)
 b. * A man who₁ [pictures of t₁] are on the table (Chomsky 1986:31, 61)

By contrast, when subject phrases are generated as a complement of passive/unaccusative V, they do not undergo Transfer in their base-generated positions upon EM, thus being transparent to sub-extraction out of them, as in (3) and (4) [abstracting away from various factors affecting movement out of subject phrases (cf. Abeillé et al. 2020; Haegeman et al. 2014, among many others)].

- (3) a. [Of which cars]₁ were [the hoods t₁] damaged by the explosion? (Ross 1967)
 b. [Of which car]₁ was [the (driver, picture) t₁]₂ awarded t₂ a prize? (Chomsky 2008:147)
- (4) a. [What]₁ were [pictures of t₁]₂ seen t₂ around the globe? (Kluender 1998:268)
 b. [Which problem]₁ will [a solution to t₁]₂ never be found t₂? (Chaves 2013:301)

The following contrast also reveals the crucial role of the underlying structure in sub-extraction from subject phrases. Unlike its counterpart in (5a), the in-situ subject in (5b) is properly labeled in the underlying structure (like in-situ subjects in Japanese/Korean as well as post-verbal subjects in Romance languages: Ishii 2011; Gallego and Uriagereka 2007), allowing for sub-extraction out of it.

- (5) a. * [Which candidate]₁ were [posters of t₁] all over town?
 b. [Which candidate]₁ were there [posters of t₁] all over town? (Merchant 2001:87)

Second, the adjunct condition effects also fall out when like subject phrases generated at [Spec,vP], adjunct phrases in general undergo Transfer upon their EM. Constructed items inside them after Transfer are rendered inaccessible to later application of MERGE in the workspace, as in (6):

- (6) a. * Who₁ did Mary cry [after John hit t₁]? (Huang 1982:503)
 b. ?* [Which bottle of wine] ₁ was Mick annoyed [because Keith drank t₁]? (Roberts 1997:217)

It also follows that adjuncts/RCs to be transferred upon their EM can take either early or late merge (Lebeaux 2000): WS=[{a, b}, {c, d}] --> MERGE(b, {c, d}, WS) --> WS'=[{a, b}, {b, {c, d}}] (Kitahara and Seely 2021).

There are, however, apparently adjuncts that allow sub-extraction out of them, as noted by Truswell (2007, 2011):

- (7) a. What₁ did John arrive [whistling t₁]? (Truswell 2007:1357, (4b))
 b. * What₁ does John dance [whistling t₁]? (Truswell 2007:1357, (4a))

One way of accounting for the exceptional transparency of adjuncts in (7a) is to postulate that some adjuncts are generated in lower positions (Borgonovo & Neeleman 2000; Privoznov (2021), among others), but the contrast between grammatical vs. ungrammatical cases in (7a) vs. (7b) indicates that this approach is not valid. We rather suggest based on complex predicate formation via restructuring in Korean (Choe 1988) that main VP and adjunct participle or prepositional phrase in (7a) are reanalyzed into a larger complex predicate via event identification (cf. Ernst 2022).

Third, the ban on extraction out of moved/derived phrases extensively discussed by Bošković (2018) apparently renders counter-evidence against the line of analysis provided up to now. If what matters in sub-extraction is a base-generated position, (8) and (9) would be acceptable like (3) and (4). We account for the contrast between the former and the latter with resort to Muller's (1996, 1998) generalization.

- (8) a. * [Whose books]₁ do you think that [reviews of t₁]₂ John never reads t₂?
(Corver 2014:1)
b. ??/* [Whose book]₁ do you wonder [CP [how many reviews of t₁]₂ John read t₂]?
(Corver 2014:9)
- (9) a. * [Which table]₁ did you think that [on t₁]₂ John put the book t₂?
b. * [Which table]₁ did you think [CP [on t₁]₂ that [TP John put the book t₂]]?

We follow Chomsky (2008) in assuming that rather than A/A'-movement feeding wh- movement, the two separate movements occur simultaneously from a deep object position. The consequence of this idea is that unlike (3) and (4), the two A'-movements in (8) and (9) invite a violation of Rizzi's (1990) Relativized Minimality, deriving Muller's generalization anew.

4. Conclusion

Transfer of an adjunct/subject phrase in its base-generated position upon its EX provides a principled explanation for the CED effects, ensuring the computational efficiency of MERGE in a WS. We will show that this system of analysis not only makes correct predictions on movement phenomena, but also has far-reaching consequences for the recent theory of MERGE.

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