Conjoined PROs in Control Constructions

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1. Introduction

In control constructions, embedded clauses contain a null subject (PRO), whose reference is controlled based on certain syntactic or semantic factors. Among the control constructions, *Obligatory Control* is divided into two types: *Exhaustive Control (EC)*, where the controller and PRO are identical (1a), and *Partial Control (PC)*, where the controller partially controls PRO (the referent of the controller is a subset of the referent of PRO) (1b).

(1) a. John$_i$ managed [PRO$_i$ to finish the soup]. (Landau (2013: 2))
b. The chair$_i$ preferred [PRO$_{i+}$ to gather at 6]. (ibid.: 18)
cf.)* The chair gather(s) at 6.

In (1a), the subject of the embedded clause is identical to the matrix subject. In contrast, in (1b), the embedded subject refers not only to the matrix subject but also to additional participants, as suggested by the collective predicate, which selects a plural subject. It is assumed that the plurality of PC subjects is semantic rather than syntactic. This is evidenced by the fact that PC subjects cannot license elements that are assumed to depend on syntactically plural DPs, such as reciprocal anaphors or plural predicates.

(2) a. * John told Mary that he preferred to meet each other at 6. (Landau (2013: 161))
b. * John told Mary that he didn't know which club to become members of. (ibid.)

This presentation proposes an analysis of PC based on the conjunction of PROs.

2. Proposal

I propose that PC subjects are derived through the coordination of two types of PROs: a controlled PRO and an arbitrary PRO. I further assume that not only the PROs but also the coordinator *and* are phonologically null, which is represented with outline characters in (3).

(3) The chair$_i$ preferred [[PRO$_i$ and PRO$_{arb}$] to gather at 6].

In (3), one of the conjoined PROs is controlled by the matrix subject, while the other is an arbitrary PRO. I assume that the arbitrary PRO is an uncontrolled default PRO (cf. Fischer and Høyem (2017)), which lacks any value and therefore cannot specify a referent at the syntax-semantics interface. I also assume that an arbitrary PRO is finally interpreted as a salient discourse referent at a later stage of the semantics. The behaviors of an arbitrary PRO across syntax-semantics domains are schematized as follows:

(4)

Syntax	→	Syntax-Semantics Interface	→	Later stage of Semantics
default PRO		cannot specify a referent		salient discourse referent

Consequently, PC subjects cannot specify plural referents at the interface level, but the plurality can arise later in the semantic component. I argue that the structural and interpretive properties of the conjoined PROs explain empirical facts of PC constructions.

3. Analysis

This section analyzes the facts about PC based on my proposal. I begin with the question of why PC subjects cannot co-occur with elements that are assumed to depend on syntactically plural DPs. I assume that the plurality of coordinated phrases is derived at the syntax-semantics interface. (Note that the plurality of a coordinated DP such as *John$_{[sg]}$ and Mary$_{[sg]}$* cannot be derived within narrow syntax since singular features in the coordinate structure are never converted into plural ones.) Specifically, I assume that the plurality of coordinated expressions arises through a semantic operation such as forming a set union of the referents, and that it is applied at an early stage of the syntax-semantics interface since the

resulting plurality is accessible to morphology, as evidenced by the plural agreement in (5a). However, in the case of PC subjects, while a controlled PRO denotes an individual, an arbitrary PRO lacks values and cannot specify a referent at the syntax-semantics interface. As a result, even if the referents of the conjuncts are combined, the outcome cannot denote a specific plural referent, yielding the singular property (5b).

(5) a. John and Mary are friends.
Syntax-Semantics Interface: John + Mary → plural
b. The chair$_i$ preferred [[PRO$_i$ and PRO$_{arb}$] to gather at 6].
Syntax-Semantics Interface: PRO$_i$(=the chair) + __ (=no value) → singular

Consequently, PC subjects cannot license reciprocal anaphors or plural predicates, as shown in (2). In contrast, because the arbitrary PRO is later interpreted as a salient discourse referent in the semantic component, PC subjects are eventually semantically compatible with collective predicates, as in (1b).

Next, I address why only PC allows a covert coordinate structure—specifically, why the coordinator can be null in PC. I assume that when all conjuncts are covert, the coordinator is also phonologically null. This assumption is supported by split antecedent ellipsis, illustrated in (6):

(6) Bob doesn't want to [$_{VP1}$ sail round the world] and Alice doesn't want to [$_{VP2}$ climb Kilimanjaro], but they will [[$_{VP1}$ ~~sail round the world] and [$_{VP2}$ climb Kilimanjaro~~]], because they made a promise to each other. (Frazier and Duff (2019: 5))

In (6), the ellipsis site is interpreted as a conjunction of two independently introduced VPs, yet the coordinator is never overt, supporting the idea that when conjuncts are silent, the coordinator is also null.

Finally, analyzing PC subjects as conjoined PROs explains why simple clauses or EC constructions do not yield PC interpretations. I propose that coordination with an arbitrary PRO is restricted by a parallelism condition on coordinate structures, which prohibits asymmetry between conjuncts. Although the parallelism condition has been invoked to account for the ban on asymmetrical extraction, I propose that it also excludes the asymmetry in overtness. Under this proposal, an overt conjunct cannot be conjoined with a null arbitrary PRO. Consequently, PC interpretations are unavailable in simple clauses because conjoining an overt subject with an arbitrary PRO violates the parallelism condition.

(7) a. * The chair gather(s) at 6.
b. [[the chair] and PRO$_{arb}$] gather(s) at 6.

For EC constructions, the same reasoning may apply, given Grano's (2015) assumption that EC predicates are functional heads and their subjects raise from the embedded vPs. Under this assumption, EC constructions contain only a single overt DP, which raises from the embedded position to the surface position. The overt subject of an EC construction cannot be conjoined with an arbitrary PRO, explaining the absence of PC interpretations.

(8) a. * John$_i$ managed [PRO$_{i+}$ to gather at 6].
b. [[John] and PRO$_{arb}$]$_j$ [$_{FP}$ manage [$_{vP}$ t_j to gather at 6]].

This presentation further explores the consequences of the proposed analysis.

References

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Reconciling CED Effects and Adjunct Control for Prepositional Phrases with PID

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PROBLEM A natural way to derive CED effects for Prepositional Phrases (PP) within Phase Theory is to appeal to Phase Impenetrability Condition (PID), under the assumption that PPs are phases. Yet, this seems to create a paradox once we consider Adjunct Control for PP:

(1) a. The **window**$_i$ broke [after **PRO**$_i$ / ***PRO**$_j$ being hit with a rock].
b. *What$_j$ did the **window**$_i$ break [after **PRO**$_i$ being hit with t$_j$]?
c. *[With what]$_j$ did the **window**$_i$ break [after **PRO**$_i$ being hit t$_j$] ?

(2) a. **John**$_i$ did a lot of research [before **PRO**$_i$ / ***PRO**$_j$ writing the paper].
b. *What$_j$ did **John**$_i$ do a lot of research [before **PRO**$_i$ writing t$_j$]?

Although *claiming Wh-movement is impossible due to the inside of PP phase being inaccessible* could successfully explain CED effects from PP adjuncts, as in (1b), (1c), and (2b), this explanation contradicts the data from Obligatory Control (which requires mandatory coreferent reading of PRO), as in (1a) and (2a), since Obligatory Control (OC) is usually considered as a (narrow-)syntactic phenomenon. Why, then, is the inside of a phase accessible to one syntactic operation (OC) but not to another (CED)?

MAIN PROPOSAL This presentation reconciles this paradox by proposing that Adjunct Control, at least in the case for PP (we do not consider *of*-phrase or *in-order*-phrase here), is actually not (narrow-)syntactic in nature, whereas Wh-extraction is. If this conclusion turns out to be true, then the above-mentioned "paradox" dissolves. In addition, although further studies are still needed, it potentially answers why extraction out of Adjunct Island is sometimes possible (mostly for non-PP adjuncts): Namely, i) adjunct itself does not prohibit extraction, but adjunct *and* phase do, and ii) the non-PP adjuncts are not phases. In this paper, we only assume that PP constitutes a phase, which has been previously proposed by Raposo (2002), Bošković (2004), etc., along with the default phase-hood assumption for vP and CP. This contrasts with Müller (2010)'s analysis assuming *every* phrase is a phase. We omit the technical details on phases' *escape hatch* here for now. This proposal is potentially compatible with many such formulations with or without the assumption of an "edge feature," including that of Müller (2010).

SUPPORT **It has been shown that Adjunct Control is apparently non-obligatory (and hence non-syntactic), in *at least some cases***, as shown in the following examples**.**

(3) They awarded it [for **PRO** winning the contest]. (Green 2018:169)
(4) [While **PRO** walking down the street], a poster caught my eye.

Here, PRO is not coindexed with any syntactic antecedent, and the correct identification of PRO has to be made based on (potentially non-linguistic) context. Hence, there is no syntactic operation involving PRO. **Indeed, there is no reason to consider Adjunct Control to be syntactic even in the "Obligatory Control" cases.** We argue that what PRO is interpreted as *is not* a phenomenon of syntactic concern, even when the coreferent reading of PRO with a sentential antecedent seems to be the only plausible one. Consider the computational mechanism for building such structures: based on standard c-selectional mechanisms, in VP, vP, or TP, both PRO and other DPs (e.g., John, him/his, etc.) are equally selected, so long as they bear a nominal feature such as [D]. Thus, both PP phrases [$_{PP}$ after PRO being hit with a rock] and [$_{PP}$ after John('s)/him/his being hit with a rock] are equally good at this stage, and the main clause [$_{TP}$ the window broke] can be independently built. Therefore, no matter what the details of the theoretical framework one might choose are, it will be difficult to reject the structure with PRO on one hand, but to accept the structure with other nouns on the other hand, without mishandling sentences such as (3) and (4). Theoretical difficulty also emerges if we assume PRO is a trace of movement. In that case, what is the motivation for such Sideward Movement? In sum, it is unclear why the computational system responsible for structure building would care about the specific interpretation of PRO.

Furthermore, there is no evidence that Adjunct Control feeds other apparent syntactic phenomena, such as overt movement and agreement, which, under the Y-model, would indicate that Adjunct

Control is syntactic. To my knowledge, there is no overt movement phenomenon that is clearly affected by what PRO is identified with. Rather, in English—a language that usually exhibits verb agreement and requires structural case for subjects—there is no such agreement for PP Adjunct Control.

(5) a. The **window**$_i$ broke [after **PRO**$_i$ **being** hit with a rock].
b. The window broke [after John('s)/him/his **being** hit with a rock].
c. The window broke [after both John and Mary/them/their **being** hit with a rock].

The verb in its non-finite gerund form is not capable of verb agreement regardless of the subject. In addition, even when a preposition incorporates a finite clause, there is still no syntactic agreement between the controller and the verb inside the PP. In (6), it does not seem plausible for *'they'* to refer to random people. *'Anyone'* and *'they'* have to be coreferent in order to obtain the sensible bound-variable reading. Yet, the verb *'see'* only cares about the *form* of *'they'*, which is plural. Indeed, we suggest that only this formal feature of plurality is syntactic, but not the coreference relation.

(6) **Anyone**$_i$ will be mad [after **they**$_i$ **see/*sees** such things].

Likewise, also shown in (5) is that **syntactic case of the adjunct subject DP is not affected by the "controller" either**. When the subject is pronounced, it either gets the default accusative case (in colloquial setting) or is assigned genitive case (in formal setting) by the nominal gerund. In either way, the syntactic case of the subject has nothing to do with the "controller." We believe the same mechanism is at work when the subject is the unpronounced PRO.

In sum, we propose that the obligatory identification of PRO with its "controller" is a phenomenon similar to (6), and neither of them is narrow-syntactic. Such requirements on coreference may indeed exist, and even if we believe they are structurally based, they can still occur in LF since all the structural relations from narrow syntax are inherited in LF. Indeed, if we allow QR in LF and obligatory bound variable reading based on LF c-command, nothing prevents the identification of PRO with its "controller" from being computed in an analogous way in LF. Besides, it is also worth noting that even when the coreferent reading seems obligatory, the "controller" may not necessarily c-command PRO, as reported by Green (2019: 6, (12)), revealing that obligatory coreferent reading may not purely be structurally based:

(7) a. I left them in **her**$_i$ locker [for **PRO**$_i$ being so kind to me].
b. I put roses on the front porch of **her**$_i$ house [for **PRO**$_i$ being so kind to me].

The pattern that accessibility of a phase is dependent upon the (narrow-)syntactic versus LF distinction is observed in other phenomena. It has been well known since Huang (1982) that Chinese lacks overt Wh-Movement, but covert Wh-Movement happens in LF for proper interpretation. In this case, Wh-Movement, which is impossible across PP in English overtly, now becomes possible covertly. In fact, the same thing is observed in English as well, although in somewhat marked structures.

(8) a. The window broke [after **PRO** being hit with **what**]?
b. John did a lot of research [before **PRO** writing **what**]?

The completely degraded sentences in (1b,c) and (2b) now becomes acceptable as long as the Wh-word stays overtly *in situ*, despite having the same LF structure. Moreover, in Wh-*in-situ* languages like Chinese and Japanese, overt movements across PP adjunct, such as topicalization, remain unavailable.

(9) a. (Taroo-ga)[$_{PP}$ yakimesi-wo tabe-ta ato ni], (Taroo-ga) aisu-wo tabe-ta.
'Taroo ate ice-cream after eating fried rice.'
b. *yakimesi$_i$-wa (Taroo-ga) [$_{PP}$ t$_i$ tabe-ta ato-ni], (Taroo-ga) aisu-wo tabe-ta.

Again, all these observations regarding the accessibility of PP phase align nicely with the dichotomy between narrow syntax and LF.

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Scope Freezing as a Consequence of the P-have Analysis

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Synopsis: Double object constructions (DOCs) in English exhibit scope freezing effects. While familiar scope ambiguity is observed in simple transitive sentences (1) and in dative constructions (2), the two object QPs in the DOC in (3) systematically resist inverse scope.

(1) A child loves each doll. (∃>∀, ∀>∃) (May (1977))
(2) I gave a doll to each child. (∃>∀, ∀>∃)
(3) I gave a child each doll. (∃>∀, *∀>∃) (Bruening (2001))

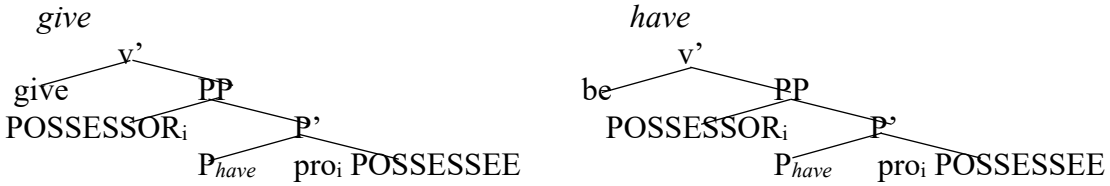
We argue that scope freezing follows automatically from the P_{have} analysis of DOCs (Harley (2002)). The verb *have* likewise decomposes into *be* and P_{have} (Freeze (1992), Guéron (1995), Kayne (1993)), and P_{have} blocks both inverse scope and passivization. This proposal offers theoretical and empirical advantages over Bruening's superiority-based account.

Verbs of Possession and Scope: The verb *have* behaves differently from other transitive verbs. One notable difference emerges with passivization: unlike other transitives (4), *have* cannot be passivized (5). The object of *have* therefore patterns with the second object in DOCs, which likewise resists passivization (6)-(7), suggesting that a unified analysis is possible.

(4) The doll is owned t by a child.
(5) *The doll is had t by a child.
(6) A child was given t a doll.
(7) *A doll was given a child t.

Our central claim is that both ditransitive verbs and *have* contain P_{have}, a two-place predicate taking a POSSESSOR in its specifier and a POSSESSEE as its complement. In addition, the POSSESSOR binds a covert pro(noun) contained in the POSSESSEE.

(8)



DOCs and their dative counterparts are not synonymous: in (9), the students have learned French, an implication that is not conveyed by the dative counterpart in (10). Moreover, each student in (9) has achieved a different level of proficiency in French, supporting the hypothesis that POSSESSEE has a covert pronoun bound by the POSSESSOR. A similar bound-variable interpretation is also observed in (11), whose subject binds pro in the POSSESSEE (8).

(9) John taught [[the students$_i$] [$_{P'}$ P_{have} [[pro$_i$ French]]]
(10) John taught French to the students. (Harley (2002))
(11) [The students$_i$ [have [pro$_i$ good French]]]

Scope Freezing (1)-(3): (8) accounts for the scope freezing observed in (3). As shown in (12), the POSSESSEE contains a pro that must remain bound by the POSSESSOR. When the two QPs undergo QR, pro must remain within the c-command domain of *a child,* thereby forcing scope freezing. The dative construction in (2) lacks P_{have} and is therefore free from this restriction, allowing the two QPs to take scope over each other freely. The verb *have* does not permit inverse scope (13). In (13), *a child* must bind pro in the object position, and therefore must c-command the object quantifier, *each child*, yielding obligatory surface scope. By contrast, (14) contains no pro in the object position, and the sentence allows inverse scope.

(12) I gave [a child$_i$ [$_{P'}$ P_{have} [pro$_i$ each doll]]] (∃>∀, *∀>∃)
(13) A child$_i$ has [pro$_i$ each doll] (∃>∀, *∀>∃) (Harley and Jung (2015)
(14) A child owns each doll. (∃>∀, ∀>∃)

Passivization (4)-(7): *Have* resists passivization (4), because the passive morpheme *be-en* fails to absorb the [acc] feature on P_{have} (15), unlike in ordinary transitive passives (4). The POSSESSOR can be passivized in DOC (6), since P_{have} is not responsible for the Case-marking of POSSESSOR (16). By contrast, passivizing the POSSESSEE in a DOC yields an ungrammatical sentence (7), for the same reason that (4) is impossible.

(15) [[pro the doll]$_i$ is had P_{have} t_i by [a child]]
(16) [A child]$_i$ was given [t_i P_{have} [pro$_i$ a doll]]
(17) *[pro$_i$ A doll]$_j$ was given [[a child]$_i$ [P_{have} t_j]].

Subject QPs: The second object in DOCs can take scope over the subject (18) or the passivized first object (19).

(18) A (different) teacher gave me every book. (∃>∀, ∀>∃)
(19) A (different) girl was given t every telescope. (∃>∀, ∀>∃) (Bruening 2001)

Bruening (2001) derives this pattern by reconstructing subject QP to their base positions, but it remains unclear why subjects, but not objects, can reconstruct. If object could reconstruct, the raised QP in (3), *a child,* should reconstruct to its base position, incorrectly predicting the availability of inverse scope.

QPs on the vP-edge: We adopt the following independently motivated assumptions: i) QR targets vP; ii) scope reconstruction is generally possible but only copies of QPs at the vP-edge participate in scope calculation; iii) the highest copy of pro in the POSSESSEE must remain bound by the POSSESSOR; and iv) objects raise out of vP for Case reasons (Lasnik and Saito (1999), Tanaka (2014)).

Inverse scope in (18) arises when the subject reconstructs to the t_{kSUBJ} position lower than the second object, which has raised to the vP-edge (20).

(20) [$_{TP}$ a (different) teacher$_k$ [$_{vP}$ me$_i$ [$_{vP}$ [pro$_i$ every book]$_j$ [$_{vP}$ t_{kSUBJ} gave [$_{PP}$ t_i P_{have} t_j]]]]]

In (19), the universal QP raises to vP and takes scope over the passivized object, which raises to TP-spec and binds pro (21). The passive subject can reconstruct to the t_{iSUBJ} position, lower than the raised universal QP, *every telescope*, thereby allowing inverse scope.

(21) [$_{TP}$ [a (different) girl]$_i$ [$_{vP}$ [pro$_i$ every telescope] [$_{vP}$ t_{iSUBJ} [$_{vP}$ was given [$_{PP}$ t_i P_{have} t_j]]]]]]

Our analysis also explains (22), which permits *every book>a teacher*, but forces *some student>every book*. This pattern would be unexpected if scope relations were transitive. Under our proposal, pro must remain bound by *some student*. The subject QP can take scope at vP-edge (t_{kSUBJ}), and the raised POSSESSEE scopes over it (23).

(22) A teacher gave [$_{PP}$ some student$_i$ [$_{P'}$ P_{have} [pro$_i$ every book]]]
(23) A teacher$_k$ [some student$_i$ [$_{vP}$ [pro$_i$ every book] [$_{vP}$ t_{kSUBJ} [give [t_j P_{have} t_k]]]]]

Time permitting: Our account captures three morpho-syntactic facts of P_{have}: scope freezing, resistance to passivization, and incompatibility with derivational morphology (**haver*, **havable*, **unhave*). We argue that these properties form a systematic cluster tied to the internal structure of P_{have}, and are attested cross-linguistically, including in French, Italian, and German.

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The Typological Position of Burmese within the Class of Languages that Allow the Co-Occurrence of Nominative and Accusative Case Markers in Monoclausal Constructions

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1. Introduction: In human languages, the simultaneous occurrence of nominative and accusative case markers within a single clause is attested in only a limited number of languages. Among these, Japanese and Korean have been extensively investigated. According to Jin and Maki (2011, 2013), Yanbian Korean, a regional variant of Korean, also permits the simultaneous appearance of nominative and accusative case markers within a single clause. However, the syntactic properties of such languages beyond those mentioned have not been examined in detail. This paper focuses on Burmese, a language that has not yet been thoroughly investigated in this respect. Through a comparative analysis with Japanese, Korean and Yanbian Korean, the study aims to elucidate the typological position of Burmese within the class of languages that allow the co-occurrence of nominative and accusative case markers in monoclausal constructions. Maki et al. (2016) and Maki (2019) have investigated the possibility of genitive subject occurrence and the availability of N′-deletion in Japanese, Korean and Yanbian Korean. In these languages, as demonstrated in examples (1) through (3), nominative and accusative case markers co-occur within a single clause.

(1) Ichiro-**ga** Shohei-**o** hometa.
Ichiro-Nom Shohei-Acc praised
'Ichiro praised Shohei.' (Japanese)

(2) Junsang-**i** Yujin-**ul** chingchanhayssta.
Jungang-Nom Yujin-Acc praised
'Junsang praised Yujin.' (Korean)

(3) Junsang-**i** Yujin-**ul** chingchanhayssta.
Jungang-Nom Yujin-Acc praised 'Junsang praised Yujin.' (Yanbian Korean)

Examples illustrating the possibility of genitive subject occurrence are presented in (4) through (6), while those demonstrating the availability of N′-deletion are shown in (7) through (9).

(4) [Doyoobi-ni tamago-**ga**/-**no** yasui] mise-wa kono mise desu.
[Saturday-on egg-Nom/-Gen cheap] store-Top this store be
'The store where eggs are cheap on Saturday is this store.' (Japanese)

(5) [Thoyoil-ey keylan-**i**/*-**uy** ssan] sangcem-un i sangcem-ita.
[Saturday-on egg-Nom/-Gen cheap] store-Top this store-be
'The store where eggs are cheap on Saturday is this store.' (Korean)

(6) [Thoyoil-ey keylan-**i**$^{(H)}$/-**i**$^{(L)}$ ssan] sangcem-un i sangcem-ita.
[Saturday-on egg-Nom/-Gen cheap] store-Top this store-be
'The store where eggs are cheap on Saturday is this store.' (Yanbian Korean)

In example (6), the subject within the relative clause is marked by the case marker *-i* in both nominative and genitive contexts. However, the nominative *-i* is realized with a high pitch, whereas the genitive *-i* is realized with a low pitch. This prosodic distinction allows for a clear differentiation between the two, and both case markers are grammatically acceptable.

(7) a. Dare-**no** taido-ga yokunaidesu ka?
who-Gen attitude-Nom not.good Q
'Whose attitude is not good?'

b. John-no taido desu.
John-Gen attitude be
'John's attitude is.'

c. John-**no** desu.
John-Gen be 'John's is.' (Japanese)

(8) a. Nuku-**uy** thayto-ka cohciansumni ka?
who-Gen attitude-Nom not.good Q
'Whose attitude is not good?'

b. John-**uy** thayto imnita.
John-Gen attitude be
'John's attitude is.'

c. * John-**uy** imnita.
John-Gen be 'John's is.' (Korean)

(9) a. Nuku-**i**$^{(L)}$ thayto-ka cohciansumni ka?
who-Gen attitude-Nom not.good Q
'Whose attitude is not good?'

b. John-**i**$^{(L)}$ thayto imnita.
John-Gen attitude be
'John's attitude is.'

c. * John-**i**$^{(L)}$ imnita.
John-Gen be 'John's is.' (Yanbian Korean)

These findings are summarized in the table presented in (10).

(10) The Correlation Between Genitive Subject Licensing and N′-Deletion in J, K and Y

	Japanese	Korean	Yanbian Korean
Genitive Subject	√	*	√
N′-Deletion	√	*	*

Building on these observations, the present study addresses the following research questions:

(11) a. Does Burmese permit the occurrence of genitive subjects?
b. Is N′-deletion permissible in Burmese?
c. In languages that allow the co-occurrence of nominative and accusative case markers within a single clause, namely, Japanese, Korean, Yanbian Korean and Burmese, what is the relationship between the possibility of genitive subject occurrence and the availability of N′-deletion?

2. Burmese Data: First, in Burmese sentences containing transitive verbs, both the subject and the object are marked by nominative and accusative case markers, respectively, as (12) shows.

(12) Hein-**ka** manayka Yangon-mhar edi sarok-**ko** waspkaetal. 'Hein bought the book
Hein-Nom yesterday Yangon-in that book-Acc bought in Yangon yesterday.'

Second, as illustrated in example (13), the genitive case marker in Burmese is *-ye*. In this example, the subject is marked with the case marker *-ka*. It is noteworthy that in Burmese, both the nominative and topic markers are realized as *-ka*.

(13) Diha-ka Watin-**ye** sarok par.
this-Top Watin-Gen book be 'This is Watin's book.'

Third, as exemplified in (14), genitive subjects are not permitted in Burmese.

(14) Di sai khaukswal-**ka**/*-**ye** ayatharshide sai par.
this restaurant ramen-Nom/-Gen good restaurant be
'This is a restaurant where the ramen is especially good.'

Fourth and finally, as demonstrated in example (15), N′-deletion is not possible in Burmese.

(15) a. Bethu-**ye** konhuatamuayar-ka makaung tar lae?
who-Gen attitude-Nom not.good thing Q
'Whose attitude is not good?' (Burmese)

b. Hein-**ye** konhuatamuayar-ka lay.
Hein-Gen attitude-Nom be
'Hein's attitude is.' (Burmese)

c. * Hein-**ye** lay
Hein-Gen be
'Hein's is.' (Burmese)

3. Discussion: Preliminary data indicate that Burmese does not allow genitive subjects in prenominal sentential modifiers, nor does it support N′-deletion, aligning it more closely with Korean than with Japanese. This is summarized in (16).

(16) The Correlation Between Genitive Subject Licensing and N′-Deletion in J, K, Y and B

	Japanese	Korean	Yanbian Korean	Burmese
Genitive Subject	√	*	√	*
N′-Deletion	√	*	*	*

Therefore, the answers to Research Questions (11a) and (11b) are negative, and the answer to Research Question (11c) is that within these four languages, if genitive subjects are disallowed, N′-deletion is also disallowed. Furthermore, the preliminary investigation gives rise to the following questions: (i) Why do such differences emerge within the small set of nominative-accusative case marker languages, and (ii) why do Burmese and Korean exhibit similar syntactic behavior? We will leave these questions for future research.

Optionality of Argument Movement in Japanese DP: Insights Inspired by English Unaccusative Nouns

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Introduction: Although English clauses are generally assumed to exhibit the EPP, this effect does not seem to hold in nominal constructions, as illustrated in (1).

(1) a. $[_{DP}$ John$_i$'s $[_{NP}$ arrival $t_i]]$
b. $[_{DP}$ the $[_{NP}$ arrival [of John]]]

In English unaccusative noun phrases, the internal argument—base-generated inside NP—may either remain in situ or raise to Spec-DP (1a–b). These observations suggest that movement of an argument to Spec-DP is optional at least in unaccusative nominals in English.

One question that arises is whether the EPP effect exists in Japanese DP. Because Japanese is a head-final language, word order does not directly reveal whether the argument of an unaccusative noun moves, as shown in (2).

(2) a. $[_{DP}\,[_{NP}$ DP $N_{Unaccusative}]]$
b. $[_{DP}$ DP$_i$ $[_{NP}$ t_i $N_{Unaccusative}]]$

DP-internal scrambling in Japanese: Japanese allows scrambling relatively freely at the clausal level, but previous research shows that scrambling inside DP is dispreferred (Tazaki, 2025). That is, scrambling of elements within a DP results in lower acceptability. This scrambling-based degradation provides a diagnostic for identifying base-generation positions of DP-internal elements. Using this diagnostic, we can determine the relative ordering of locative adjuncts and arguments. The acceptability of nominal phrases in (3) indicates that the locative phrase *zitaku-de-no* 'at home' may be base-generated before either the external or internal argument, but not after the internal argument. Thus, in (3c), the internal argument must raise over the locative phrase. "LSO" means the Locative-Subject-Object word order in (3).

(3) a. Zitaku-de-no Taro-no eigo-no benkyoo (LSO)
home-in-GEN Taro-GEN English-GEN study
'Taro's study of English at home'
b. Taro-no zitaku-de-no eigo-no benkyoo (SLO)
c. ??Taro-no eigo-no zitaku-de-no benkyoo (SOL)

This pattern allows us to predict different acceptability outcomes for unergatives and unaccusatives, depending on whether Spec-DP must be filled. If Japanese D has an EPP requirement, unergatives and unaccusatives should show similar acceptability across Locative–Subject (LS) and Subject–Locative (SL) orders, since the sole argument of both the verb types ultimately occupies the same structural position. If Spec-DP is optional, then unergatives should show no LS/SL difference, whereas unaccusatives should degrade in SL, where the argument is scrambled over the locative phrase.

Experiments: To test the predictions, we conducted two acceptability judgment experiments. Experiment 1 was designed to validate the acceptability contrast observed in (3). The first experiment included 18 transitive nouns, presented in LSO, SLO, or SOL word orders. 36 fillers were included. 60 native Japanese speakers participated. Participants rated the naturalness of each phrase on a 7-point scale, and raw scores were transformed into z-scores. As shown in Figure 1, the results confirmed the acceptability pattern observed in (3): transitive nouns in SOL were significantly less acceptable than those in LSO and SLO ($p < .001$).

Experiment 2 tested the central predictions, using a 2 × 2 factorial design crossing NOUN TYPE (unergative vs. unaccusative) and WORD ORDER (LS vs. SL). 12 unaccusatives and

12 unergatives were prepared in LS and SL word order. 48 fillers were included, and 76 native Japanese speakers participated. Unaccusative examples are given below:

(4) a. Koozigenba-de-no kureen'sha-no koshoo (LS)
construction.site-in-GEN crane-GEN breakdown
'The breakdown of a crane at a construction site'
b. Kureen'sha-no koozigenba-de-no koshoo (SL)

The results, shown in Figure 2, revealed that acceptability scores for unergatives did not differ significantly between the two word orders (p = .925), whereas unaccusative nouns in SL were rated significantly less acceptable than those in the LS (p < .001). These results show that the internal argument of unaccusatives can remain in its base position, which argues against an EPP requirement on D in Japanese.

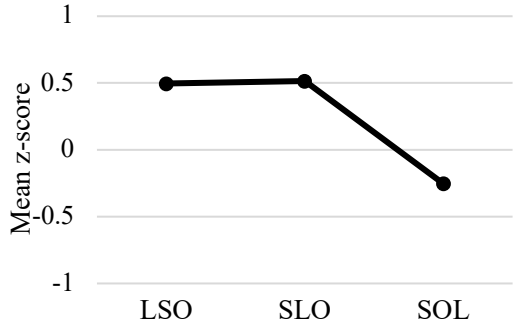

Figure 1. Results of Experiment 1

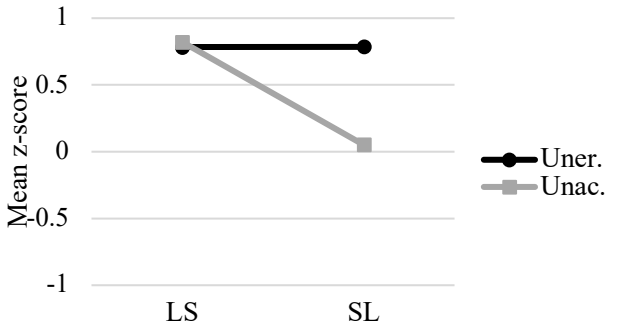

Figure 2. Results of Experiment 2

Structural analysis: A final issue is whether Japanese and English DP structures are identical. The answer appears to be negative, given that these languages differ in how labels are determined. In English, a set {$DP_{[F]}$, $XP_{[uF]}$} can be labeled <F, F> via feature sharing (Chomsky, 2013). In Japanese, a set {DP-Case, XP} is labeled as XP, as the Case marker on DP serves as an anti-labeling device (Saito, 2016). To capture the absence of the EPP in both languages despite these differences in labeling, we propose the DP structures in (5) for English and (6) for Japanese unaccusatives, assuming that D is a phase.

(5) a. $[_{<GEN,GEN>}\ DP_{[uCase]i}$'s $[_{DP}\ D_{[Case]}\ [_{nP}\ n\ [_{RP}\ R\ t_i]]]]$ (= DP*'s* unaccusative)
b. $[_{DP}\ D\ [_{nP}\ n\ [_{RP}\ R\ [_{PP}\ P\ DP]]]]$ (= *the* unaccusative *of* DP)

(6) $[_{DP}\ [_{nP}\ [_{RP}$ DP-Case R] $n]$ D] (= DP-*no* unaccusative)

In (5a), where the internal argument undergoes movement to Spec-DP, the argument and D share Case features, and the resulting {DP, DP} configuration is labeled <GEN, GEN>. In (5b), by contrast, the argument remains in situ and instead merges with P, forming a {P, DP} configuration that receives the label PP. In Japanese (6), the internal argument merges with R, and the label of {DP, R} is determined as RP. Case is assigned to the argument via the label <GEN, GEN> in (5a), by P in (5b), and by n or D in (6). This analysis derives the observed optionality of argument movement in both English and Japanese DPs.

Under this analysis, an external argument must move to Spec-DP for labeling reasons in English; otherwise, the structure {DP, nP} cannot be properly labeled. In Japanese, by contrast, the external argument need not raise because the presence of a Case marker resolves the labeling issue. In short, English exhibits an EPP effect only in unergative and transitive nominal constructions.

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On the Ban on Negative True Imperatives in Japanese: Evidence for a PF Approach

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1. Introduction to the puzzle According to previous research, languages differ in whether they permit negative true imperatives (i.e. imperative verbal form + sentential negation). While Class II languages such as Polish allow this construction, Class I languages, including Greek, disallow it, as in (1) (Rivero and Terzi 1995, Bošković 2012, Isac 2015, and among others).

(1) a. *Class I: Greek*
(*Den/mi) diavase!
NEG read.IMP
'(Do not) read!' (Bošković 2012)

b. *Class II: Polish*
(Nie) pracuj!
NEG work.2SG.IMP
'(Do not) work!' (Zeijlstra 2006)

In the literature, there have been two approaches to the analysis of negative true imperatives: a PF analysis (Miyoshi 2004 and Bošković 2004, 2012), and a verb-raising analysis (Isac 2015). This paper investigates imperatives in Japanese, and argues for the PF-based analysis.

In Japanese, a verb appears with an imperative morpheme as in (2a). As in (2b), a combination of negation and the morpheme always causes ungrammaticality.

(2) a. hon-o yom-e!
book-ACC read-IMP
'Read books!'

b. * hon-o yom-{e-nai/nai-e}!
book-ACC read-{IMP-NEG/NEG-IMP}
'Don't read books!'

Why does Japanese disallow negative true imperatives? This is the puzzle of this paper.

2. Proposal Adopting the core idea of Miyoshi (2004) and Bošković (2012), this paper proposes *Affix Prosodification*. Prior to presenting the proposal, the paper briefly reviews their PF-based analyses. Miyoshi (2004) argues that, in Romance languages, the imperative affix occupies a C head, and must prosodically merge with the verb under strict adjacency:

(3) a. Diavase!
read.IMP
'Read!'

b. [$_{CP}$ $C_{[IMP]}$ ... V ...]

Miyoshi (2004) and Bošković (2012) propose that negative true imperatives are banned in Class I languages because affix-hopping of an imperative affix is blocked by negation, as in (4b).

(4) a. * Den/mi diavase! (= (1a))
NEG read.IMP
'Do not read!'

b. [$_{CP}$ $C_{[IMP]}$ ... NEG ... V ...]

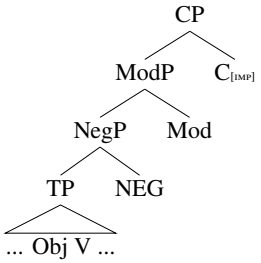
Under Boškovićs (2012) analysis, Class II languages allow negative true imperatives because an imperative affix head is either absent or not affixal in these languages.

2-1. Solving the Puzzle I propose *Affix Prosodification* in (5):

(5) Affixes are prosodified with their host head as a prosodic word at Spell-Out.

Let us see how it solves the puzzle. Following is a derivation of (6) after C merges:

(6) a. *Before Affix Prosodification*



b. *After Affix Prosodification*
... $(Obj)_{\phi}$ V-NEG-$C_{[IMP]\omega}$

Assuming that CP is a Spell-Out domain (Chomsky 2000, 2001), (5) applies when CP is Spelled-Out. As in (2a), the imperative morpheme *-e* (or *-o*) is a verbal affix in Japanese. Following Miyoshi (2004), I propose that the morpheme must be adjacent to its host verb at PF. As in (6b), however, they are not adjacent to each other because negation appears between them. Therefore, negative true imperatives in Japanese always fail to satisfy the morphological requirement that a verb and the imperative morpheme must be adjacent. Note that a T head and a modal head (MOD) also appear between the imperative morpheme and its host verb but they do not intervene because they are phonologically null in Japanese. Since negation does not appear in true imperatives (2a), the morphological requirement is always satisfied.

Furthermore, this analysis provides a straightforward account for why dummy verbs can take an imperative form. Japanese has a language specific rule of *do*-support, namely *su(ru)/a(ru)*-insertion, when an adverbial particle such as *-wa* is attached to a verb. (7a) shows that the inserted dummy verb takes the imperative form. This fact can be explained by saying that the imperative affix is salvaged by the dummy verb *su(ru)* after (5) applies.

(7) a. sono-hon-o yomi-wa *(shir)-o!
the-book-ACC read-TOP do-IMP
'Read the book!'

b. (... read-TOP)$_{\phi}$ *do*-C$_{[IMP]\omega}$ *do*-insertion

If this is on the right track, the dummy verb should salvage the imperative morpheme in any language that permits the dummy verb-insertion. English provides evidence for this prediction: negative imperatives require *do*-support, and the construction is ungrammatical in the absence of the dummy verb, as in (8).

(8) *(Do) not read this book!

This pattern is consistent with the view that dummy-verb insertion can salvage an imperative affix that would otherwise remain unrealized/unchecked at PF.

One might wonder if the imperative morpheme in negative true imperatives is also rescued by a dummy verb in the same way as (7a). This expectation is actually fulfilled in an interesting way. The following negative true imperative with a dummy verb *aru* was attested in Old Japanese, even though it sounds archaic in contemporary Japanese, as in (9).

(9) sono-hon-o yomu (koto) nak-ar-e!
the-book-ACC read (fact) NEG-be.PRESENT-IMP
'Do not read the book!'

As Miyagawa (1998) points out, a dummy verb ***a(ru)* 'be'** is inserted when it follows an adjective. Thus, in (9), the imperative affix is salvaged by the dummy verb.

A question still remains: why (10) is bad in contemporary Japanese:

(10) * sono-hon-o yoma-nak-ar-e!
the-book-ACC read-NEG-be.PRESENT-IMP
'Do not read the book!'

(11) yoma-nai-∅.
read-NEG-be.PRESENT
'(I) do not read (the book).'

This can be accounted for if the present tense form of the copula in contemporary Japanese is phonetically null (indicated by ∅). Like a verb 'be' in Russian and modern Hebrew, the present tense of *a(ru)* in Japanese is phonologically null when it co-occurs with negation as in (11). It thus cannot salvage the imperative morpheme, leading to the ungrammaticality of (10).

3. Counter-arguments against Verb-Raising Analysis Isac (2015) proposes that a verb and a MOD head bear a modality feature [Mod] and the verb raises to the MOD head to check its [uMod]. Negative true imperatives are disallowed in Class I languages because the NEG head in these languages is a non-affixal head: the verb is not allowed to raise to the MOD head with the NEG head. Moreover, an Agree relation cannot be established between the MOD head and the V head because the NEG head also has [uMod] and it is an intervenor between them as in (12a).

(12) a. [$_{ModP}$ MOD$_{[iMod]}$ ... NEG$_{[uMod]}$ ... V$_{[uMod]}$ ...] Class I languages

b. [$_{ModP}$ [V$_{[uMod]}$+NEG$_{[uMod]}$+MOD$_{[iMod]}$] ... t_{NEG} ... t_{V} ...] Class II languages

In contrast, such a locality issue does not arise in Class II languages because the NEG head is an affix. Once the V raises with the NEG head, the NEG head and the V head are equidistant from the MOD head as in (12b).

The analysis in Isac (2015) incorrectly predicts that Japanese should allow negative true imperatives, given that negation in Japanese is an adjectival affix head. But this is contrary to the fact in (1a). Moreover, she argues that [uMod] on negation blocks Agree between [uMod] on the verb and [iMod] on the MOD head, thereby deriving the ban on negative true imperatives. However, as she noted, such intervention effects are not predicted, once Multiple Agree (Hiraiwa 2005) is assumed. The grammaticality of multiple *wh*-constructions in Japanese, illustrated in (13), independently argues for Multiple Agree. Therefore, her analysis cannot be maintained.

(13) a. dare-ga nani-o tebe-ta no?
who-NOM what-ACC eat-PAST Q
'Who ate what?'

b. [$_{CP}$ Q$_{[iWH-]}$ [$_{TP}$ who$_{[uWH-]}$ [$_{VP}$ what$_{[uWH-]}$ V]

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Gender differences in articulation – An Electromagnetic articulography study of Cantonese vowels

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Social factors such as socio-economic status and gender play a significant role[1] in shaping articulation (Blackwood Ximenes et al., 2017; Chang, 2024; Wieling et al., 2016). The current study investigates kinematic variability in HKC[2] corner vowels (/aː/, /iː/, and /uː/) with the following research questions (RQ), (1) Is variability in one vowel correlated with variability in another? (2) Does gender significantly influence articulatory variability? (3) Which articulators (e.g., tongue, lips) contribute most to gender-related differences?

Electromagnetic articulography (EMA; Carstens AG501) data from 30 young adult HKC speakers (15 female)[3] was collected. Participants produced 70 Hong Kong street names designed to elicit three corner vowels (/iː, aː, uː/) in varied consonant-vowel (CV) contexts. Each vowel was repeated over 10 times per speaker. Sensors were placed at six articulatory landmarks: tongue dorsum (TD), tongue tip (TT), upper lip (UL), lower lip (LL), tongue lateral (TL), and lateral lip corner (LC). Articulatory movements were tracked in the anterior-posterior (x-axis) and vertical (z-axis) dimensions for subsequent analysis. Articulatory variability is defined at each articulatory location for each speaker as the Euclidean distance between each repetition of a vowel production and the mean position for that vowel (Whalen et al., 2018).

For RQ1, we calculated the mean variability across all articulators and assessed the correlation of variability among the three vowels separately for male and female speakers. For RQs 2 and 3, we used a linear mixed-effects model with variability as the response variable, and vowel, gender, and articulator as fixed effects; speaker and word were included as random effects.

We found significant positive correlations among the three corner vowels for female speakers, indicating that female speakers with higher variability in one vowel tended to exhibit higher variability in others (Figure 1 top panel). For RQs 2 and 3, the results revealed a trend where female speakers exhibited slightly lower overall articulatory variability than males ($\beta = -0.2$, $p = 0.15$). *Post-hoc* comparisons of individual articulators revealed that female speakers had significantly less variability than males in TD, TT and TL.

[1] differences between genders may be attributable to the anatomical differences between genders too.
[2] Hong Kong Cantonese
[3] Written consent was obtained from all participants prior to data collection, and they were compensated for their participation. Ethical approval for the study was obtained from the Human Subjects Ethics Committee of the Hong Kong Polytechnic University before data collection commenced.

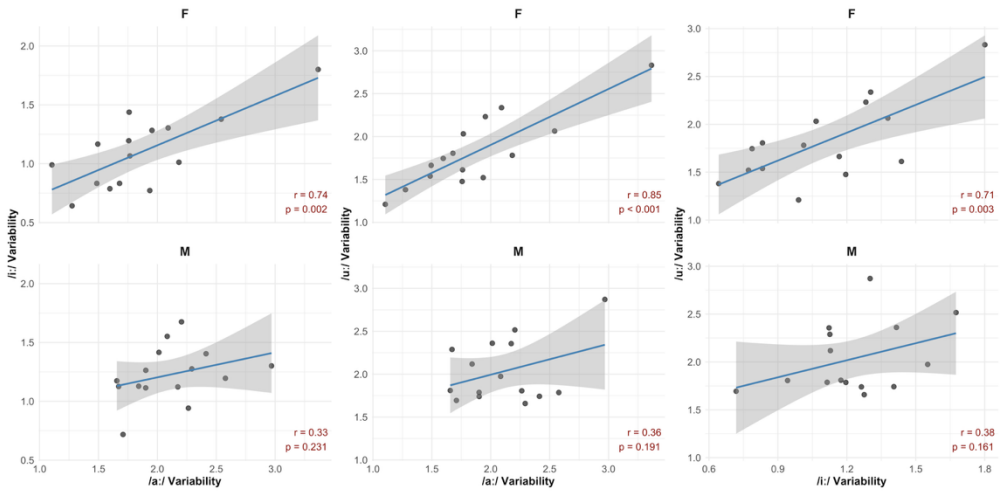

Fig. 1 Mean variability correlation among three corner vowels for male and female speakers respectively.

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Syntactic Analysis on Prosodic Behaviors of Japanese *Sentential Compounds*

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1. Introduction This study analyzes *sentential compounds* (Izumi 2024) in (Tokyo) Japanese.

(1) “John-ga tomato-o [tabe-ta” -setu]
John-NOM tomato-ACC eat-PST hypothesis
‘ “John ate a tomato”-hypothesis’

(2) “koogi-ga [tumaranai” -gao]
lecture-NOM boring face
‘ “(I feel that) the lecture is boring”-face’

In (1), for example, compound prosody (i.e., a word-level accent pattern; indicated by []) is applied to a part of the clause (‘eat-PST’), together with the head noun (‘hypothesis’). Notice that the former is not the *whole* clause, marked by “”. We generalize prosodic characteristics of this construction as (3). (We set aside modificational relations, with a few mentions later.)

(3) a. A clause can be joined into compound prosody, like a first component of canonical compounds which is monomorphemic.
b. Nevertheless, arguments with case markers in the clausal part are excluded from the domain of compound prosody (e.g., ‘John-NOM’ and ‘tomato-ACC’ in (1)).

Founded on our novel description, we syntactically analyze sentential compounds. Notably, we claim that (3) is explained by recapturing incorporation and extending theta-relations.

2. Existing Theories One intuitive explanation for (3a) would be to stipulate phrase-to-word conversion in lexicon (cf. Pafel 2015). This approach would predict that the inner structure of the first component should be opaque. However, this contradicts (3b), according to which prosody is restricted by syntactic factors, e.g., arguments. Note that (3b) cannot be reduced to phonological length, as suggested by the fact that a unit with potential three or more phonological words can be realized in a single compound prosody, e.g., (4).

(4) “John-ga tomato-o [tabe-ni iku-n-ja-nai-ka” -setu]
John-NOM tomato-ACC eat-to go-*no*-COP-NEG-Q hypothesis
‘ “John presumably goes to eat a tomato”-hypothesis’

Another possible account is to posit an idiosyncratic head that would “‘reify’ the content of the XP-phrase” (Harley 2009: 143), converting a clausal part into a unit subject to compounding. This approach would keep intact the inner structure of the clause. (3b) is not necessarily incompatible here, but cannot be predicted without additional explanations.

3. Proposal To begin with, suppose that (5) is tenable for the purpose of our discussion.

(5) Iff syntactic heads are Incorporated, they are realized in a single compound prosody.

Under this assumption on the morphosyntax-prosody interface (cf. Ito and Mester 2007, 2021), we argue that compounds, including sentential compounds, are generated by syntactic incorporation, à la Harley (2009). Nevertheless, we recapture incorporation as the operation that does not restrict the type of heads that can be involved, unlike Harley. We argue that incorporation is obligatory unless blocked (hereafter *Incorporation*), i.e., (6). In our analysis, such blocking is typically motivated by *strong theta-assignment* (7a), which obeys (7b).

(6) Incorporation is (i) costless and (ii) mandatory unless blocked.

(7) a. If X *strongly theta-assigns* to YP, Y cannot be Incorporated into X.
b. X can *strongly* theta-assign to YP only when X *normally* theta-assigns to YP.

Let us set aside the difference between strong and normal theta-assignment for a moment. Taking (2) as an example, *kao* ‘face’ does not theta-assign to the preceding clause, as suggested by *rendaku* (voicing of the initial consonant of (native-Japanese) second components of compounds, typically in modificational (i.e., non-theta) relations, e.g., [*ne-gao*] ‘sleeping-face’). Then, the blocking condition in (7a) does not apply to Incorporation crossing a head and a clause of sentential compounds. Now, (5) and (6) correctly predict the compound prosody (=3a). Notably, the current analysis dispenses with an exceptional head as in Harley’s approach, let alone the *ad hoc* phase-to-word conversion.

We suggest that arguments are always *normally*, but not necessarily *strongly* theta-assigned. While we take that normal theta-relation builds base-generated structures, strong theta-relation is posited as a driving force of Spell-Out independent of specific categories (cf. Bošković 2014). The prosodic difference between compounds and sentences, i.e., the presence/absence of compound prosody, illustrates what the strength of theta-assignment brings about. (7a) deduces that *ker(i)* 'kick' in the compound (8a) just *normally* theta-assigns to the argument *isi* 'stone', given that Incorporation is not blocked. On the other hand, it is suggested that *ker* in the sentence (8b) *strongly* theta-assigns to *isi*, given that Incorporation is blocked. Remarkably, *isi* optionally accompanies an accusative case marker *-o* in (8b), but never does so in (8a). These observations further suggest (9), which could align with the Dependent-Case theory (though not elaborated here).

(8) a. [isi-(*o) -keri] b. Kinoo isi-(o) ker-ta.
stone-(ACC) -kick yesterday stone-(ACC) kick-PST
'stone-kicking' 'Yesterday (I) kicked a stone.'

(9) Arguments are case-marked only if they are strongly theta-assigned.

The observation in (3b) is therefore deduced from (9) and (7a): compound prosody with case markers is impossible because case markers are possible only with strong theta-assignment, and that assignment should have blocked Incorporation. As expected, arguments *without* case markers can be included in compound prosody: accent patterns (i), as well as (j), are acceptable in "*John-ga* [$_i$ *tomato* [$_j$ *tabe-ta*"*-setu*] ((1) with an accusative marker absent).

One may wonder if the presence of case markers, rather than strong theta-assignment, would block Incorporation. Under the assumption of (6), however, this hypothesis incorrectly predicts that sentences cannot be generated without case markers, which contradicts the optionality of the accusative marker in (8b). Then, alternatively, what if Incorporation were *optional* unless blocked by case markers? This would correctly rule in sentences without case markers. However, it fails to explain why or why not Incorporation arises when case markers are absent, unless we stipulate additional systems to regulate Incorporation. In contrast to the alternative assumptions just above, our analysis requires no stipulations other than semantic factors, i.e., strong-theta assignment, to derive both compounds and sentences. (We, in turn, leave open the optionality of case-markers in (8b), which might be explained rather superficially.) Moreover, our analysis can expect the Polysynthesis Parameter (Baker 1996) if the availability of strong theta-assignment varies among languages: polysynthetic structure is deduced when *v* and Roots cannot strongly theta-assign to arguments in a language.

Note that our approach is compatible with noun complement clauses (NCC). In NCC, a head and any parts of a preceding clause are not in a single compound prosody, as in (10).

(10) John-ga tomato-(o) tabe-ta setu
John-NOM tomato-(ACC) eat-PST hypothesis
'the hypothesis that John ate a tomato'

This construction is not surprising if *setu* 'hypothesis' in (10) strongly theta-assigns to the clause, unlike (1). The assumption is not arbitrary because it fits the observation that a clause-final form in NCC is restricted, which implies that a head selects the clause: e.g., (4) cannot be pronounced without compound prosody due to the interrogative particle *ka*.

4. Future Research A clause sometimes modifies the following noun without yielding compound prosody (e.g., *kinoo ker-ta isi* 'the stone that (I) kicked yesterday'). This type of modificational relation might be counted as another "blocker" than strong theta-assignment, which would enable us to generalize (7a) into the statement that Y cannot be Incorporated into X *iff* there is, say, a *strong semantic relation*. We leave this point for future research.

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The Rise of Split VoiceP in the History of the English Passive

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1. Introduction Two important changes happened to passives and perfects throughout the Old English and Middle English periods: The loss of aspectual prefixes in the past participle and the rise of its eventive nature. These were followed by three subsequent changes, which happened to passives and perfects throughout the Modern English period: The rise of the perfect-of-passive (i.e., *have been done*), the rise of *get* passive (i.e., *get NP done*), and the loss of the *be* perfect (i.e., *be done*). This paper attempts to clarify how these changes took place and how they interacted with each other within the Split VoiceP framework.

2. Basics of Split VoiceP (Bai 2025a, c) In a nutshell, Voice as a syntactic head always, in both transitives and passives, introduces a DP as a potential subject (i.e., predicate-internal subject) and hence Voice[+D]; there does not exist Voice[–D], for non-argument-introducing Voice (Bruening 2013; Alexiadou et al. 2015). Voice[+D] has no selectional restrictions on the theta role of the DP it introduces. Either external or internal or any other type of arguments can be introduced by Voice; either external merge (EM) or internal merge (IM) is applied in introducing a DP. Thus, passive subjects, as well as active subjects, start their career as "subjects" in Spec of a Voice head before reaching Spec of TP. In canonical passives (English-type), external arguments, mostly agents, are not suppressed but syntactically projected (Collins 2024) in Spec of a lower Voice head (Bai 2025a, c). This leads to a Split VoiceP structure, represented in (1), where the light *v*, left out therein, is a verbalizer rather than an argument-introducer.

(1) $[_{TP}[_{VoiceP3}$ sbj3 $[_{VoiceP2}$ sbj2 $[_{VoiceP1}$ sbj1 $[_{VP}]]]]$ — Split VoiceP
(2) $[_{TP}[_{VoiceP1}$ DP1 (=sbj1) $[_{VP}$ $t_{DP1}]]]$ — Intransitive (the anticausative variant)
(3) $[_{TP}[_{VoiceP1}$ DP2 (=sbj1) $[_{VP}$ DP1$]]]$ — Transitive
(4) $[_{TP}[_{VoiceP2}$ DP1(=sbj2) $[_{VoiceP1}$ DP2 (=sbj1) $[_{VP}$ $t_{DP1}]]]]$ — Passive
(5) $[_{TP}[_{VoiceP2}$ DP3(=sbj2) $[_{VoiceP1}$ DP2 (=sbj1) $[_{VP}$ DP1$]]]]$ — Causative (transitive-of-transitive)

The transitive structure $\{DP^{n+1}, DP^{n}\}$ is derived by external merge (EM) of two DPs, notated as DP1 and DP2, as in (3), while the passive structure $\{DP^{n}_{i}, DP^{n+1}, t_{i}\}$ is derived by internal merge (IM) of DP (DP1) skipping over an externally merged DP (DP2), accompanied by head movements (in English-type passives), as in (6). Since Voice is underspecified not only about theta roles (external or internal) but also about merge (EM or IM), a new DP (DP3) may be introduced by Voice2, yielding (syntactic) causatives (as a species of the transitive structure $\{DP^{n+1}, DP^{n}\}$), as in (5).

(6) $[_{TP}$ T … $[_{VoiceP2}$ sbj2 ***be-en*** $[_{VoiceP1}$ sbj1(KP) Voice1 $[_{VP}$ V$]]]]$

The projection of an agentive phrase (DP2, identified as KP in Collins 2024) as a syntactic argument in canonical passives is cross-linguistically evidenced by anaphor binding, control into purposive clauses, secondary predicate depictives, etc. (Collins 2024). IM (or promotion) of an internal argument (DP1) into Spec of a head lower than T, namely, Voice2 is evidenced by the fact that the subject in English transitive expletives (7) and the quantifier *all* in quantifier-floating passives (8) does not occupy Spec of TP. Additionally, in Japanese and Mongolian causative-of-passive constructions, the subject of the embedded passive (e.g., *Hanako* in (9)) does not surface in Spec of TP, indicating that passivization must involve a head other than T.

(7) $[_{DP}$ There] were $[_{DP}$ three people$]_{i}$ arrested t_{i} at the airport. (McCloskey 1997: 215)
(8) They were all arrested. (Fleisher 2005: 5)
(9) Ziroo-ga Hanako-o/ni Taroo-ni sikar-are-sase-ta. (caus-of-pass)
Ziroo-NOM Hanako-ACC/DAT Taroo-DAT scold-PS-CS-PST
'Ziroo made Hanako be scolded by Taroo.' (Tsujimura 1996: 259)

Voice as a sbj-introducing head may also select a small clause, an unlabeled structure. In copula clauses, DP is merged as the sister of AdjP, yielding a small clause structure (Moro 2004), and promoted to Spec of VoiceP to become a potential subject (sbj). In this case, VoiceP, corresponding to Baker's (2003) PredP containing AdjP, is an intransitive structure.

(10) $[_{TP}[_{VoiceP1}$ DP (=sbj) $[_{Small\ Clause}$ t_{DP} $[_{AdjP}]]]]$ — Copula phrase (as a species of intransitive)

3. The rise of Split VoiceP in the history of English The *BE DONE* construction underwent two-step reanalysis from (11) to (12) to (13) in the history of English.

(11) $[_{VoiceP}$ be $[_{AdjP}$ en $[_{InAspP+VoiceP}$ ge- [V]]]] (OE)
(12) $[_{OutAspP+VoiceP}$ be+en $[_{VoiceP}$ [V]] (ME onwards)
(13) $[_{VoiceP}$ be+en $[_{VoiceP}$ [V]] (LModE onwards)

As for the **OE** structure, the suffix *en* is the exponent of an adjectivizing head, which selects a prefixed verb stem, where the aspectual prefix, mostly *ge*, spells out InAsp+Voice by virtue of having a perfectivizing and/or transitivizing function (Elenbaas 2007). This is evidenced by the fact that the prefixed participle expressed a stative result state in OE (McFadden 2015; Bai 2025b). The copula, namely, *wesan* or *beon*, notated as "be" here, spelled out an outer Voice head, where a DP, base-generated as the sister of AdjP, is promoted to Spec of VoiceP. *BE DONE* in this period was a stative resultative construction, which is adjectival in terms of syntactic category.

As for the **ME** structure, *ge* and the like were lost, which triggered the activation of the outer aspect head, OutAsp, and the shift of locus of the resultativity from InAsp to OutAsp, where *en* came to spell out the bundle of Voice and OutAsp due to the requirement of overtly marking the resultativity, with InAsp becoming inert (Bai 2025b) and the inner Voice head remaining alone. Importantly, *en* was no longer the exponent of Adj from ME onwards; it was reanalyzed as the exponent of OutAsp. With this change, the inner VoiceP came to be selected by the bundle of OutAsp and the outer Voice, where the DP came to be theta-marked as an internal argument by V in the syntax and be subject to promotion to Spec of OutAsp+Voice. *BE DONE* in this period, being closer to the PdE passive, was a perfective resultative construction, where it primarily denoted the perfect, not stative, resultative state of an action rather than the action itself. This is on a par with the fact that *be* functioned as a perfective marker (McFadden 2015), not a pure passive marker, in the same period. Note that the perfect resultative state in the ME period was more eventive than the stative resultative state in the OE period (Bai 2025b).

As for the **LModE** structure, Aspect and Voice are no longer bundled but rather separate (Bai 2025b), as is the case with *BE DOING* (Cooper and Hall 2012), where *en*, together with *be*, is the exponent of Voice (Voice2 now), which as an independent head selects the lower VoiceP (VoiceP1 now). With Aspect and Voice2 split out, each of them came to be spelled out by *en*, thereby two occurrences of *en* in a single string became possible, as in *have be-en eat-en*. As such, the perfect-of-passive emerged, whose structure is like $[_{\text{OutAspP}}$ have+en_{perf} $[_{\text{VoiceP}}$ be+en_{pass} $[_{\text{VoiceP}}$ V]]]. Importantly, the separation of Voice2 from Aspect led to a strictly layered VoiceP structure $[_{\text{VoiceP2}}$ $[_{\text{VoiceP1}}$ [V]], which is a canonical passive structure where Voice1 introduces a DP via EM and Voice2 introduces one (the DP as an internal argument) via IM. As long as Aspect (OutAsp) was separated from Voice2 and came to select VoiceP2 as a passive projection, *be*, together with *en*, came to spell out Voice2 rather than Aspect, leading to the loss of the *be* perfect. *BE DONE* in this period was thus already the same as the PdE passive, primarily expressing the eventive, not necessarily resultative, nature of an action. This is on a par with the fact that the participle has undergone a change from expressing a stative sense (stative resultative sense) to expressing a perfect resultative sense to expressing a more eventive sense towards the modern period (Bai 2025b).

4. Consequences and implications What underlies the five changes listed in the introduction is the loss of OE aspectual prefixes, namely, *ge* and the like, in the participle. This morphological change caused subsequent syntactic and semantic changes. As for syntax, the Split VoiceP structure became available, where *en* was changed from Adj to OutAsp+Voice to Voice, and *be* lost its copula nature and acquired an auxiliary nature. As for semantics, the participle became less stative and more eventive. All this indicates that English passive/perfect system has undergone an upward change, as is the case with other constructions (Elly van Gelderen, personal communication). Importantly, this change was not arbitrary; rather, it was closely correlated with the underlying syntactic change with respect to the rise of Split VoiceP, which brought about the rise and loss of certain constructions. The rise of Split VoiceP made it possible that the split structure or VoiceP2 is further embedded under a higher head. Along this line, it is predicted that in the ModE period, the *get* passive emerged, where *get* came to be able to select the Split VoiceP structure (i.e., VoiceP2 containing VoiceP1), in addition to the perfect-of-passive, where Aspect (OutAsp) selects the Split VoiceP structure. Voice (Voice[+D]) is the only argument-introducer in the syntax and UG provides just this much — Voice + (Free) Merge — in deriving various voice constructions including transitives and passives.

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Frege's Other Puzzle from the Perspective of a Classifier-Language

The goal of this paper is to shed new light on what Hofweber (2005) named *Frege's Other Puzzle*, on the basis of Japanese data. The puzzle is why numerals can be used in diverse syntactic contexts. Frege (1884/1950, §57) points to the relation between examples like (1) and (2).

(1) Jupiter has four moons.
(2) The number of Jupiter's moons is four.

Hofweber also mentions arithmetical statements like (3) as forming part of the puzzle.

(3) Two and two is four.

Moltmann (2013, 2017) expands the empirical domain by examining in detail expressions containing *number*. (4) is one such example.

(4) The number four is divisible by two.

Classifier languages: The presence or absence of a classifier provides a useful dichotomy in approaching empirical data in languages with a numeral classifier such as Mandarin and Japanese. In fact, Wągiel and Caha (2021) take up Mandarin examples that exemplify (1) and (3) in a cross-linguistic survey that attempts to elucidate the nature of cardinal numerals. Cases like (1) are accompanied by a classifier, while cases like (3) are not. Based on this kind of contrast, they argue that numerlas in the object counting use are derived by adding extra structure (realized as a classifier in Mandarin) to numerals in the abstract counting use.

They are, however, completely unaware of the discussion surrounding Frege's Other Puzzle, and limit the data set to cases like (1) and (3), failing to address examples like (2) and (4). Combining the two lines of research and pursuing further the dichotomy due to the presence or absence of a classifier, I would like to clarify the nature of a larger set of data and also ask whether the dichotomy suffices.

Data and analysis: The original puzzle concerns the status of (2). The Japanese version of it involves a classifier, as in (5), despite the fact that the numeral is not followed by a noun, at least on the surface.

(5) Mokusei-no eisei-no kazu-wa yot-tsu da.
Jupiter-GEN moon-GEN number-TOP 4-CL COP

In the Japanese version of (4), on the other hand, no classifier follows the numeral, as in (6).

(6) Yon-toiu kazu-wa ni-de warikireru.
4-C numer-TOP 2-with be.divisible

As for (2), Moltmann (2013) and Felka (2014) advocate an analysis according to which *the number of Jupiter's moons* functions as a concealed question, the numeral *four* being part of an answer to that question. Their analyses differ in details, but this approach is supported by a variant of (5) which allows a full answer sentence, as in (7), where the entire sentence embodies the question-answer sequence.

(7) Mokusei-no eisei-no kazu-wa-toiu-to mokusei-ni-wa eisei-ga yot-tsu aru.
Jupiter-GEN moon-GEN number-TOP-C-C Jupiter-DAT-TOP moon-NOM 4-CL is

A full non-elided answer sounds somewhat redundant, but it is acceptable. Note also that the special complex complementizer *toiu-to* right after the topic marker in (7) can follow an indirect question, as in (8), vindicating the concealed question status of the topic in (7).

(8) Mokusei-ni-wa eisei-ga iku-tsu aru-ka-toiu-to yot-tsu aru.
Jupiter-DAT-TOP moon-NOM how.many-CL is-Q-C-C 4-CL is

To handle (5), one needs to assume the elided clausal structure that ends with *no*.

Slightly modifying Wągiel and Caha's (2021) proposal, we can posit the following general denotation for a classifier, where $\#_P$ counts the number of adomic individuals that constitute the

plural individual represented by x and must be compatible with the selectional properties of particular classifiers:

(9) $[\![\text{CL}]\!] = \lambda P.\lambda n.\lambda x.[P(x) \wedge \#_P(x) = n]$

In contrast, the type of structure for numerals illustrated with (4)/(6) fails to be accompanied by a classifier, behaving on a par with cases like (3), since there are no individuals to be counted. It is also worth adding that arithmetical statements like (3), (4), and (6) express relations among numbers. I will also take up the special context that allows the classifier-less version of (5).

The nature of the dichotomy: The presence or absence of a classifier only gives a two-way distinction among various uses of numerals. Snyder (2021) gives a more fine-grained semantic classification. Does the dichotomy suffice?

Notice that from a mathematical point of view, ordinal numbers and cardinal numbers represent the most important aspects of natural numbers (Tiles 1989). The presence or absence of a classifier is sensitive to this distinction. Noticeably, the count sequence in Japanese given below does not involve a classifier.

(10) ichi, ni, san, shi, go, roku, shichi, hachi, ⋯
1, 2, 3, 4, 5, 6, 7, 8

Ordering in the count sequence, of course, is fixed.

It should also be noted that arithmetic operations on natural numbers are recursively defined by means of the successor function S. Addition, for example, is defined in the following way (George and Velleman 2002, p. 59):

(11) For any $m \in \mathbb{N}$
i. $m + 0 = m$, and
ii. for any $n \in \mathbb{N}$, $m + S(n) = S(m + n)$

The successor function gives the ordering of natural numbers as in (10). Wągiel and Caha simply assume that classifier-less uses correspond to ‘abstract counting’. A more substantive account of arithmetic statements and the count sequence as involving ordinal numbers, however, helps explain why things should be as they are. Ordinal numbers are based on the system of natural numbers characterized by the Dedekind-Peano axioms, whereas cardinal numbers come into play when the relation between a set and an individual natural number is to be expressed. No wonder that arithmetic statements and the count sequence do not use classifiers.

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How Linguaculture and Age Affect Attitudes to Digital Language Style Elements: Qualitative Insights from NSE and East-Asian Youths and Elders

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Written computer-mediated communication (CMC) strikingly deviates from standard language writing in terms of verbal and visual aspects. A textual element typical of written CMC are so-called textisms: non-standard spellings and abbreviations (e.g., 'cuz', 'tho', 'thx', 'idk'). The multimodal nature of written CMC has given rise to many visual digital elements, including emoji (small ideograms, e.g., 😄🙏😳 😊👍🏻🤷‍♂️), emoticons (e.g., :-) XD ;) =P ^^ :O), stickers (cartoon-like images, more detailed and larger than emoji), and GIFs (short, looping animated images, often used for memes referencing popular culture).

This study is interested in people's attitudes towards such digital language style elements. It investigates the effects of Linguaculture and Age group on attitudes to digital language style elements. Verheijen (2024) already showed that linguaculture and age group affect the *use* of digital language style elements. The present study posits that these factors also affect *attitudes* towards such elements. Age group is of interest because younger people are 'digital natives' who have grown up with CMC, whereas older people are 'digital immigrants' (Prensky, 2001). Linguaculture is of interest because of cross-cultural variation in (a) contextuality, where high-context Asian cultures such as Japan depend more on non-verbal communication cues than low-context cultures such as the US, and (b) politeness, which is more prominent in East-Asian communication than in English and where hierarchical differences are crucial (Haugh & Obana, 2011; Kersten et al., 2004; Pflug, 2011).

An online survey was conducted with 400 participants, who were selected based on two criteria: (1) Linguaculture, distinguishing between native speakers of English and East-Asian EFL speakers (Japanese, Chinese, Korean, Vietnamese) and (2) Age group, distinguishing between younger (18-27, Gen Z) and 'older' (40+). The survey had three aims:

(a) to assess **perceptions of appropriateness** of digital language style elements and how different factors affect this, including Communication Context (personal vs. professional), Hierarchy position of interlocutor (peer vs. higher), and Accommodation (i.e., mirroring the interlocutor's language style, Giles, 2016; Verheijen, 2024). Participants self-assessed their attitudes to using digital language style elements on Likert scales in different communication contexts, with different interlocutors, and with and without accommodation. The variables of Context and Hierarchy were reduced to four kinds of interlocutors (friends, colleagues, parents, supervisors);
(b) to assess the **importance of factors** in deciding whether to use digital language style elements. Participants rated and ranked how important they found certain factors in determining their use of digital language style elements. The factors included were Context, Hierarchy, Age, Relationship, Purpose, Platform, and Accommodation;
(c) to assess general **liking** of digital language style elements.

Data were collected using the online survey and recruitment platforms Qualtrics and Prolific.

Quantitative findings

Statistical analyses were conducted with IBM SPSS Statistics and quantitative findings were presented at the ELSJ 18th International Spring Forum 2025. Age group, Context, Hierarchy, and Accommodation were found to affect perceptions of appropriateness of all digital language style elements. Perceived appropriateness of such elements was significantly higher among younger people, in personal communication, if interlocutors are peers, and if interlocutors use digital language style elements themselves. In addition, Linguaculture was found to affect perceptions of appropriateness for textisms and emoticons, which were significantly higher among East-Asian participants than NSE participants.

As for the importance of factors in determining the use of digital language style elements, main effects of Linguaculture were found on the importance of *Hierarchy*, *Accommodation*, and *Context*. Hierarchy turned out to be more important for East-Asian participants, while Accommodation and Context were more important for NSE participants. An interaction effect between Age group and Linguaculture was also found, revealing that the effect of Linguaculture on the importance of Accommodation was greater for older people than for younger people: mirroring the perceived formality of their communication partner's own language style was especially less important for older East-Asian participants.

Regarding participants' liking of digital language style elements, main effects of Age group and Linguaculture were found: younger people liked all digital language style elements more than older people (as hypothesized), and East-Asian participants liked textisms, emoticons, and stickers more than NSE participants. An interaction effect between Age group and Linguaculture showed that the effect of Age group on liking of textisms was greater for NSE than East-Asian participants: textisms were liked less by older NSE participants, and most by younger East-Asians. Note that the latter finding corresponds with experimental evidence found by Verheijen (2024), also presented at the ELSJ 17th International Spring Forum 2024, that particularly younger East-Asian participants use more textisms.

Current focus: Qualitative insights

This presentation at the ELSJ 19th International Spring Forum 2026 continues from the *quantitative* findings that Linguaculture and Age group indeed affect attitudes towards digital language style elements in written CMC: the present study offers additional *qualitative* insights into people's attitudes. This is done by analysing the answers to the open-ended questions that were asked in the survey to 400 participants of different Age groups and Linguacultures. They were asked (a) to share their thoughts on the appropriateness of using digital language style elements in digital messages and (b) to explain why they like or dislike using certain digital language style elements. Their open-text responses are analysed using the methodology of Qualitative Text Analysis (Kuchartz, 2014) and results will be presented.

This analysis will overcome the prompt bias, uncovering **unexpected factors** that turn out to also motivate people in deciding whether to use digital language style elements. Secondly, after establishing *what* people think, this study will reveal the **why** behind their attitudes and behaviour, i.e., their motivations for deeming digital language style elements (in)appropriate in digital messages and for (dis)liking the use of such elements. It will offer more **nuance** and **complexity**, allowing participants to give personal examples and describe their attitudes and behaviour in their own words. Finally, the open-text responses will show **sentiment**, since participants could describe their *feelings* towards the use of textisms, emoji, emoticons, stickers, and GIFs. All this will enrich our understanding of NSE and East-Asian youths' and elders' attitudes to digital language style elements in written CMC.

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“You Can See Here. Let’s Check It Out”*:* Pronouns and Persuasion in Generative AI Product Launch Events

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Abstract

This study examines the use of personal pronouns in product launch events for generative AI (GenAI) technologies and the persuasive effects made possible by the recurrent combinations of pronouns and their frequent collocates. In the past few years, GenAI technology has been evolving at a faster pace than ever before. To announce the launch of new products or version updates, tech companies such as OpenAI and Google record and release product launch videos on digital platforms such as YouTube to demonstrate and promote new AI tools. Product launch talks thus constitute an important genre that not only unveils and highlights the advancement of new AI technologies but also helps establish the image of a company and its relationship with customers and investors, as studies investigating product launch events of technological devices have suggested (Wang & Fu, 2025; Wenzel & Koch, 2018; Zhang, Feng et al., 2021; Zhang, Song et al., 2021; Zhou, Jiang & Liu, 2024).

Previous research on product launch discourse has emphasized the importance of language choice and examined a range of linguistic devices and discursive strategies adopted in such events. For example, Zhang, Feng et al. (2021), investigating how interpersonal meanings are constructed in the classic iPhone 1 product launch presentation by Steve Jobs, show that the speaker made frequent use of the declarative mood, the first-person singular pronoun *I*, and the low-value modal auxiliary *can* to provide new information, emphasize Jobs’s position as the leader of the company, and demonstrate the distinctive functions of the iPhone 1 to the audience in a less aggressive tone. Zhou, Jiang and Liu (2024), comparing quantitative features of Apple’s onsite and online product launch presentations between 2016 and 2022, find that the company’s online pre-recorded videos contained longer words, more difficult texts, and fewer short sentences than their onsite speeches, due to the affordances and limitations of each mode.

Despite the importance of product launches, especially in the IT industry, research on this genre has not received the attention it deserves, and existing studies focus mostly on the launch of hardware products such as smart devices (Wang & Fu, 2025; Zhang, Feng et al., 2021; Zhang, Song et al., 2021; Zhou, Jiang & Liu, 2024). Few, if any, studies examine product launch discourse for digital applications or services such as ChatGPT, which cannot easily be displayed as a tangible device with an appealing appearance but instead relies heavily on linguistic and other semiotic resources in human–machine and human–human interaction to construct and negotiate its value. This characteristic very likely makes product launch presentations even more consequential for AI products than for hardware-based devices.

In light of this research gap, this study presents both quantitative and qualitative analyses

of the six English product launch videos published by OpenAI on YouTube between 2023 and 2025, all of which have more than a million views, focusing on the use of personal pronouns and their recurrent collocates. The transcripts of the six videos were generated and extracted from YouTube and analyzed using the corpus linguistics program *AntConc* (Version 4.3.1) (Anthony, 2024), with English personal pronouns as the search items. The qualitative analysis was conducted manually on the distribution and functions of the most frequent pronoun–collocate combinations in the product launch discourse.

Quantitative results show that, in contrast to the iPhone 1 presentation, second-person pronouns (*you* and *your*) are the most frequent, followed by first-person plural pronouns (*we*, *us*, and *our*) (cf. Zhang, Feng et al., 2021). Moreover, each form of personal pronoun shows a strong preference for specific collocations. For example, while the top verbal collocates of *you* are *can* and *see*, the first-person singular *I* most frequently co-occurs with a *be* verb and *think*, and the plural *we* is often used along with a *be* verb and *have*. A closer look at these combinations reveals that pronouns like *you* and *we/us* have various referents in context, and the recurrent linguistic chunks serve rhetorical functions such as discourse management, image construction, and audience engagement. These patterns also reflect the culture of the AI industry, the distinctive features of GenAI, and the nuanced traits of AI product launch presentations. As such, the current study contributes to the literature on business communication, AI discourse, and the applied uses of English pronouns.

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Horn-Scales Formed by Verbs

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This paper investigates whether verbs can systematically form Horn-scales (Horn, 1972) and, consequently, give rise to scalar implicatures. An example of a Horn-scale (Horn, 1972) is <some, all>, where the meaning of *all* asymmetrically entails the meaning of *some*, such that uttering a proposition containing *some* will likely trigger the inference to the negation of a proposition containing *all* (e.g., *some of the apples are red → not all the apples are red*). Such type of inference is commonly called *scalar implicature* (SI). Horn-scales, or strength-based scales, come in a variety of forms beyond quantifiers; there are scales made up of adjectives (<good, great>), adverbs (<sometimes, always>), modal verbs (<may, must>), and verbs (<like, love>), to name a few. While most research has focused on quantifiers and adjectives (Gotzner et al., 2018; Van Tiel et al., 2016), this research shows that verbs, cross-linguistically, reliably form Horn-scales.

I Identify, analyze, and classify Horn-scales formed by verbs in two languages: English and Spanish, and explore the semantic and pragmatic constraints that underly entailments between predicates. To trail the scales, I extract naturally occurring verb pairs from rich corpus data (Jakubíček et al., 2013; Kilgarriff et al., 2004) using collocations such as *x but not y* where *x* and *y* are variables over verbs. The results are partially shown in Table 1 below.

Table 1: Horn-scales bilingual dataset

English		**Spanish**	
x	***y***	***x***	***y***
damage	destroy	dañar	destruir
cool	freeze	enfriar	congelar
wither	die	marchitarse	morirse
catch up	overtake	alcanzar	adelantar
wake up	get up	despertarse	levantarse
charge	convict	acusar	condenar
like	love	gustar	encantar
hate	detest	odiar	detestar
…			

For the analysis of the semantic properties that underlie the entailment relations, key lexical semantic notions like Aktionsart and scale structure (Dowty, 1979; Kennedy & Levin, 2008; Kennedy & McNally, 2005) turn out to be highly relevant. Specifically, the data exhibit patterns of verb meanings with two stative verbs – e.g., <like, love> – in a relation of increasing intensity, one degree achievement and one accomplishment – e.g., <damage, destroy> – in a part-whole relation, or one achievement followed by another

achievement – e.g., <catch up, overtake> – in a temporal sequence relation, as illustrated in Table 2.

Table 2: Semantic relations

Weak member	Strong member	Semantic relation
State	State	Intensity
Degree achievement	Accomplishment	Parthood
Achievement	Achievement	Sequence

Thus, relations between events are classified in terms of intensity, parthood, and sequence respectively. (1) shows that *love* lexicalizes a stronger affection towards the song than *like* (Intensity); (2) shows that, in a suitable context, any event of a plant being destroyed has an event of it being damaged as a part (Parthood); (3) demonstrates that overtaking requires the necessary precedence of catching up when describing a car race.

(1) One song that most people seem to **like** but not **love** is Uptown.
(2) In the waterlogged areas, excess water significantly **damages** or completely **destroys** the plants, thus reducing the average crop yield.
(3) Shelby, driving furiously to **catch up**, finally **overtook** Gurney late in the race and won.

My findings show that entailment-based relations between verbs are both frequent and systematic, suggesting that scalar ordering at the predicate level is a robust phenomenon. When comparing the English and Spanish data, no significant differences appear. This study lays essential groundwork for a separate study of SIs in the verbal domain, offering a promising venue to probe for pragmatic inferences.

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Auxiliary Adverb Order in English Silent Structures

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【INTRODUCTION】 It has been noted in the literature that certain adverbs cannot immediately precede a silent verbal category (first formulated by Sag (1978)). For example, in the VP-ellipsis in (1) and (2), an adverb that is otherwise allowed between the auxiliary and the VP is banned from the position immediately to the left of the ellipsis site. In the similar vein, in (3), the v*P has undergone fronting, and the relevant contrast concerns the position immediately preceding the trace: the adverb *surely* is possible when it is separated from the trace, as shown in (3a) while it is ruled out when it immediately precedes the trace, as in (3b).

(1) Fred has never been rude to Grandfather, but…
a. John always has _. b. * John has always _. (Baker 1981: 309)

(2) John has read this book, and …
a. Otto probably has _, too. b. *Otto has probably _, too. (Sag 1978: 149)

(3) He said he would study karate, and [$_{v*P}$ study karate]
a. he surely has t_{v*P}. b. *he has surely t_{v*P}. (Abels (2003: 1))

【BACKGROUND】 The preceding analyses have tended to mainly attribute the ungrammaticality to head movement. For example, Abels (2003) argues that there are always two types of head movement available: upward head movement, as is usually assumed, or a downward one (Affix Hopping). Further, he assumes that adverbs constitute a phrase, where they are located in the specifier of AdvP. Then, when VP-ellipsis occurs, the AdvP undergoes upward head movement since the VP domain is elided and AdvP cannot adjoin to the VP. Since head movement aligns an adjoining head to the left of an adjoined head, the word order of Adv-Aux obtains. Another intriguing proposal comes from Park (2023). He proposes that when VP-ellipsis takes place, auxiliaries stay in-situ instead of raising to T. The verbal features contained in the complex head V-v move to Aux and then to T. However, when VP-ellipsis happens, the V-v movement to the auxiliary does not occur. Therefore, the auxiliary remains in-situ and the word order Adverb-Aux is obtained. However, Engels (2010) provides examples showing that, when T-to-C movement happens under VP-ellipsis, the auxiliary can appear at the right edge of the clause, as shown in (4) and (5). This is not expected under Abels (2003) given that the adverb head moves to the auxiliary and attaches to the left of it, or under Park (2023), the remaining auxiliary remains in-situ due to VP-ellipsis.

(4) A: Terry knows how to build an H-bomb.
B: No - does he really _? (Ernst 1983: 548)

(5) A: John hasn't gotten along well with Grandpa lately.
B: Has he ever _? (Baker 1981: 313)

【ASSUMPTIONS】 For labeling of adverbs, Kim (2019) proposes that adverb-adjunction involves an Anti-Labeling Device in the sense of Saito (2016), whereby overt or covert adverbial suffixes function as anti-labelers. On this view,

adverbial morphology such as English *-ly* patterns with Case/agreement morphology and renders adjoined AdvPs opaque for labeling so that they never project. This places adverbs in parallel with scrambled phrases, both of which can stack iteratively because they are freed from the burden of projecting a label. As a consequence, VP-adverb complexes can be straightforwardly labeled as VP(or v*P) and can undergo movement operations such as VP-fronting even when they contain adverbs, thereby resolving problems for standard labeling-based approaches.

【PROPOSAL and ANALYSIS】 We argue that the ungrammaticality of (1) to (3) is attributed to the labeling failure. As a basic background of labeling, Chomsky (2013, 2015) proposes the Labeling Algorithm for syntactic objects, where he argues that every syntactic object has to be assigned a label to ensure what sort of syntactic object it is. Specifically, he gives the following algorithm. One is a trivial one: {X, YP}, where X is the head. In this case, the syntactic object receives X as its label since Minimal Search finds the head X first. The other one does not go in the same way. For a syntactic object {XP, YP}, a label is assigned if XP and YP share the same prominent feature or either of the phrases moves to a higher position. For the labeling of deletion sites or copies, Maeda (2021) argues that copies and elided material are invisible to the Labeling Algorithm (LA) because their phonological features are eliminated (or stripped away), unlike inherently phonologically null heads such as C or T. Adopting her proposal, we propose that the unavailability of Aux-Adv order in VP-ellipsis is ascribed to the unlabeled stranded adverb, as shown in (6).

(6) $[_{\alpha}$ Adv $[_{v*P}$ …]] (α=??) (The gray part shows the deletion site.)

If v*P is not marked as a deletion site, α would receive v*P as its label. However, since the adverb itself cannot assign a label, the label of α cannot be assigned, causing the failure of interpretation at the interfaces. This is also applied to the example of VP-preposing in (3). For the syntactic object γ={H, XP}, Chomsky (2015) argues that it fails to be labeled if H is weak. Then Saito (2018) revises it and suggests that XP provides the label for γ in this case. This is stated in (7).

(7) Alternative: Search into γ = {α, β} for a label. If α is a weak head or search into α finds a weak head, then γ inherits the label of β.

Adopting this idea into the structure of $\{_{\gamma}$T, $\{_{\delta}$ Adv $\{$~~v*P~~$\}\}\}$, δ should provide a label of γ since T is weak. However, δ does not have a label and consequently γ cannot receive a label as well as δ. In this case, if T moves to C, the resulting structure would be {T-C, $\{DP_{subj}$ $\{_{\gamma}t_{T}$, $\{_{\delta}$ Adv $\{$~~v*P~~$\}\}\}\}\}$, where δ receives DP as its label. In this way, head movement salvages the labeling failure.

In this presentation, we argue that i) the ungrammaticality of Aux-Adv order is attributed to the labeling failure and ii) head movement may salvage the labeling failure.

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Deriving Andrews-Amalgams by Sideward Movement and Counter-Cyclic Pair-Merge

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Introduction In Andrews-amalgams (AAs), a clause (the IC, short for interrupting clause) appears in the complement position of a verb that does not typically take a clausal complement, and this clause contains **an element that functions as an argument of that verb (the pivot)**. (1) illustrates an AA.

(1) He$_{i/j}$ kissed Bill$_i$ didn't remember how many **women**. (Kluck (2011: 33))

(1) shows that *he* in the main clause and *Bill* in the IC can refer to the same individual without giving rise to a Condition C violation, indicating that the IC forms a domain in which its internal elements are not c-commanded by the elements in the main clause. Another property of AAs is that the IC embeds an interrogative clause that must be deleted with the main clause serving as the antecedent, as in (2a, b), in contrast to standard embedded interrogative clauses, which are optionally deleted as in (2c).

(2) a. John invited you'll never guess how many **people** ~~(John invited to his party)~~ to his party. (Kluck (2011: 325))

b. ??John invited you'll never guess how many **people** John invited to his party to his party.

c. Bob was hitting someone in the face ...
You can imagine who (Bob was hitting). (Kluck (2011: 232))

Previous Analysis Kluck (2011) proposes that (1) has the structure in (3), in which the main clause verb takes a parenthetical phrase (ParP) (De Vries (2012)) as its complement. The head of ParP, Par, creates a domain in which the elements outside it cannot c-command Par′. In addition, a null element *e*, interpreted as *someone*, occupies Spec, ParP.

(3) [$_{TP}$ He$_i$ kissed [$_{ParP}$ e [$_{Par'}$ Par Bill$_i$ didn't … [how many **women**]$_1$ ~~[$_{TP}$ he kissed t$_1$]~~]]].

In Kluck (2011), the Par head accounts for the grammaticality of (1). As shown in (3), the IC subject, *Bill*, is within the Par′, in which it cannot be c-commanded by the main clause subject *he*. Therefore, *he* and *Bill* can refer to the same individual without inducing a Condition C violation. However, this analysis faces two problems. First, the elided TP is contained in the main clause, which is the antecedent of the ellipsis. This means that (3) is an uninterpretable structure because when the antecedent clause is copied into the elided TP for interpretation, the elided TP is also copied. Second, this analysis provides no mechanism that forces obligatory deletion of the interrogative clause in the IC.

Proposal I propose the following derivation for AAs. First, only a part of the *wh*-phrase, *how many*, is extracted to the CP of the interrogative clause (Pesetsky (2000)), as in (4a).

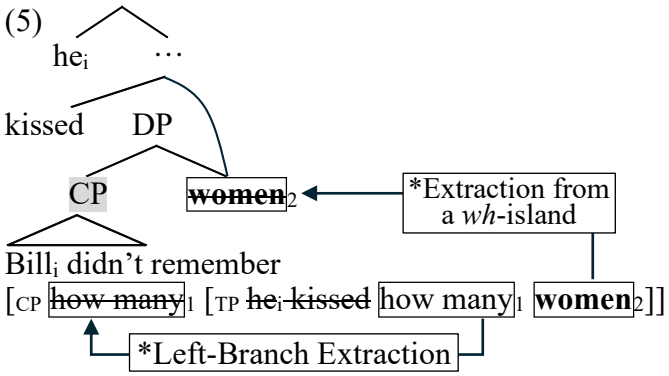
After the IC is formed, the pivot *women* undergoes sideward-movement (Nunes (2004)), which copies a syntactic object (SO) and merges it with another independent SO, namely, *kissed*, as illustrated in (4b).

(4) a. [$_{CP}$ C [$_{TP}$ Bill didn't … [$_{CP}$ [how many]$_1$ [$_{TP}$ he kissed [how many]$_1$ **women$_2$**]]]]

b. kissed **women$_2$**

After the main clause (4b) is formed, the IC (4a) counter-cyclically pair-merges (Epstein, Kitahara, and Seely (2012, 2014), Hayashi (2018)) with the sideward-moved pivot, *women*. As a result, *women* is shared between the main clause and the IC, as illustrated in (5). In this structure, the IC, which counter-cyclically pair-merged to the sideward-moved pivot, is outside the c-command domain of the main clause elements. Therefore, *he* in the main clause does not c-command *Bill* in the IC, and the sentence does not induce a Condition C violation. In addition, under the proposed structure, the elided TP is not contained in the antecedent main clause. Thus, unlike Kluck's (2011) structure, the proposed structure can be properly interpreted. Note that the proposed derivation involves extraction of the pivot from a *wh*-island and left branch extraction of a *wh*-phrase, both of which generally yield ungrammatical sentences. To solve these problems, I adopt Abe and Hornstein's (2012) proposal, according to which if a movement does not change the word order, the lower copy is pronounced and the lower copy pronunciation ameliorates the violations caused by the movement. In (5), the copies of *how many* become adjacent after the TP is elided, and the sideward-movement of the pivot does not change the word order (even when a PP follows the pivot like (2a), the PP will be deleted and the copies of the pivot also become adjacent). Then, the lower copies of these phrases are pronounced, ameliorating the violations. Crucially, without TP deletion, the sentence is ungrammatical because the lower copy pronunciation is unavailable and the violations are not ameliorated. Therefore, the ellipsis of the interrogative clause in the IC is obligatory.

(5)



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Do So in Japanese: A Case for Negative Events

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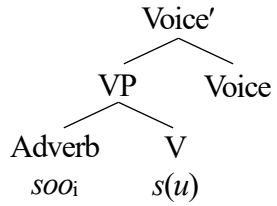
Background: The Japanese counterpart of English *do so*, namely *soo-s* 'so-do', has been analyzed as a proform anaphoric to *event predicates* (type ⟨v, t⟩). For instance, Tanaka (2016) observes that the antecedent of *soo-s* can be an NP if it is an eventive NP like *tozan* 'climbing' in (1a), but not if it is an individual-denoting NP like *yama* 'mountain' in (1b); that is, while *soo-s* in (1a) can mean 'climb a mountain in winter,' its use in (1b) is infelicitous without an additional context. Thus, given that eventive NPs are semantically of type ⟨v, t⟩, the contrast in (1) shows that *soo-s* takes an event predicate as its antecedent.

(1) a. [[NP **Huyu**^{F}**-no-tozan**]$_1$-wa kiken-da]-to kii-te, Ken-wa **soo**$_1$**-su**-ru-no-o yameta.
winter-Gen-climbing-Top dangerous-is-C hear-and Ken-Top so-do-Pres-C-Acc gave.up
'Hearing that winter climbing was dangerous, Ken decided not to do so.'

b. * [[NP **Huyu**^{F}**-no-yama**]$_2$-wa kiken-da]-to kii-te, Ken-wa **soo**$_2$**-su**-ru-no-o yameta.
winter-Gen-mountain-Top dangerous-is-C hear-and Ken-Top so-do-Pres-C-Acc gave.up
'Hearing that winter mountains were dangerous, Ken decided not to do so.'

Based on this fact, I adopt Tanaka's (2016) compositional semantic analysis of *soo-s*, according to which its meaning is a result of syntactically merging the two lexical items *soo*$_i$ and *s*(*u*). Specifically, I assume that *soo-s* is structured as in (2a), where its Agent argument (**ag**) is introduced by Voice (Kratzer 1996), and that *soo*$_i$ is a proform construed as a type-flexible free variable g(i), but *s*(*u*) is an action verb requiring its sister to be of type ⟨v, t⟩, so *soo*$_i$ is interpreted as of type ⟨v, t⟩ in the case of *soo-s*, as shown in (2b).

(2) a.



b.

$[\![soo_i]\!]^g$	= g(i)	(type-flexible)
$[\![s(u)]\!]^g$	= $\lambda P.\lambda e$: **act**(e). [P(e)]	type ⟨⟨v, t⟩, ⟨v, t⟩⟩
$[\![\text{VP}]\!]^g$	= λe. [g(i)(e)]	type ⟨v, t⟩
$[\![\text{Voice}]\!]^g$	= $\lambda P.\lambda x.\lambda e$. [**ag**($e$) = $x \wedge P(e)$]	type ⟨⟨v, t⟩, ⟨e, ⟨v, t⟩⟩⟩
$[\![\text{Voice}']\!]^g$	= $\lambda x.\lambda e$. [**ag**(e) = $x \wedge$ g(i)(e)]	type ⟨e, ⟨v, t⟩⟩

Goal & Issue: Given the analysis in (2), the goal of this study is to establish that *soo*$_i$ may refer back to any given predicate *P* if $[\![soo_i]\!]^g \in @(P)$, where $@(P)$ = the set consisting of *P* and its alternatives that result from replacing the F(ocused)-marked part of *P* with a contextually salient referent (Rooth 1992). This licensing condition is general enough. For example, it allows *soo*$_1$ in (1a) to denote λe. [**climb**(e) $\wedge$ **in-winter**(e)], since that predicate is the same as the denotation of the first subject NP *huyu-no-tozan*, whose lexical meaning is taken to be λe. [**climb**(e) $\wedge$ **in-winter**(e)]. However, though theoretically simple, hence promising, the licensing condition above as it stands does not capture the possible range of antecedents for *soo*$_i$. The crucial observation comes from Hoji (1990: Ch.5, p.9). What he points out is that *soo-s* can refer back, not only to a plain event predicate as in (3a), but also to a predicate modified by the negative suffix *na*(*i*) 'not' as in (3b), where *soo-s* can mean something like 'not scold Jun.'

(3) a. Ken^{F}-wa [**Jun-o sikara**]$_3$-nakat-ta-ga, Yui^{F}-wa **soo**$_3$**-si**-ta.
Ken-Top Jun-Acc scold-Neg-Past-but Yui-Top so-do-Past
'Ken did not scold Jun, but Yui did so.' (*soo-s* ≈ 'scold Jun')

b. Ken^{F}-ga [**Jun-o sikara-nakat**]$_4$-ta-node, Yui^{F}-mo **soo**$_4$**-si**-ta.
Ken-Nom Jun-Acc scold-Neg-Past-because Yui-also so-do-Past
'Ken did not scold Jun, so Yui did so, too.' (*soo-s* ≈ 'not scold Jun')

Then, the issue is how to semantically represent the antecedent of *soo*$_4$ in (3b). In fact, this is not a trivial question under event semantics, if negative morphemes denote *proposition negation* ¬, a function of type ⟨(s)t, (s)t⟩. For instance, as Champollion (2015) notes, a sentence like the antecedent clause in (3b) should be assigned, not the reading in (4a), but that in (4b), since (4a) is too weak a proposition in that almost every event can make it true as long as it exists; e.g., even a dancing event can make it true.

(4) a. $\exists e.\, \neg[\mathbf{ag}(e) = \mathbf{ken} \wedge \mathbf{scold(jun)}(e)]$ (there is an event *e* such that *e* is *not* a scolding by Ken of Jun)
b. $\neg\exists e.\, [\mathbf{ag}(e) = \mathbf{ken} \wedge \mathbf{scold(jun)}(e)]$ (there is *not* an event *e* such that *e* is a scolding by Ken of Jun)

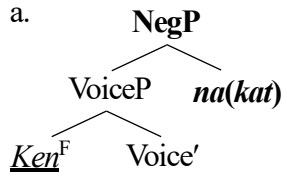
Still, if (4b) is the correct representation of the antecedent clause in (3b), no part of it provides the actual antecedent for *soo*$_4$, because what is negated in (4b) is the entire existential proposition, which is not of type ⟨v, t⟩. Thus, to capture the fact that *soo*$_4$ refers back to a predicate modified by *na*(*i*), there are two ways to go; to revise the licensing condition above or to introduce a new idea. I will take the second route.

Main Claim: I propose that the suffix *na*(*i*) expresses what Bernard & Champollion (2024) call *event negation*; that is, $[\![na(i)]\!]^g = \lambda P.\lambda e'.\, [e' \in \mathbf{neg}(P)]$, an expression of type ⟨⟨v, t⟩, ⟨v, t⟩⟩ (cf. Oshima 2025). According to Bernard & Champollion, the function **neg** takes an event predicate *P* (i.e., the set of every event described by *P*) and returns the set of those events which "preclude" all actual events described by *P*. In other words, **neg**(*P*) denotes the set of every anti-*P* event *e* such that *e* cannot coexist with any *P* event at the same time *t* in the same world *w*. This semantics of **neg** is ensured by the *Principle of Negation* shown in (5), which entails that (5a) and (5b) hold (cf. Bernard & Champollion 2024: 591ff.)

(5) **Principle of Negation**: $\forall P.\forall t.\forall w.\, [\exists e.\, [e \in P_{\text{ at } t \text{ in } w}]] \leftrightarrow [\neg\exists e.\, [e \in \mathbf{neg}(P)_{\text{ at } t \text{ in } w}]]$
a. **No Gluts**: $\forall P.\forall t.\forall w.\, [\exists e.\, [e \in P_{\text{ at } t \text{ in } w}]] \rightarrow [\neg\exists e.\, [e \in \mathbf{neg}(P)_{\text{ at } t \text{ in } w}]]$
b. **No Gaps**: $\forall P.\forall t.\forall w.\, [\neg\exists e.\, [e \in P_{\text{ at } t \text{ in } w}]] \rightarrow [\exists e.\, [e \in \mathbf{neg}(P)_{\text{ at } t \text{ in } w}]]$

With this, let us now assume that the suffix *na*(*i*) takes VoiceP and projects NegP as in (6a) (e.g., Shibata 2015). Then, the NegP of the antecedent clause in (3b) is compositionally interpreted as shown in (6b).

(6) a.



b. $[\![\text{Voice}']\!]^g = \lambda x.\lambda e.\, [\mathbf{ag}(e) = x \wedge \mathbf{scold(jun)}(e)]$
$[\![\text{VoiceP}]\!]^g = \lambda e.\, [\mathbf{ag}(e) = \underline{\mathbf{ken}} \wedge \mathbf{scold(jun)}(e)]$
$[\![na(kat)]\!]^g = \lambda P.\lambda e'.\, [e' \in \mathbf{neg}(P)]$
$[\![\text{NegP}]\!]^g = \lambda e'.\, [e' \in \mathbf{neg}(\lambda e.\, [\mathbf{ag}(e) = \underline{\mathbf{ken}} \wedge \mathbf{scold(jun)}(e)])]$
(= the set of every event that cannot coexist with any scolding by Ken of Jun)

Importantly, the denotation of NegP here can serve to create the antecedent of *soo*$_4$ in (3b), as it is of type ⟨v, t⟩. Suppose that $[\![soo_4]\!]^g = g(4) = \lambda e'.\, [e' \in \mathbf{neg}(\lambda e.\, [\mathbf{ag}(e) = \underline{\mathbf{yui}} \wedge \mathbf{scold(jun)}(e)])]$. Then, this interpretation will be licensed, because it is a member of the alternative set of $[\![\text{NegP}]\!]^g$, given that the first subject *Ken* in (3b) is contrasted with the second one, *Yui*. That is, $[\![soo_4]\!]^g \in @([\![\text{NegP}]\!]^g)$, as represented in (7).

(7) $@([\![\text{NegP}]\!]^g) = \{\, \lambda e'.\, [e' \in \mathbf{neg}(\lambda e.\, [\mathbf{ag}(e) = \underline{x} \wedge \mathbf{scold(jun)}(e)])] \mid \underline{x} \in \{\mathbf{ken}, \mathbf{yui}, \ldots\} \,\}$

Therefore, *soo-s* in (3b) is allowed to make the following assertion, which includes the semantics of *na*(*i*).

(8) $[\![\underline{Yui}^F\text{-}mo\ soo_4\text{-}si\text{-}ta]\!]^g = \exists e.\, [\mathbf{ag}(e) = \underline{\mathbf{yui}} \wedge g(4)(e)]$
$= \exists e.\, [\mathbf{ag}(e) = \underline{\mathbf{yui}} \wedge e \in \mathbf{neg}(\lambda e.\, [\mathbf{ag}(e) = \underline{\mathbf{yui}} \wedge \mathbf{scold(jun)}(e)])]$

Conclusion: I have proposed that the postulation of negative events, namely actual events described by negated predicates, makes two attempts feasible: [1] to capture Hoji's (1990) observation on *soo-s*, and [2] to keep the licensing condition on the interpretation of *soo*$_i$ as simple as possible. This proposal, if tenable, lends further support to Bernard & Champollion's (2024) new theory of linguistic negation.

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Temporal Interpretation of Propositional To-Infinitive Complement Clauses

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Wurmbrand (2014) proposes that propositional to-infinitives such as *believe to* and *claim to* project an anaphoric tense, attributing the patterns in (1) and (2) to this property. This tense resembles the present tense in that it locates the event time (ET) and the reference time (RT) at the same time, but it differs in taking the attitude holder's now (NOWa.h.) as RT, whereas the present tense takes the utterance time (UT) as RT. In (1b), the futurate adverb *tomorrow* is impossible because the anaphoric tense enforces simultaneity between the event time of the infinitive and that of the matrix predicate.

(1) Simultaneity with matrix event (ME)

a. Five years ago, Julia claimed to be pregnant *at that time*.

b. * Yesterday, John claimed to leave *tomorrow*.

(Adapted from Wurmbrand (2014: 432))

In (2a), embedding a perfective predicate (*bring the toy*) yields ungrammaticality, whereas an imperfective predicate (*be singing*) is acceptable.

(2) Unavailability of perfective predicate

a. * Leo believed Julia to bring the toy right then. *perfective

b. Leo believed Julia to be singing in the shower right now. ✓imperfective (ibid.: 405)

She explains this contrast by appealing to the short RT associated with present-like tenses: when the present tense is involved, perfective readings cannot arise, as in (3).

(3) a. *Leo sings in the shower right now. *perfective

b. Leo is singing in the shower right now. ✓imperfective (ibid.: 426)

This restriction follows from a semantic incompatibility between perfective aspect and the present tense: perfective aspect requires ET to be included within RT, i.e., ET ⊂ RT, whereas the RT of the present tense corresponds to UT, which is instantaneous and therefore cannot contain ET. As a result, the perfective interpretation in (3a) is ruled out.

However, this proposal encounters an empirical problem. It predicts that the ME and the infinitive event (IE) must always be simultaneous, yet my informants report that propositional infinitives can yield past-oriented interpretations:

(4) a. Yesterday, John claimed to be at the party *two days ago*.

b. Yesterday, John was believed to be a student *five years ago*.

Note that the embedded events *be at the party* and *be a student* occur prior to *claim/believe*. However, under her proposal, the sentences in (4) are incorrectly predicted to be unacceptable, since the proposal derives strict simultaneity between ME and IE via an anaphoric tense.

To address this empirical issue, I propose that propositional infinitives do not project tense and that the temporal relation between ME and IE is unordered. This allows three logical

relations—ME < IE, ME = IE, and IE < ME. Following Williamson (2019), I assume that the semantic properties of the matrix predicate constrain the relations. Specifically, I assume that future-oriented events (in Williamson's sense of the FUT operator) cannot arise, as their semantic properties conflict with the requirements imposed by the matrix predicate.

(5) a. *believe* requires that, in every possible world, proposition φ become true.
b. $[\![\alpha \text{ believe } \varphi]\!]^{w,t,S} = 1$ iff $\forall \langle w',t' \rangle \in \text{Dox}_{w,t,\alpha} : [\![\phi]\!]^{w',t'\text{Dox}w,t,\alpha} = 1$

(Williamson (2019: 465))

(6) Futurate interpreted events presuppose to be diverse in terms of its truth value in possible worlds.

As shown in (5) and (6), futurate interpretations are ruled out due to their incompatibility with the requirements of *believe*. In contrast, simultaneous and past-oriented interpretations do not conflict with these requirements and are therefore permitted. Note that I assume *future-interpreted events* rather than a FUT operator. Positing such an operator would incorrectly predict a sentence like (7a) to be unacceptable, whereas assuming *future-interpreted events* does not, since it makes no claim about the presence of an operator. Furthermore, sentence (7b) is indeed unacceptable, which is consistent with this prediction.

(7) a. John believes that it will rain tomorrow.
b. *John believes that Charlie wins tomorrow. (Adapted from Williamson (2019: 86))

Regarding (2), I follow Ramchand's (2014) generalization of Epistemic Stative-Sensitivity (ESS) Modals. She characterizes the following generalization:

(8) ESS Modals are those that are technically ambiguous between an epistemic and circumstantial interpretation, but can only get that epistemic interpretation when combined with a stative predicate. (Adapted from Ramchand (2014:103))

This means that an epistemic interpretation is available only when the modal takes a stative predicate as its complement. The predicate *believe* is a doxastic attitude predicate (see (5)), and doxastic attitudes constitute a subtype of epistemic attitudes (cf. Meyer 2003). Given this, propositional predicates can embed only stative events, since the epistemic (or doxastic) interpretation is lost when the embedded predicate is perfective.

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Proposals, rejections, and Common Ground management

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Overview This work connects two existing puzzles and provides a unified view: (i) Why do modal adverbs (e.g., English *probably*) behave like PPIs? (ii) Why do corrective particles (e.g., Chinese *bìng bù*, English *but*) always involve propositional negation? I adopt the view that these are all speaker-oriented, **CG** (Common Ground)-management operators: (i) Speaker S uses a modal adverb to **propose** adding a proposition p in CG, and this proposal is based on p's being probable (**true** enough) in S's epistemic worlds; (ii) S uses a corrective particle to **reject** (i.e., **negate**) the inclusion of a proposition p in the CG. I further propose a strength difference between a proposal and a rejection: a **proposal** involves **existential** modality, while a **rejection** involves **universal** modality.
Puzzle (I) Modal adverbs can only be positive, but not negative (see (1)); moreover, modal adverbs don't occur in the scope of negation or in questions (see (2)–(3); see Bellert 1977, Nilsen 2004, Piñón 2009). Thus they differ from modal adjectives (see (4)).

(1) a. Probably / Possibly / Evidently, they won the elections.
b. #Improbably / Impossibly / Not evidently, they won the elections.

(2) a. They probably / possibly / evidently did not win the elections.
b. #They did not probably / possibly / evidently win the elections.

(3) #Did they probably / possibly / evidently win the elections?

(4) It is (im)probable / (im)possible / (not) evident that they won the elections.

Earlier accounts (e.g., Bellert 1977, Nilsen 2004) cannot explain (i) why humans don't use ⟦improbably, p⟧ to mean 'the truth of p has a low probability', or (ii) why modal adverbs differ from modal adjectives (see (5): (5a) is contradictory, while (5b) is not).

(5) a. #The socialists will possibly win, even though they certainly won't.
b. It's possible that the socialists will win, even though they certainly won't.

Piñón (2006) and Wolf & Cohen (2009) propose that the use of modal adverbs is about CG management: modal adjectives express the objective probability of a proposition, while modal adverbs indicate its probability in a speaker's epidemic worlds, and speakers need to be sincere so that they should only propose to add propositions to the CG if they consider them sufficiently likely. This view does explain the data in (1)–(5): a speaker should not propose p to the CG if p has a low likelihood in her epistemic worlds; and in (5), ⟦possibly, p⟧ and ⟦certainly, $\neg p$⟧ bring contradictory proposals. However, according to Grice's Maxims of Quantity, Quality, and 'Be brief', a sincere speaker should just avoid using modal adverbs altogether and propose p to the CG only if she fully believes p.
Puzzle (II) On the other hand, while modal adverbs are PPI-like, **corrective particles** demonstrate an opposite behavior: negation is necessarily involved in correction.

Toosarvandani (2014) points out that in '*not p but q*', sentential negation is required:

(6) a. Space travel is not possible, but a dream. the **corrective use** of *but*
b. #Space travel is impossible, but a dream.

Chinese corrective particle *bìng bù* (lit., 'and + NEG') also requires sentential negation (Yuan & Liu 2025, Wu 2025, Zhang 2025). (7) shows that here, double negation cannot be reduced to a positive sentence; the contrast between (8) and (9) shows that morphological negation does not meet this requirement and therefore cannot replace sentential negation.

(7) wǒ bìng *(bú shì méi) yǒu sǎn
1SG BÌNG NEG COPULA NEG have umbrella
'It's not that I have no umbrella.' ✓ **irreducible double negation**

(8) wǒ-men qǐng-le Zhāng-Sān (dàn) tā bìng bù/fēi yīdìng huì lái
1PL invite-PFT Zhāng-Sān but 3SG BÌNG NEG necessary can/will come
'We invited Zhāng Sān, but it's not necessary that she will come.'

(9) wǒ-men qǐng-le Zhāng-Sān (dàn) tā (*bìng) wèi-bì huì lái
1PL invite-PFT Zhāng-Sān but 3SG BÌNG unnecessary can/will come
Intended: 'We invited Zhāng Sān, but it's not necessary that she will come.'

Proposal Given that both modal adverbs and corrective particles have specific polarity-related requirements, their semantic contribution should be above the level of propositional contents. Inspired by existing studies (Piñón 2006, Wolf & Cohen 2009, Zhang 2025), I analyze them as speaker-oriented, CG-management operators that operate on propositions.

As shown in (10) and (11), '*bìng bù p*' and '*not p but q*' asserts $\neg p$, but is usable only when, from the speaker's epistemic perspective, (i) p is likely given the CG, and (ii) in **all worlds satisfying their conversational goals**, p is not CG. The corrective meaning is due to the contrast between (i) the high expectedness of p, given the current CG in the speaker's epistemic worlds, and (ii) the speaker's rejection of p from the CG.

(10) $[\![\text{bìng bù } p]\!]^{c,w} \overset{\text{def}}{=} \neg p$, defined for p, c, w only if $\underbrace{\forall w' \in \text{Epi}_{\text{SPEAKER}_c}(w)}_{\text{The speaker is sure that}}$:

$(\underbrace{\mu_{\text{PROB}_{w'}}(p \mid \text{CG}_{w'}) \geq \theta_{c,w'}}_{p \text{ is sufficiently likely given the CG}} \wedge \underbrace{\forall w'' \in \text{Conver}_{\text{SPEAKER}_c}(w') : (p \notin \text{CG}_{w''})}_{\text{in all worlds satisfying their conversation goals, } p \text{ is not CG}})$

(Zhang 2025; see also Frana & Rawlins 2019's analysis of Italian *mica*)

(11) $[\![\text{not } p \text{ but } q]\!]^{c,w} \overset{\text{def}}{=} \neg p \wedge q$, defined for p, q, c, w only if $\underbrace{\forall w' \in \text{Epi}_{\text{SPEAKER}_c}(w)}_{\text{The speaker is sure that}}$:

$(\underbrace{\mu_{\text{PROB}_{w'}}(p \mid \text{CG}_{w'}) \geq \theta_{c,w'}}_{p \text{ is sufficiently likely given the CG}} \wedge \underbrace{p \wedge q = \varnothing}_{\text{not both true}} \wedge \underbrace{\forall w'' \in \text{Conv}_{\text{SPEAKER}_c}(w') : (p \notin \text{CG}_{w''} \wedge q \in \text{CG}_{w''})}_{\text{in all worlds satisfying their conversation goals, } p \text{ is not CG, } q \text{ is CG}})$

As shown in (12), '*probably, p*' has no assertion (i.e., nothing is added to CG), but only felicity requirements. Such a sentence is appropriate only when, from the speaker's perspective, (i) p is not yet CG, and (ii) in **some worlds satisfying their conversational goals**, p is sufficiently likely. The speaker's sincerity does not consistent in making a true enough assertion, but in flagging a partial violation of Gricean maxims: at least in some goal-worlds, p is worth being considered. (5a) is contradictory in that the same speaker proposes both p and $\neg p$, treating them as simultaneously worth consideration (see (13)).

(12) $[\![\text{probably } p]\!]^{c,w}$, defined only if $\underbrace{\forall w' \in \text{Epi}_{\text{SPEAKER}_c}(w)}_{\text{The speaker is sure that}}$:

$(\underbrace{p \notin CG_{w'}}_{p \text{ is not yet CG}} \wedge \underbrace{\exists w'' \in \text{Conver}_{\text{SPEAKER}_c}(w') : (\mu_{\text{PROB}_{w''}}(p \mid \text{CG}_w) \geq \theta_{c,w''})}_{\text{in some worlds satisfying their conversation goals, } p \text{ is sufficiently likely}})$

(13) (5a): $\exists w'' \in \text{Conver}_{\text{SPEAKER}_c}(w') : (\mu_{\text{PROB}_{w''}}(p \mid \text{CG}_w) \geq \theta_{c,w''} \wedge \mu_{\text{PROB}_{w''}}(\neg p \mid \text{CG}_w) \geq \theta'_{c,w''})$

My analysis suggests that a proposal involves **uncertainty** (existential modal), while a rejection involves **certainty** (universal modal). As additional evidence, in *bìng bù*, *bìng* means 'and', and cross-linguistically, conjunction is often associated with necessity.

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Indexical shift in counteridenticals and counterfactual modality

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This article discusses the indexical shift under counterfactual (CF) modality. I demonstrate such a phenomenon through "counteridenticals" (Goodman 1983, Kocurek 2018).

Kaplan's (1989) fixity condition states that indexicals have a fixed reference in the same discourse. However, it was found that the reference of indexicals could shift in some special linguistic environment. For instance, Schlenker (1999) pointed out that in a language like Amharic, the 1st person pronoun may occur under the attitude verb and is coreferent with the Agent of the attitude as in (1a). In contrast, the shift isn't possible in English as in (1b):

(1) a. John$_i$ says that I$_i$ am a hero. (Amharic)
b. John$_i$ said that he$_i$ is a hero. (English)

Indexical shift occurs in a special type of counterfactual called "counteridenticals" in a slightly different manner. Kocurek (2018) argued that the 1st person pronouns often refer to non-identical individuals (counterparts in the possible world) in counteridenticals. Kocurek provides the following examples:

(2) a. If I were you, I would vote for me.
b. If I were you, I would vote for myself. (Kocurek 2018: 350)

In (2a), *I* and *me* in the consequents refer to different individuals, whereas in (2b), *I* and *myself* refer to the same individual. While the (non-)coreference in the consequents are correctly predicted by the Binding Theory, what is not accounted for is that the 1st person pronoun has two counterparts in counteridenticals. In (2a), *I* in the antecedent refers to one of the candidates in the actual world, and *I* (the first occurrence of the 1st person) in the consequent refers to one of the voters. In (2b), *you* is one of the candidates and *I* is one of the voters in the antecedent, and *I* (the first occurrence of the 1st person) in the consequent refers to one of the candidates.

As shown in (2), the indexical pronouns shift their references under counteridenticals. This phenomenon extends to other types of indexical pronouns. Consider the following examples:

(3) a. If today were tomorrow, I would be qualified for drinking alcohol.
b. If my house were next to yours, I would give you the pie out of oven.
c. If I were (born as) Julius Caesar, I wouldn't be alive in the twentieth century.
(Goodman 1983:6)

In (3a), the indexical time pronoun (equivalent to "now") in the antecedent refers to the utterance time, but that in the consequent is shifted to *tomorrow* which is supposed to be the day when the speaker is able to drink alcohol. In (3b), the indexical place pronoun equivalent to "here" is the location of the speaker in the antecedent, but it shifts to the location of the hearer in the consequent. In (3c), the indexical world pronoun is located at where the speaker is, but it is shifted to the world of Julius Caesar.

As pointed out by Kocurek (2018: 327), the indicative version of counteridenticals, which he calls *identity indicatives*, are infelicitous. Observe the following contrast:

(4) a. If you (really) are my father, I must have your DNA/#I must be rich.
b. If you were my father, I would be rich/#I would have your DNA.

Identical indicatives are felicitous in the context where the speaker is not sure who his father is or doesn't know if the addressee is his father or not. On the other hand, counteridentical as in (4b) is felicitous in the context where the speaker is speaking hypothetically – the speaker

has clear knowledge about his father's identity, i.e., the addressee is not his father. I show that in using the epistemic modality, some background knowledge (historical or imaginary) is unavailable, which is available in the counterfactual modality.

There are two major challenges to account for the meanings of counteridenticals. First, there is an indexical shift from the antecedent to the consequent. Consider a referential shift for the indexical pronouns *I* in (2a). The referential shift of *I* can be described as follows:

(5) If A were B, A (=B with the mind of A) would vote for A'.

The indexical *I* in the consequent is not identical with *I* in the antecedent. In view of the speaker and the hearer of the context of the utterance, the referent of *I* in the consequent refers to the hearer, who has the mind of the speaker. The second challenge is the truth/felicity conditions of the counteridenticals, as the same indexical pronouns in the antecedent and consequent differ in meaning.

To solve these problems, I propose to extend the theory of deixis to the indexical pronouns in the CF conditionals. Simply stated, I claim that that the indexical shift seen in (1) is due to the shift of discourse centers as discussed by Roberts (2023), whereas the shifts seen in (2) are due to change of location of index by the CF modality.

Given Robert's indexical characterization of the epistemic modals, I argue that CF modal auxiliaries encode the exclusion of (or a distance from) the deictic center of the context. Following the pragmatics of exophoric demonstratives (the distinction of demonstratives by their distance from the discourse center) by Oshima & McCready (2017) and Nunberg (1993), let us loosely define deictic feature of pronouns as follows:

> Let *i, j, k* be an index: *i, j, k* ∈ N.
> For any variable, $\text{var}_{n,} \in D_{\text{var}}$ and *i* is proximal, *j* is medial, and *k* is distal to the deictic center of *c*.

I argue that CF modality has a deictic component because it encodes the location of the indexical pronoun which is anchored to the speaker's doxastic state. For example, the same proposition can be evaluated in different types of modalities depending on which range of worlds are relevant to the modal base. Speaking about the epistemic modality, the relevant worlds are proximal to the speaker's world. When it comes to the CF modality, the proposition is evaluated among the (closest) distal worlds. I assume CF modality has a feature of a distal anaphor since CF propositions are uttered based upon the mutual knowledge on their non-actuality.

The pragmatics of deixis can be applied to the CF conditionals in the following way. In all the examples in (2) and (3), indexical pronouns in the antecedent are computed with respect to the context world, while indexical pronouns in the consequent are computed with respect to the distal world. Thus, I propose the felicity conditions of counterfactuals such as (2a) according to the appropriate modal base, as in (6):

(6) $[[\text{If I were you, I would vote for me}]]^{C}$ is felicitous iff
   i. There is no w_i in which $[[\text{I BE}_{CF}\text{ you}]]^{i}=1$ and
   ii. $[[\text{I WOLL}_{CF}\text{ vote for me}]]^{k}=1$ for all w_k among the closest to i.

The prejacent proposition of the CF modality in context is felicitous iff there is no world in which the antecedent is true with respect to *i*, while there is a world in which the consequent is true with respect to *k*. The referents of the indexical pronouns can be correctly computed in the appropriate domains of modality. The referents of those in the consequents in (2a) and (2b) can be analyzed as shifted referents as desired. This semantics provides the correct semantic representations for (2a-b). The indexical shifts under counteridenticals are accounted for by the shift of indexical pronouns due to the deictic feature of CF modality.