Notes on Adjectival Predicate Ellipsis and its Theoretical Implication for Argument Ellipsis

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<u>**Synopsis**</u>: The aim of this paper is two-fold: to demonstrate that adjectival predicate ellipsis (APE)/anaphora should be derived from LF-Copy, and to explore its consequences. Given the impediment to overt movement from the English APE site, I assert that APE should be derived from LF-Copy rather than PF-Deletion. A PF-Deletion approach, derivational ellipsis, is also shown to be inconsistent with APE data, which confirms LF-Copy to APE. Furthermore, LF-Copy is applicable to Japanese "soo" predicate anaphora (SPA). LF-Copy to APE in English and SPA in Japanese provides additional support for Bošković's (2018) explanation of why only D-less languages have Argument Ellipsis and R-heard raising analysis in that-relatives.

<u>**Data**</u>: In English, AP can be elided. AP2 undergoes deletion under identity with AP1 in (1).

(1)   Mary should [$_{Pred P}$ be [$_{AP1}$ friendly]], and John should [$_{Pred P}$ be [$_{AP2}$ Δ]], too.

This is confirmed by the fact that adjectival predicate ellipsis (APE) permits sloppy reading in (2) (as easily as VP ellipsis, according to my informant), similar to VP ellipsis.

(2)   Mary should be [$_{AP1}$ more friendly with her sister], and John should be [$_{AP2}$ Δ], too.

(2) shows AP2 can be interpreted as "more friendly with Mary's own sister" (sloppy reading). However, APE behaves differently from VPE in terms of extraction possibilities. VPE allows WH movement out of the deletion site (Fiengo and May 1994, a.o.) whereas (3) shows that APE does not, my informant reports.

(3) a. * I know who John should be more friendly with, but I don't know **who** Mary should be [$_{AP}$ Δ].

   b. *John is not friendly to the person **who(m)** he should be [$_{AP}$ Δ].

(3) questions the claim that APE is derived by PF-Deletion, which is generally assumed to be the source for VP ellipsis. That is because it is unclear why overt extraction is unavailable in (3a) if overt element exists in Narrow Syntax (NS). We need another approach to PE.

<u>**Proposal and Analysis**</u>: I would like to propose that APE is derived by LF-Copy. Consider (4).

(4) a. NS: John should be [$_{AP}$ Δ].   b. LF: John should be [$_{AP}$ more f. to who]

(4) is a derivation for (3a) (f.=friendly in (4b)). AP is empty in NS in (4a). In LF, the preceding AP is copied onto AP, as shown in (4b). In this case, the object "who" is phonologically null, so overt movement leads to the ungrammaticality of (3a). Therefore, the LF-Copy correctly predicts the unavailability of (3).

<u>**Against PF-Deletion**</u>: Proponents of PF-Deletion may suspect that derivational ellipsis (DE, Aelbreht 2010) also explains (3), which is untenable. Her proposal is that extraction from deletion site becomes unavailable as soon as licensing head for ellipsis (T for VP ellipsis, etc) merges. I would like to argue that T is licensing head for APE because lack of T makes APE unavailable, as in (5). Gerundives lacking T block APE of AP2.

(5)   *John being [$_{AP1}$ healthy] and Mary not being [$_{AP2}$ Δ], according to the result of medical checkup, was surprising to everyone.

DE predicts that WH movement out of deletion site is available. WH phrases can move to phase edge (Spec, Pred P) before T head merges, which is incompatible with (3). This confirms LF-Copy approach to APE.

<u>**Support:**</u> "Soo" predicate anaphora (SPA) should be driven by LF-Copy of AP, parallel to APE in English, for the following three reasons. (6) shows Japanese pro-form "soo" can be used for AP predicates.

(6) a. Taroo-wa   [$_{AP1}$ kodomo-ni sinsetsu]-da.   b. Hanako-mo **soo** da.
      Taro-TOP   child-DAT kind-COP   Hanako-also so   COP
      'Taro is kind to children.'   'Hanako is so (=kind to children), too.'

First, SPA prohibits overt extraction by clause-internal scrambling from within itself, as in (7). The ungrammaticality of (7b) indicates that the object ("gakusei-ni") cannot be extracted from "soo" by clause-

internal scrambling.

(7) a. gakusei₁-ni   Taroo-wa [AP t₁ sinsetsu]-da.   b.* **gakusei₁-ni** Hanako-mo **soo** da.
      student-DAT Taroo-TOP   kind-COP   student-DAT Hanako-also so COP
      'to John, Taroo is kind.'   'To John, Hanako is so, too.'

Second, Overt extraction in (8b) is also unavailable in long-distance scrambling (of "gakusei-ni" from "soo").

(8) a. Gakusei₁-ni, Taroo-wa John-ga [AP t₁ sinsetsu]-da to itta.
        Student-DAT Taroo-TOP John-NOM   kind-COP C said
        'To [students]₁, Taro said John was kind t₁'
     b. ***Gakusei₂-ni**, Hanako-wa   Mike-mo **soo** da   to itta.
        Student-DAT Hanako-TOP Mike-also so   COP C said
        'To [students]₂, Hanako said Mike was so (= [AP kind t₂]), too'

Third, (9), conversely, shows null operator movement can take place out of SPA (Cleft, Hoji 1990).

(9)   [CP Op₁ Taro-ga [AP t₁ hizyouni amak]atta no]-wa   [hakusikatei-no   insei]₁-ni
           Taro-NOM   very   lenient PST NML-TOP doctor course-GEN graduate student-DAT
       da   ga, [CP Op₂ Hanako-ga   soo datta no]-wa   gakubusei₂-ni   da.
       COP but   Hanako-NOM so   COP NML-TOP undergraduate-DAT   COP
       'It was to doctor course graduate students that Taro was very lenient but it was to undergraduates
       that Hanako was so.'

In (9), "soo" denotes AP ([AP t₁ hizyouni-amai]) in the preceding sentence. The grammaticality of (9) indicates that "soo" allows null operators to move out of it, showing that "soo" possesses its internal syntactic structure. This is unexpected by the proposal that "so" is pro-form because pro-form lacks its internal structure. The asymmetry in the availability of extraction between overt elements and null operators in SPA is resolved by the LF-Copy analysis with the assumption that null operator movement takes place at LF (Sakamoto 2017, etc). Specifically, "soo" exists in NS and preceding predicates are LF-Copied onto "soo" in LF. Since LF-Copied elements cannot have phonological features, overt movement from the predicate "soo" is prohibited. Conversely, null operators can be extracted because they can move at LF.

Theoretical Implication: LF-Copy approach to APE/SPA lends support to the claim of Bošković's (2018) claim regarding the availability of Argument Ellipsis only in D-less languages. He proposes that only elements of type <e, t> can be copied in LF in addition to the following two points: (i) NPs in D-less languages (Serbo-Croatian, etc.) are type <e, t> in syntax; (ii) NPs in DP languages (Bulgarian, etc.) are type e in syntax. These proposals seemingly establish the generalization that Argument Ellipsis, which is assumed to be derived by LF-Copy, is available only in D-less languages. That is because arguments in DP languages are not LF-Copied due to type restrictions on LF-Copy. However, it is crucial for his argument to be justified that only LF-Copy, not PF-Deletion, should derive the deletion of elements of type <e, t>. Since AP is type <e, t>, the independent justification from APE and SPA aligns with Bošković's (2018) argument.

Consequence: Unavailability of APE in that-relatives suggests that-relatives involve R-head movement, not null operator movement. (10) shows Adjectival PE is ungrammatical in that-relativization.

(10) *John is not friendly to [DP the [CP person (that) he should be [AP1 Δ]]].

 This suggests that that-relatives are derived by R-head movement rather than null operator movement, its competing alternative. That is because null operator movement does not degrade sentences undergoing APE, as illustrated in Japanese cleft (9).

Selected References: Bošković, Ž. (2018). On pronouns, clitic doubling, and argument ellipsis: argument ellipsis as predicate ellipsis. *EL* 35(1). Sakamoto, Y. (2017). *Escape from silent syntax*. PhD diss., UCON.

A Phase-based Analysis of Subject-Object Asymmetry in Nonfinite Clauses
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Issues: In nonfinite clauses, embedded subject anaphors as in (1a) can get an item in the upper clause as their antecedents, while embedded object anaphors as in (1b) cannot. On the other hand, the asymmetry of this kind does not obtain in finite clauses, as shown in (2).

(1)　a.　They$_i$ want very much for each other$_i$ to succeed.
　　b. *They$_i$ want very much for John to nominate each other$_i$.　　(Saito (2017: 64, fn. 3))
(2)　a. *Mary$_i$ insisted that herself$_i$ saw it.　　　　　　　　　　(Saito (2017: 61))
　　b. *John$_i$ thinks that Mary recommended himself$_i$.　　　　　(Saito (2017: 62))

Quicoli (2008) argues that for an anaphor to get an interpretation, its antecedent must be introduced to the derivation by the time the anaphor is transferred. However, Quicoli's theory cannot expect the contrast shown in (1) and (2), where only subject anaphors embedded in nonfinite clauses are successfully bound (cf. Saito (2017)).

　A similar subject-object asymmetry is observed with Quantifier Raising (QR), in which a structurally lower quantifier moves over another quantifier, inducing an inverse scope reading. While embedded subject quantifiers as in (3a) can undergo QR, embedded object quantifiers as in (3b) cannot. Again, finite clauses do not show this kind of contrast, as illustrated in (4).

(3)　a.　Some juror wants (for) every defendant to be acquitted. (∃>∀, ∀>∃)
　　　　　　　　　　　　　　　　　　　　　　　　　　(cf. den Dikken (2015: 91))
　　b.　Someone wanted for you to meet every woman.　(∃>∀, *∀>∃)
　　　　　　　　　　　　　　　　　　　　　　　　　　(Cecchetto (2004: 370))
(4)　a. #Someone said that every man is married to Sue.　(#∃>∀, *∀>∃)
　　b. #Someone said that Sue is married to every man.　(#∃>∀, *∀>∃)　(Fox (2000: 62))

　The account to capture the above facts must accommodate the contrast between finite and nonfinite clauses as well as the subject-object asymmetry in nonfinite clauses. It has been widely accepted that finite complements constitute phases, which leads the elements embedded in them to be inaccessible. We might be led to conclude that nonfinite C is not a phase head. This does not seem to help, however, because as suggested in (1b) and (3b), there are cases in which embedded objects must be inaccessible. Therefore, we need a theory that allows only embedded *subjects*, but not *objects*, to undergo movement or binding in nonfinite clauses.

Theoretical Background: I assume with Chomsky (2013, 2015) that the derivations of the v*P phase and the CP phase proceed as in (5) and (6), respectively. In the v*P phase in (5), an internal argument (IA) raises to Spec-R, followed by pair-Merge of R to v*, which makes the latter invisible. The phasehood is thus activated on R, resulting in the transfer of its complement. As for the CP phase in (6), an external argument (EA) moves to Spec-T, after which the complement of the phase head C, δ, is transferred.

(5)　[$_δ$ EA [$_γ$ R-v* [$_β$ IA [$_α$ R̶ I̶A̶]]]]　　　　(6)　[$_ε$ C [$_δ$ EA [$_γ$ T [$_β$ E̶A̶ [$_α$ R-v*…]]]]]

　Following Matsubara (2000), I also assume that a prepositional phrase constitutes a phase. He argues that it includes a functional head p*, which takes PP headed by a substantive P, as illustrated in (7). P affixes onto p* in a similar fashion to the derivation of v*P. Under Chomsky's (2015) framework, this structure should be reinterpreted as in (8). DP moves to Spec-P for agreement. After P affixing onto p*, rendering the latter invisible, the phasehood is activated on P. The transfer domain thus shifts to the complement of it.

(7)　[$_{p^*P}$ p* [$_{PP}$ P DP]]　　　　　　　　(8)　[$_γ$ P-p* [$_β$ DP [$_α$ P̶ D̶P̶]]]

Proposal: I propose that the nonfinite CP phase comprises the substantive C and the functional c*. In (9a), EA is merged to Spec-C, after which the phase head c* is introduced. C undergoes pair-Merge to c*, which cancels the phasehood of the latter. The transfer domain is shifted to the complement of the lower copy of C, γ, as illustrated in (9b). The derivation in (9) is parallel with that of v*P in (5) and p*P in (8). Nonfinite C, externalized as *for*, is called a "prepositional" complementizer because it has the prepositional counterpart. It should thus be natural to

consider that oblique case is assigned to the subject by $c*$, in a parallel way as in $p*$P.

(9) a. $[_\zeta c* [_\varepsilon \text{EA} [_\delta \text{C} [_\gamma \text{T} [_\beta \cancel{\text{EA}} [_\alpha \text{R-}v*\ldots]]]]]]]$

  b. $[_\zeta \text{C-}c* [_\varepsilon \text{EA} [_\delta \text{€} [_\gamma \text{T} [_\beta \cancel{\text{EA}} [_\alpha \text{R-}v*\ldots]]]]]]]$

Analysis: Under the proposal developed here, in nonfinite clauses in (1), only subject anaphors can get an interpretation. As shown in (10), the anaphor is merged to Spec-C and the transfer domain is γ, the complement of the lower copy of C, which undergoes pair-Merge to $c*$. This makes it possible for the anaphor to get an element in the upper clause as its antecedent.

(10) $[_\zeta \text{C-}c* [_\varepsilon \text{each other} [_\delta \text{€} [_\gamma \text{T} [_\beta \cancel{\text{each other}} [_\alpha \text{R-}v*\ldots \text{IA}]]]]]]]$

In finite clauses in (2), in contrast, the anaphors cannot be bound because the shaded part in (11), including the subject and object anaphor, is necessarily transferred.

(11) $[_\varepsilon \text{C} [_\delta \text{EA} [_\gamma \text{T} [_\beta \cancel{\text{EA}} [_\alpha \text{R-}v*\ldots \text{IA}]]]]]$

  Turning to QR, I assume with Otsuka (2023) that it is phase bound and that what makes inverse scope interpretation possible is pair-Merge of a quantifier to the higher structure than another one. The availability of inverse scope in (3a) is then attributable to pair-Merge of the universal quantifier in the embedded subject position to the position higher than the matrix subject, as illustrated in (12a). Object quantifiers embedded in nonfinite clauses as in (3b) cannot undergo pair-Merge across clauses, since as shown in (12b), they are trapped in the transfer domain at the embedded $c*$P phase level.

(12) a. $[_\iota <\text{QP}> [_\theta \text{EA} [_\eta \text{R-}v* [_\zeta \text{C-}c* [_\varepsilon \text{QP} [_\delta \text{€} [_\gamma \text{T} [_\beta \cancel{\text{QP}} [_\alpha \text{R-}v*\ldots \text{IA}]]]]]]]]]]]$

  b. $[_\theta \text{EA} [_\eta \text{R-}v* [_\zeta \text{C-}c* [_\varepsilon \text{EA} [_\delta \text{€} [_\gamma \text{T} [_\beta \cancel{\text{EA}} [_\alpha \text{R-}v*\ldots \text{QP}]]]]]]]]]$

QR across finite clauses as in (4) is always impossible, in the same way as anaphor binding. As illustrated in (11), both embedded subjects and objects are transferred at the embedded CP level, which results in no quantifiers undergoing pair-Merge to the higher structure.

Extension: The current proposal opens up a possibility that the lack of Subject Condition sensitivity in nonfinite clauses is accounted for. In nonfinite clauses, extraction from subject DP is possible as in (13), which contrasts with finite clauses as in (14).

(13) Of which car$_i$ would you have liked (for) [the driver t_i] (not) to cause a scandal?

(Matsubara (2008: 469))

(14) *Of which car$_i$ did [the driver t_i] cause a scandal?   (Chomsky (2008: 147))

This contrast can be captured once we adopt the view that subjects embedded in nonfinite CP can escape from the transfer domain and follow the Determinacy-based approach advocated by Goto and Ishii (2020). They argue that Determinacy, which requires Merge to apply in a deterministic way, applies at the input of Merge. Under this approach, extraction from subjects in finite clauses gives rise to the violation of Determinacy. In (15), to move the *wh* to Spec-C, there are two accessible copies of *wh* in Spec-T and Spec-R-$v*$, which violates Determinacy.

(15) $[_\zeta \text{wh}_1 [_\varepsilon \text{C} [_\delta <\ldots \text{wh}_2> [_\gamma \text{T} [_\beta <\ldots \text{wh}_3> [_\alpha \text{R-}v*\ldots]]]]]]]$

In nonfinite clauses, the problem with Determinacy can be circumvented. As shown in (16a), the subject merged to Spec-C is not transferred at the embedded CP level, where the phase head $c*$ is rendered invisible by pair-Merge. This enables the *wh* to move to its landing site from Spec-C after the copy of the subject, left in Spec-R-$v*$, is transferred and rendered inaccessible, as in (16b). There is no way of two copies of *wh* being accessible, and thus no Determinacy violation is yielded.

(16) a. $[_\zeta \text{C-}c* [_\varepsilon <\ldots \text{wh}_1> [_\delta \text{€} [_\gamma \text{T} [_\beta <\ldots \text{wh}_2> [_\alpha \text{R-}v*\ldots]]]]]]]$

  b. $[_\eta \text{wh}_1 \ldots [_\zeta \text{C-}c* [_\varepsilon <\ldots \text{wh}_2> [_\delta \text{€} [_\gamma \text{T} [_\beta <\ldots \text{wh}_3> [_\alpha \text{R-}v*\ldots]]]]]]]]$

Selected References: Chomsky, Noam (2015) "Problems of Projection: Extensions," *Structures, Strategies and Beyond: Studies in Honour of Adriana Belletti*, ed. by Elisa Di Domenico, Cornelia Hamann and Simona Matteini, 1-16, John Benjamins, Amsterdam. / Goto, Nobu and Toru Ishii (2020) "Determinacy Theory of Movement," *NELS* 50, 29-38. / Matsubara, Fuminori (2000) "*p**P Phases," *Linguistic Analysis* 30, 127-161.

Nominalising Suffixed Adjectives via Lexicalisation and Clipping

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1. No Morphological Restriction for Adjective-to-Noun Conversion?

Suffixed words systematically resist undergoing V(erb)-forming conversion regardless of their base category. For example, the suffixed noun *curiousness* cannot undergo V-forming conversion as in **Jane curiousnesses every day* (Plag (2018: 114); cf. Marchand (1969), Bauer (1983), Farrell (2001), Nagano (2008)). Based on Lieber's (1992) *relisting approach* (i.e., listing a pre-existing item in the lexicon as a new member), Nagano (2008) explains that this restriction arises because suffixed words are not listed in the lexicon unless they are lexicalised; thus, they cannot be targets of relisting. Interestingly, however, this morphological restriction is not found in the N(oun)-forming conversion from suffixed Adj(ective)s, as shown in (1).

(1)   a.   The <u>*dailies*</u> were delivered to the door.

       b.   This sweet <u>*digestive*</u> sat on her plate.

       c.   A famous <u>*intellectual*</u> of international standing addressed the meeting.

                                            (Bauer (2021: 176), underlines and italics ours)

The italicised words are true N(oun)s (see Section 2). Then, what morphological processes turn suffixed Adjs into Ns? This study contends that the Ns in question originate from Suffixed Adj+N expressions (e.g., *factive verbs*) to which two morphological processes are applied: lexicalisation of the whole expression and clipping of the head N (e.g., *factive verbs > factives*$_N$).

2. *The Poor*-Type vs. *The Factive*-Type

Borer and Roy (2010) provide the same syntactic analysis for simple and suffixed Adjs. Their main idea is that the relevant Adjs are true attributive Adjs, and they modify a pronominal null N (i.e., (Det) Adj [$_N$ *pro*]). This syntactic analysis aptly captures the case of simple Adjs (*the poor*-type) but not the case of suffixed Adjs (*the factive*-type) because they clearly differ from simple Adjs when used as Ns. The *the poor*-type still shows adjectival (non-nominal) properties, whereas the *the factive*-type can "occur in any noun phrase […] with any determiner, and the forms can have a plural form" (Bauer (2021: 175–176)), as compared in (2) (cf. Borer and Roy (2010), Bauer (2021)).

(2)   a.   Definite plural: *the poor*(*s) vs. *the intellectuals*

       b.   Indefinite plural: *three sads vs. *two fictives*

       c.   Indefinite article: *a pretty, *a rich vs. *a psychic*, *an attributive*

       d.   Demonstrative: *these wise(*es*), *those lucky vs. *these nominals*, *those factives*

The stark contrast between these Adjs necessitates us to adopt a different analysis for the very process of the *the factive*-type.

3. Analysis

We argue that there are two steps in the nominalisation process of the *the factive*-type:

lexicalisation and clipping. As shown in (3), the Suffixed Adj+N expressions as a whole are first lexicalised, and then the expressions are clipped (cf. *keitai-denwa* (mobile-phone) > *keitai* in Japanese).

(3)　　[[*factive*]$_A$ *verb*]$_{NP}$　　>　　[*factive verb*]$_{N/NP}$　　>　　[*factive*]$_N$
　　　　　　　　　　lexicalisation　　　　　　　　clipping

Here, we regard *lexicalisation* as the process of listing in the lexicon (cf. Nishiyama and Nagano (2020: 95)). For instance, *factive* of *the factive* cannot be reconstructed unless its modifiee (i.e., head N) is determined semantically (or pragmatically). However, once the entire construction (i.e., *factive verb*) is listed in the lexicon, the head N can be elided because of its recoverability. Consequently, the remnant suffixed Adj is effectively transposed into N.

The proposed process is not sporadic because certain nominalised phrasal verbs can also be analysed in the same manner. Thus, *a pay-off* means 'a person responsible for sharing out the proceeds of a fraud, robbery, or other criminal operation' (*OED*) and can be assumed to originate in *pay-off man*, from which *pay-off* has come to be used as an N without the head N *man* (Nishiyama and Nagano (2020: 96)).

An alternative analysis might be to regard the suffixes in (1) (e.g., *-ly*, *-ive*, *-al*) as nominalisers. However, our analysis, but not this kind of analysis, can be straightforwardly applied to nominalisations from suppletive (or collateral) Adjs such as those in (4), which are known as attributive-only modifiers. For instance, *canine* is the suppletive adjectival form of *dog* that appears only in an environment of attributive modifications. Interestingly, they exhibit the same behaviour as the *the factive*-type in (2).

(4)　　*canine* (< dog) 'canine teeth'　　　*lacustrine* (< lake) 'lacustrine sediments'
　　　　cardiac (< heart) 'cardiac indices'　　*pluvial* (< rain) 'pluvial periods/seasons'

These suppletive Adjs are nonconcatenative and "hard to reduce to any transparent morphological processes synchronically" (Koshiishi (2002: 51)), thus avoiding the nominaliser approach. The nominal use of these suppletives is naturally captured by our analysis, namely the lexicalisation of the Suppletive Adj+N expressions and subsequent clipping of the modified Ns.

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<center>
The Reciprocal Uses of Relational Nouns in Japanese and English:
Conceptual Symmetry and its Linguistic Manifestations

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Background

While reciprocity is mainly discussed in relation to verb semantics or grammatical voice, it also plays an important role in the nominal realm. This study focuses on the reciprocal uses of relational nouns (RNs) in Japanese and English.

In English, the relational noun *sister* in its plural form can refer to a group of individuals each member of which bears a "sister-of" relation to the others, as illustrated in (1).

(1) The sisters entered the room.   (Eschenbach 1993: 4)

Cases like this, often called "reciprocal plurals," have been discussed in the formal semantics literature (Eschenbach 1993, Barker 1999, Hackl 2002, Staroverov 2007). Eschenbach offers an analysis in terms of a semantic operation associated with the plural form that derives from a basic relation (e.g. *sister-of*) a group of individuals related to each other by that relation.

The plural forms of RNs like *father* or *referee* evidently do not have such a reading, which leads to the question: what constraints are there on the semantics of RNs that allow for reciprocal use? There are two candidates proposed in the literature: a weak one and a strong one.

(i) Weak constraint: relations that do not exclude symmetrical cases (Eschenbach 1993)
(ii) Strong constraint: relations that are symmetrical (where symmetry is defined weakly so as to accommodate cases like *sisters*; the *sister-of* relation is strictly speaking not symmetrical. This is because the sentence "A is B's sister" does not entail "B is A's sister," since B could be male.) (Staroverov 2007; see also Hackl 2002)

Observations on Japanese RNs

First, the Japanese sentence corresponding to the English example in (1), with the RN in the subject position, cannot be interpreted reciprocally. In general, Japanese RNs can have a reciprocal reading only in the predicate position, an observation which is supported by the data available.

Second, there is a seemingly unpredictable lexical restriction on the reciprocal use of RNs. For example, while *raibaru* 'rival' can be used reciprocally, *teki* 'enemy' cannot.

(2) Taroo to Yooko wa {*raibaru* 'rival'/*itoko* 'cousin'/*tomodati* 'friend'} da.

[Reciprocal reading possible]

(3) Taroo to Yooko wa {??*teki* 'enemy'/??*aite* 'opponent'/??*konyakusya* 'fiancé'} da.

[Reciprocal reading difficult or impossible]

This is puzzling given the fact that their English counterparts, such as "John and Sue are

{enemies/opponents/fiancés},” are quite natural in their reciprocal reading. What makes the difference between *raibaru* 'rival' and *teki* 'enemy'?

Conceptual symmetry inherent in the meanings of RNs

I propose that Japanese *raibaru* 'rival' is essentially symmetrical in the way in which *teki* 'enemy' is not. As dictionary definitions suggest, *raibaru*, like its English counterpart *rival*, is closely associated with the idea of competition, a relation where the participants have equal status. The word *raibaru* evokes the symmetrical relation of competition as its conceptual background or "frame," even in nonreciprocal contexts. On the other hand, the background frame of *teki* 'enemy' is not necessarily symmetrical; in fact, we can easily imagine a situation where A is an enemy of B, but B is not an enemy of A. This may be the reason why Japanese *teki* cannot be used reciprocally.

In contrast, its English counterpart *enemy* can be interpreted reciprocally, suggesting that the symmetry requirement for RNs in English is somewhat weaker than that of Japanese. These considerations lead us to conclude that Japanese requires inherent symmetry for RNs to be used reciprocally, while English does not. In other words, Japanese imposes on the reciprocal use of RNs the strong constraint in (ii) above, while English opts for the weak one in (i).

Towards a cognitive semantics of reciprocity

There seem to be two types of reciprocity in language: one inherent in the meaning of the lexical item (e.g. "John and Sue met.") and one derived from a basic unidirectional relation (e.g. "John and Sue criticized each other."). Although the situations expressed are symmetrical in both cases, they have different conceptual structures. Considering the fact that nouns like *rival* are reciprocal in nature as discussed above, it is dubious that the reciprocal meanings of expressions like *rivals* are "derived" from the basic unilateral relations, as assumed in the previous studies. Sadanobu (1990) maintains that, while symmetry is usually defined in truth-conditional terms, the notion of symmetry at the conceptual level is also needed to adequately capture the reciprocity reflected in the Japanese grammar. I hope that this study will shed light on some aspects of the concept of symmetry, thereby contributing to a deeper understanding of reciprocity in language.

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P as a Locus of Definiteness in the Extended Projections of the Nominal Domain

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Introduction: It has been standardly assumed in the literature that definite articles are obligatorily present in a nominal phrase with definite interpretation in languages with definite articles, such as English. This follows from Chierchia's (1998) blocking principle, by which presence of a lexicalized semantic operator in a language blocks covert application of the operator at LF.

In this work, however, I introduce Mardale's (2006) observation that definite articles are obligatorily omitted in the presence of a preposition despite the definite interpretation in Romanian and Albanian, which is unexpected from the standard view of the definite article noted above. Pointing out that Mardale's D-to-P incorporation analysis cannot capture the relevant pattern, I propose that P can function as the highest functional element of the extended functional projections in the nominal domain, *à la* Grimshaw (2000), Baker (2003), and Zanon (2020). In addition, building on Talić (2017), I propose that DP is in fact absent in the case of article drop in PPs in the languages in question. P in the cases in question is responsible for the definite interpretation as the highest functional element in the nominal domain, just as D in the usual cases. In a bigger picture, this work puts forward the possibility to investigate non-prototypical properties of certain categories in a more fine-grained manner under the formal linguistic framework.

Data: Mardale (2006) shows that certain PPs, which are typically locative, resist definite articles in Romanian and Albanian, as seen in (1a) and (1b), respectively.

(1) a. Mă îndrept către   parc**(*-l)**.   b. Unë po   shkoj në kishë**(*-n)**.
     me head   towards park-the   I   PROG go   to church-the
     'I'm heading towards the park.'   'I'm going to the orthodox church.'

One might think that this is similar to bare singulars in locatives found in languages like English (e.g., *I went to school*), which are restricted to a narrow lexical class of nouns (so-called weak definite; see, e.g., Scholten 2010 and Aguilar-Guevara 2014). However, Mardale (2006) reports that article drop in PPs with definite interpretation is more productive and is possible with other types of prepositions in Romanian, such as direct object marking. In addition, Mardale points out that the nouns in the locatives in (1) necessarily receive a definite interpretation; in other words, an indefinite reading is not allowed. This is contrasted with the weak definite, which lacks a clear definite interpretation (Scholten 2010, Aguilar-Guevara 2014). In fact, an indefinite article must be present for an indefinite interpretation in the relevant PP in Romanian, as shown in (2).

(2) Mă îndrept către   *(un) parc.
    me head   towards a   park
    'I'm heading towards a park.' (Romanian, Mardale 2006:2)

Mardale (2006) proposes that D incorporates into P in the case of article drop, whereby D is unpronounced. However, this account cannot explain the contrast between (1) and (3).

(3) a. Mă îndrept către   parc***(-l)** înverzit.
     me head   towards park-the green
     'I'm heading towards the park.' (Romanian, Mardale 2006:2)
   b. Unë po   shkoj në kishë***(-n)** ortodokse.
     I   PROG go   to church-the orthodox
     'I'm going to the orthodox church.' (Albanian, Mardale 2006: 6)

It is unclear how the adjective, which is located lower than DP, would block this incorporation (i.e., article drop) in (3), since nothing would intervene between D and P (in fact, Mardale does not offer an analysis of (3)). Thus, a more comprehensive account of article drop is warranted.

Proposal: In the spirit of Grimshaw (2000), Baker (2003), Zanon (2020), among others, I propose that the prepositions in the cases introduced above can be part of the extended projection of a nominal domain. This can be motivated by the traditional classification of lexical categories

proposed by Chomsky (1970), in which N is [+N, -V], A is [+N, +V], V is [-N, +V], and P is [-N, -V]; N and P thus constitute a natural class as [-V] elements. P can then serve as a functional element in the nominal domain as a [-V] element.

A question that arises here is why omission of D is *forced* in the presence of P in the relevant cases. I suggest that a feature responsible for definite interpretation, which I dub as Def-feature for ease of exposition, can be realized (together with other relevant features such as ϕ-features) as a definite article, i.e., D, only if it is part of the feature bundle of the highest element in the nominal domain in the relevant languages (cf. Mardale 2006). In the presence of P as the highest element of the extended projections of the nominal domain, DP would not be the highest projection in the extended projections of the nominal domain in this case. Note also that the languages that allow article drop in PP are affixal article languages, in which Talić (2017) argues DP can be absent in the absence of the definite article. Thus, it is not implausible that D is actually absent in such cases, and the presence of PP as the highest functional projection in the nominal domain blocks projection of DP, which needs to be the highest functional projection in the nominal domain.

This proposal can straightforwardly explain the impossibility of article drop in the presence of an adjective in (3). AP projects above NP (cf. Abney 1987) and "intervenes" between PP and NP in terms of the categorial feature; P, which is [-V], is merged above AP, which is [+V], so that PP does not count as the highest projection of the extended projections in the nominal domain, for which the complement of P needs to be [-V]. Since P cannot be the highest functional projection in the nominal domain in this case, D needs to project above AP as the functional projection that carries the definite interpretation (note that D, A, and N are all [+N]). Thus, the definite article, which corresponds to D, must be present in the presence of an adjective.

A remaining question under this proposal is why the bare noun in the cases under discussion receives definite interpretation. I propose that P actually contains the Def-feature. Under Bare Phrase Structure (BPS), lexical items that have traditionally been given specific categorial labels are merely bundles of features. Chomsky (1995), building on Borer (1984) and Fukui (1986, 1988), proposes that parameters are reduced to different specifications of formal features in the lexicon (the so-called Borer-Chomsky Conjecture). It is then logically possible that Ps in question can in principle have the Def-feature in some languages as a parametric option. I suggest that this option is possible only if P serves as the highest functional element in the extended projections of the nominal domain. Otherwise, the definite article is used as the highest functional element in the nominal domain as the locus of the Def-feature. Under this proposal, the P in question and D receive a unified treatment from the perspective of the Def-feature; in both cases, the Def-feature needs to be contained in the highest element of the extended projections in the nominal domain. (Note that all this only concerns the Def-feature, hence is irrelevant to the indefinite article in (2). Note also that the Def-feature may not be limited to [+N] items; see Bošković and Gajewski 2011 for an argument that neg-raising predicates contain Def in languages with definite articles.)

In a bigger picture, the current proposal offers a more fine-grained view of properties of traditional categories in the formal linguistic framework, accommodating the apparent form-meaning mismatch under BPS and the Borer-Chomsky Conjecture. This opens the door to investigation of non-prototypical properties of Ps such as direct object marking in a more comprehensive manner from the formal linguistic perspective (note that DOM realized as P such as Spanish *a* 'to' and Romanian *pe* 'on' is typically associated with definiteness/specificity).

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The Movement Analysis for Temporal Interpretations in Relative Clauses

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Kauf and Zeijlstra (2018) propose an innovative system for embedded tense interpretation. They also address such relative clauses that yield *de re* and *de dicto* readings. Consider the examples below.

(1) In 2000, Mary met a woman who was president in 2004.

(Kauf and Zeijlstra (2018: 10))

(2) *In 2000, Mary was looking for a woman who was president in 2004.   (ibid.)

In (1), *a woman* is construed as *de re* under a non-intensional predicate *met* and the sentence allows the event time (ET) of the relative clause to be futurate to that of matrix clause, whereas in (2), *a woman* is construed as *de dicto* under an intensional predicate *was looking for*, and the ET of the relative clause cannot be futurate to that of matrix clause. They assume that the relative clause under *de re* environment in (1) is a non-restrictive clause (NRRC), and the relative clause under *de dicto* environment in (2) is a restrictive relative clause (RRC). Given this assumption, they argue that the difference seen in (1) and (2) is derived from the attribute of respective relative clauses. Independent of the matrix clause, the past tense in NRRC refers not to the event time of matrix clause (ET_{mat}), but to the speech time (ST). The past tense in RRC, on the other hand, refers to ET_{mat} because it is c-commanded by its matrix clause. In doing so, the past tense in relative clause (T_{rel}) in NRRC orders the event time of relative clause (ET_{rel}) anterior to ST, leaving ET_{mat} and ET_{rel} unordered. This is why the futurate reading of relative clause in (1) is possible. In contrast, the past T_{rel} in RRC orders ET_{rel} anterior to ET_{mat} because T_{rel} in RRC refers ET_{mat} due to its dependency on the matrix clause. Since the relation between ET_{mat} and ET_{rel} is fixed (ET_{rel} anterior to ET_{mat}), the sentence in (2), which is against the relation, is ungrammatical.

A prediction of their analysis on the NRRCs is borne out in a different environment.

(3) Tomorrow evening, I will talk with John, who is in grade 9 now.

ET_{rel} in the NRRCs can be relative to ST, and then the present T_{rel} places ET_{rel} at the same time with ST as the deictic adverb *now* indicates. However, their analysis incorrectly predicts that the example below is ungrammatical.

(4) Tomorrow evening, I will talk with all students who are in grade 9 now.

Since the embedded clause is RRC, their analysis expects that the present T_{rel} refers to the futurate ET_{mat}, locating the ET_{rel} at the same time as well. However, (4) is construed as the ET_{rel} being located at ST, as the adverb *now* indicates. This interpretation poses a problem to their analysis, and we provide an alternative analysis for the issue.

We propose in the case of RRC, the entire NP containing a relative clause optionally

moves to TP, allowing T_{rel} to refer to ST (cf. Kaneko (2020)), while NRRC is independent of its matrix clause and always gets relative to ST as Kauf and Zeijlstra assume. Given this, the right interpretation in (4) is derived from the covert movement of *all students who are in grade 9* out of the matrix scope of *will*, which enables the T_{rel} to relate to ST.

What about the sentences in (1) and (2)? Here, unlike Kauf and Zeijlstra, we assume both sentences are the case of RRC, and the NP may move. In the case of *de re* reading in (1), since the NP *a woman who was president in 2004* is interpreted in the actual world, it moves out of the matrix predicate scope and gets relative to ST or the actual world. The ungrammaticality in (2), then, results from the nature of *de dicto* reading in which the interpretation of NP varies depending on possible worlds. More specifically, (2) is ungrammatical because it fails to have a *de dicto* reading. In order for (2) to have *de dicto* reading, the NP *a woman who was president in 2004* needs to be in the scope of the matrix intensional predicate *was looking for*. Yet, with the futurate adverb *2004*, the NP needs to move out of the matrix past predicate, T_{rel} relating to ST. Eventually, the *de dicto* reading fails to occur, which makes the sentence ungrammatical.

Our analysis also expects that the T_{rel} refers to the ET_{mat} when NP modified with RRC does not move. This is borne out in (5).

(5) At the end of next term, I will give automatic As to all students who turn in their term papers on time.

In (5), ET_{rel} is interpreted as futurate, aligning with ET_{mat}; *giving automatic As to all students at the end of next term* as the adverb *on time* implies. This means the NP stays at the original position, within the scope of matrix *will*, and the present T_{rel} refers to ET_{mat}, locating ET_{rel} at the same time of ET_{mat}, contra the case in (4).

Finally, let us see what prediction our analysis makes when it comes to NRRC. We assume that NRRC is independent of matrix clause, and thus its tense always refers to ST since the clause is not in the scope of matrix clause. Then, when NRRC is aligned with a non-deictic adverb referring to ET_{mat}, the sentence is expected to be ungrammatical. This is justified, as in (6).

(6) *At the end of next term, I will give automatic A to John, who turns in his term paper on time.

In (6), although T_{rel} in NRRC refers to ST due to its independency, the non-deictic adverb *on time* refers to futurate ET_{mat}. This incompatibility contributes to the ungrammaticality.

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Analyzing English *Only* as *Not Any More/Other Than*

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Overview. I adopt a decompositional view on *only*, proposing that it contains an **additive** component and **negation** (see (1); cf. [3, 1]). This proposal is similar to but improves on [5, 7, 2] in including **scalarity**: the alternatives to the prejacent of *only* are considered along a (partially) ordered scale. By analyzing *only* as NOT ANY MORE/OTHER THAN, I explain (i) its uniform interpretation across domains, (ii) positive and negative inferences, (iii) NPI (non-)licensing phenomena, and (iv) how *only* is different from EXHAUSTIVITY (see (2)).

(1) $[\![\text{only}]\!](p) \overset{\text{def}}{=} \lambda w : \exists p'[p' \in \text{ALT}(p) \wedge p' \subset p].\forall p''[p'' \in \text{ALT}(p) \wedge p'' \subset p \rightarrow \neg p''(w)]$
        Presupp. of additivity: there are alternatives stronger than the prejacent p.
        Negative assertion: all stronger alternatives are false.

(2) $[\![\text{EXH}]\!](p) \overset{\text{def}}{=} \lambda w : \underline{p(w)}.\forall p''[p'' \in \text{ALT}(p) \wedge p''(w) \rightarrow p \subseteq p'']$
        Presupposition of the truth of the prejacent: the prejacent p is true.
        Assertion of strength: p is the most informative true one among alternatives.

1. The use of *only* across domains. In the current proposal, the focused associate of *only* invokes a (partially) ordered alternative set (i.e., a scale). Thus the associate of *only* (e.g., *Al and Bill* in (3a), *5′* in (3b)) is not considered exceptions (cf. [5, 7]), but rather the **base** for increase, and the assertion is a negative claim about the **additive** part (e.g., people other than Al and Bill in (3a), an increase above 5′ in (3b)). With this notion of scalarity/additivity, the semantic contribution of *only* is uniform across the domains of entities and degrees.

(3)   a.   Only [Al and Bill]$_F$ read *Dune*.   ALT$(p) = \{$Al, Bill, and Cal read *Dune*, ...$\}$
              Negative inference: Not anyone other than Al and Bill read *Dune*. **Assertion**
              Positive inference: Al and Bill read Dune.   **Scalar implicature** (see (4a))
        b.   Phil is only [5]$_F$ feet tall.   ALT$(p) = \{$Phil is 6 feet tall, ...$\}$
              Negative inference: Phil is not any taller than 5 feet.   **Assertion**
              Positive inference: Phil is 5 feet tall.   **Scalar implicature** (see (4b))

2. Positive inference of *only*. In this proposal, an *only*-sentence is semantically negative (see (1)) and has a straightforward negative inference (see (3)). Then due to the notion of scalarity, positive inference can be naturally derived as scalar implicature (see (4a), (4b)).

(4)   a.   Not any one other than Al and Bill read *Dune*   (literal meaning of (3a))
              $\wedge\neg$[Not any one other than Al read *Dune*]   (negating a stronger claim)
              $\wedge\neg$[Not any one other than Bill read *Dune*]   (negating a stronger claim)
              $\rightsquigarrow$ Al and Bill read Dune   **Scalar implicature**
        b.   Phil is not taller than 5 feet   (literal meaning of (3b))
              $\wedge\neg$[Phil is not taller than n feet] (here $n < 5$)   (negating a stronger claim)
              $\rightsquigarrow$ HEIGHT(P) $\leq 5' \wedge \neg$[HEIGHT(P) $\leq n'$] (here $n < 5$) $\rightsquigarrow$ HEIGHT(P) $= 5'$

Usually, scalar implicature disappears when a sentence is negated (e.g., *He saw Al or Bill* vs. *He didn't see Al or Bill*). But negating an *only*-sentence turns their positive inference (see (3)) from scalar implicature to entailed meaning (see (5)). This explains the seeming projection of the positive inference. Under the current analysis, this projection is an illusion.

(5)   Negating (3a) and (3b): Some stronger alternative to the prejacent of *only* is true.
   a.   Not only [A & B]$_F$ read D. = A, B, & someone else read D. $\models$ A & B read D
   b.   Phil is not only [5]$_F$ feet tall. = Phil is taller than 5 feet. $\models$ $\overline{\text{Phil is 5 feet tall}}$

In a negative *only*-sentence, positive inference is an entailment and thus not cancellable (see (5)). In a positive *only*-sentence, positive inference is implicature and can be weakened or disappear. (6) does not entail 'At least an idiot will trust you'. For '*only if p, q*', if it entails 'if p, q', then 'if p, q' is true in a world where $\neg p \wedge q$, which would predict (7) to be true in a world where the sun does not rise in the west but I'll marry him, contradicting our intuition for (7). (8) also does not entail 'you have to go to the NE'. The current analysis naturally accounts for our intuition for these sentences: positive inference is not guaranteed.

(6)   Only [an idiot]$_F$ will trust you. In fact, not even idiots will trust you.
         Current analysis: Not anyone other than an idiot will trust you.

(7)   Only [if the sun rises in the west]$_F$, I'll marry him. (Only if p, q $\not\models$ if p, q (i.e., $p \rightarrow q$))
         Current: $\neg p \rightarrow \neg q$ (I won't marry him in any non-'sun-rising-in-the-west' worlds.)

(8)   To get good cheese, you only have to go to the [North End]$_F$.   (see [7, 1])
         Current analysis: You don't have to go to anywhere other / farther away than the NE.

3. NPI (non-)licensing. Given that *only* means <u>*not* any more/other than</u>, its NPI licensing behavior is naturally explained (see (9)), without assuming Strawson downward-entailingness (cf. [6]). On the other hand, the focused associate of *only* serves as the base for an increase, thus not licensing NPIs (see (10). In some sense, *only* is similar to *also* in involving additivity and NPI non-licensing: the associate of *only* is the base; the associate of *also* is an increase.

(9)   Only Mary read any books. = Not anyone other than Mary read any books.

(10)   a.   Only [some / *any boys]$_F$ came. (*<u>Any boys</u>$_{base}$ came. <u>Others</u>$_{increase}$ also came.)
          b.   Mary only gave [some / *any books]$_F$ to John.   (see e.g., [8] for discussion)

4. *only* vs. EXHAUSTIVITY. Works that analyze *only* as an EXHAUSTIVITY operator (see (2)) need to explain why positive inference can be weakened or disappear (e.g., (8)). E.g., [1] proposes the optional insertion of a silent *at least* within the prejacent of *only*. It is puzzling why this optional insertion does not lead to ambiguity for (8) and why an overt insertion of *at least* is unacceptable (see (11)). The current proposal can explain the unacceptability of (11).

Modified numerals exhibit maximality, as evidenced by the infelicitous continuation in (13b) (see e.g., [4]), and thus they cannot serve as the base for an increase (see also (12)).

(11)   *Only [at least 3 boys]$_F$ came.   (12)   At least 3 boys came. *Others <u>also</u> came.

(13)   a.   Mary fed <u>two dogs</u>. They are cute. Perhaps she fed <u>more</u>.
          b.   Mary fed <u>at least two dogs</u>. They are cute. #Perhaps she fed <u>more</u>.

Another advantage of the current proposal over an EXH-based one is that both *only* and <u>*not* any other/more than</u> convey or impose the impression that the focused associate is at the lower end of a scale (see also [7]). I think this suggests that *only* does contain a hidden *any*, which brings a domain-widening effect and leads to the 'diminishing' impression.

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Update Semantics with Accessibility Relation

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1 Introduction. This study has two aims. (i) I construct four dynamic systems based on the accessibility relation and show that System 4 is equivalent to test semantics (Veltman 1996). A related idea can also be found in Goldstein (2019b), but the implementation of this proposal is based on Incurvati & Sbardolini (2023). (ii) I use the above systems to examine two empirical issues. The first issue concerns epistemic contradiction (Yalcin 2007; Willer 2013, 2015). I show that System 2 is sufficient to account for this phenomenon. The second argument focuses on the paradox of free choice (Aloni 2007, 2022; Goldstein 2019a; Simons 2005; Zimmermann 2000). I offer a novel dynamic perspective to address this puzzle without relying on the notion of alternatives.

2 Background. Instead of adopting the accessibility relation, the update semantics treats the epistemic modality as a test of the availability of the update process, known as the test semantics shown in (1). The test semantics can easily explain the epistemic contradictions shown in (2). After updating φ, the local context $C[\varphi]$ will be all φ-worlds. Thus $C[\Diamond\neg\varphi] = \emptyset$. In contrast, classical modal logic will never predict (2), unless supposing the accessibility relation is $\forall w \in W$, $R[w] = \{w\}$ (under this relation, $\varphi \Leftrightarrow \Box\varphi \Leftrightarrow \Diamond\varphi$).

(1) a. $C[\Diamond\varphi] = \{w \in C \mid C[\varphi] \neq \emptyset\}$ b. $C[\Box\varphi] = \{w \in C \mid C[\varphi] = C\}$

(2) a. #It is raining and it might not be raining. $\varphi \wedge \Diamond\neg\varphi$

    b. #It is not raining and it might be raining. $\neg\varphi \wedge \Diamond\varphi$

However, neither accessibility relation-based semantics nor test semantics predict the free choice inference shown in (3), which is a paradoxical phenomenon arising from disjunctions embedded in the scope of an existential modal operator. In both semantics, $\Diamond(\varphi \vee \psi) \Leftrightarrow \Diamond\varphi \vee \Diamond\psi$. Moreover, if we add the free choice principle $\Diamond(\varphi \vee \psi) \vDash \Diamond\varphi \wedge \Diamond\psi$, namely that the logical form of (3a) entails (3b), to classical modal logic, any $\Diamond\psi$ can be inferred from any $\Diamond\varphi$. Due to the principle of explosion, the system containing free choice is inconsistent.

(3) a. Mary might have a dog or a cat. $\Diamond(\varphi \vee \psi)$

    b. $\rightsquigarrow$ Mary might have a dog $\wedge$ Mary might have a cat. $\Diamond\varphi \wedge \Diamond\psi$

3 Proposal. I restore the accessibility relation to update semantics and develop the system provided by Incurvati & Sbardolini (2023) to adapt this idea.

[System 1] According to Incurvati & Sbardolini (2023), this study assumes that (i) a context is a pair $c = (C, \leq)$ of a non-empty set of worlds $C \subseteq W$, and a total order $\leq$ on w in C ($w \leq v$ means that w is at least as likely to be the actual world as v), and (ii) the updating process is divided into two stages, proposal *prop* and execution *exec*. The former is an operation to rearrange the order of worlds in the initial context. The latter then eliminates the less likely worlds. The systems allow the *prop* to rearrange the order not only based on w, but also based on $w' \in R[w] = \{w' \in W \mid wRw'\}$. The semantics of atomic proposition and modal operators are exhibited as follows. System 1 is surface dynamic (see Rothschild & Yalcin 2016), and I use it as a baseline to derive the remaining systems by imposing constraints on the relation between $R[w]$ and C.

(4) a. $C[\varphi] = C \cap \{w \mid w \in \llbracket\varphi\rrbracket\}$

    b. $C[\Diamond\varphi] = C \cap \{w \mid w' \in R[w] = \{w_i, \ldots, w_{i+n}\} \ s.t. \ w' \in \llbracket\varphi\rrbracket\}$

    c. $C[\Box\varphi] = ((C \cap \{w \mid w_i \in R[w] \ s.t. \ w_i \in \llbracket\varphi\rrbracket\}) \cap \ldots) \cap \{w \mid w_{i+n} \in R[w] \ s.t. \ w_{i+n} \in \llbracket\varphi\rrbracket\}$

(5) a. $c[\varphi] = exec(prop_w^\varphi(c))$

    b. $c[\Diamond\varphi] = exec(prop_{w_{i+n}\in R[w]}^\varphi(\ldots(prop_{w_i\in R[w]}^\varphi(c))))$

    c. $c[\Box\varphi] = exec(prop_{w_{i+n}\in R[w]}^\varphi(\ldots(exex(prop_{w_i\in R[w]}^\varphi(c)))))$

(6) Proposal:

    a. $prop_w^\varphi(c) := (C, \leq^{\varphi,w})$

    b. $prop_{w' \in R[w]}^\varphi(c) := (C, \leq^{\varphi, w' \in R[w]})$

(7) Execution:

    a. $exec(c) := (C \cap min(c), \leq |^{C \cap min(c)})$

    b. $min(c) = \{w \in C \mid \forall v \in C, w \leq v\}$

(8)   a. $\forall w, v \in C, w \leq^{\varphi,w} v$ iff $w \in \llbracket \varphi \rrbracket$ and $v \notin \llbracket \varphi \rrbracket$, or $w \in \llbracket \varphi \rrbracket$ and $v \in \llbracket \varphi \rrbracket$.

    b. $\forall w, v \in C, w' \in R[w]$ and $v' \in R[v], w \leq^{\varphi, w' \in R[w]} v$ iff

        $w' \in \llbracket \varphi \rrbracket$ and $v' \notin \llbracket \varphi \rrbracket$, or $w' \in \llbracket \varphi \rrbracket$ and $v' \in \llbracket \varphi \rrbracket$.

[System 2] System 2 assumes that for any $w \in C$, $R[w] \subseteq C$. When updating φ, C will be all φ-worlds. Since $R[w] \subseteq C$, all worlds in $R[w]$ must be φ-worlds. This guarantees that updating φ will yield the result of $\varphi \vDash \Box \varphi$. Thus epistemic contradictions ($\varphi \wedge \Diamond \neg \varphi \vDash \bot$) are predicted. The entailment relation in System 2 is $\varphi \vDash \Box \varphi \vDash \Diamond \varphi$.

[System 3] System 3 assumes that for any $w \in C$, $C \subseteq R[w]$, then the entailment relation is $\Box \varphi \vDash \varphi \vDash \Diamond \varphi$. This theory allows disjunction to update multiple propositions simultaneously, based on Incurvati & Sbardolini (2023), and I show the semantics of disjunction and its compositional interaction with modal operators as follows. I claim that for any φ, ψ and c, $prop^\varphi(c)$ and $prop^\psi(c)$ can be simultaneously proposed in w or $w' \in R[w]$, only if $C \cap \llbracket \varphi \rrbracket \neq \emptyset$ and $C \cap \llbracket \psi \rrbracket \neq \emptyset$. Thus, we get $R[w] \cap \llbracket \varphi \rrbracket \neq \emptyset$ and $R[w] \cap \llbracket \psi \rrbracket \neq \emptyset$, namely the free choice inferences.

(9) $C[\varphi \vee \psi] = C \cap \{w \mid w \in \llbracket p \rrbracket \ s.t. \ p \in \{\varphi, \psi\}\}$

(10) $c[\Diamond(\varphi \vee \psi)] = exec(prop_{w_{i+n} \in R[w]}^{\varphi \vee \psi}(\ldots(prop_{w_i \in R[w]}^{\varphi \vee \psi}(c)))) = exec \begin{pmatrix} \begin{pmatrix} prop_{w_i \in R[w]}^\varphi \\ prop_{w_i \in R[w]}^\psi \end{pmatrix}(c) \\ \vdots \\ \begin{pmatrix} prop_{w_{i+n} \in R[w]}^\varphi \\ prop_{w_{i+n} \in R[w]}^\psi \end{pmatrix}(c) \end{pmatrix}$

[System 4] System 4 assumes that for any $w \in C$, $R[w] = C$, then the entailment relation in this system is $\varphi \Leftrightarrow \Box \varphi \vDash \Diamond \varphi$. Under this constraint, System 4 is equivalent to the test semantics. Since System 4 is stronger than System 2, this study concludes that the test semantics is sufficient but not necessary for explaining epistemic contradictions. However, unlike System 2, when combined with the proposability requirement of disjunction, System 4 also predicts free choice inferences.

4 Conclusion. The present study attempts to integrate static and dynamic semantics with respect to epistemic modality. The comparison of four systems is summarized in Table 1.

Table 1: Comparison of four systems.

	Relationship between $R[w]$ and C	Epistemic contradictions	Free choice principle (with the requirement of proposability)
System 1	Unrestricted	✗	✗
System 2	$\forall w.w \in C, R[w] \subseteq C$	✓	✗
System 3	$\forall w.w \in C, C \subseteq R[w]$	✗	✓
System 4	$\forall w.w \in C, R[w] = C$	✓	✓

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Phi-Agreement and the Raising-to-Object Constructions in English and Japanese

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We argue that movement of accusative nominals in Raising-to-Object constructions (**RtO**) is optional in Japanese, while it is obligatory in English. We further propose that the optionality in Japanese is due to the lack of ϕ-agreement. RtOs in English and Japanese are illustrated in (1)/(2).

(1)   John believes **him** to be innocent.

(2)   John-wa **kare-o** mujitsu-da   to   sinji-tei-ru
         John-TOP he-ACC innocent-COP that believe-ASP-PRS
         'John believes him to be innocent.'

In English RtO (1), the embedded subject *him* becomes the matrix object. Two pieces of evidence are in order. In (3b), the raised argument is passivized, which indicates that the DP *Argentina* is a matrix object in (3a). In (4), the matrix adverb can intervene between the raised argument and the embedded clause, which indicates that the DP (i.e., *his earnings*) is the matrix object.

(3)   a.   We expect Argentina to win the World Cup.

         b.   Argentina was expected (by everyone) to win the World Cup.   (Polinsky 2013: 580)

(4)   The chairman expected his earnings *foolishly* to show increases.   (ibid)

   Whether movement in Japanese RtO is optional or obligatory has been controversial (Hiraiwa 2001, Kobayashi 2013, Takahashi 2021, among others). We argue that movement in Japanese RtO is indeed optional. Let us start with evidence that Japanese RtO may involve movement. In (5a), an NPI, *rokuna-gakusei* 'good-student', is not licensed by the matrix NEG. NPIs require clausemate NEG in Japanese, and the NPI in (5a) has no such NEG. On the other hand, (5b) is grammatical with the NPI licensed by NEG, which indicates that the argument NPI is raised to the matrix clause.

(5)   a. *Taro-wa [**rokuna-gakusei-ga** i-ru   to] omow-anakat-ta.
             Taro-TOP good-student-NOM   be-PRS that think-NEG-PST
             'Taro didn't think that there were good students there.'

         b.   Taro-wa **rokuna-gakusei$_i$-o** [t_i i-ru   to] omow-anakat-ta.
             Taro-TOP good-student-ACC   be-PRS that think-NEG-PST   (Kobayashi 2013)

Conversely, Hiraiwa (2001) shows that the accusative argument in Japanese RtO can stay in-situ in certain cases. In (6), the adverb *mada* 'still' modifies the embedded predicate (*John thinks that Mary is only a child* but NOT *John still thinks that Mary is a child*) and intervenes between the accusative argument and matrix subject. This indicates that *Mary-o* stays in the embedded clause.

(6)   John-ga   [**mada** Mary-o   kodomo-da to] omot-tei-ru.
         John-NOM still   Mary-ACC child-COP that think-ASP-PRS
         'John thinks that Mary is only a child.'   (Hiraiwa 2001: 72)

   Against this backdrop, Takahashi (2021) has recently claimed that RtO in Japanese is obligatory just like in English. He argues that movement allows adjuncts to take a free ride (Saito 1994), which makes the data in (6) consistent with the obligatory raising analysis. However, I argue that his argument does not necessarily hold, and the accusative argument in (6) indeed stays in-situ in the embedded clause. Let us consider (7), in which two embedded clauses are coordinated. If Takahashi's (2021) analysis was right, then we are forced to claim that the accusative argument with an adjunct, namely *rippani Bill-o* and *mada Mary-o*, undergoes A-movement out of each conjunct

in (7), which violates the Coordinate Structure Constraints (Ross 1967). The Across-the-Board extraction is not an option here due to the non-identity of the elements.

(7) John-to Mary-wa sorezore [$_{\&P}$ [$_{CP}$ rippani   Bill-o   otona-da to] (sosite) [$_{CP}$
     John-and Mary-TOP each   admirably Bill-ACC adult-COP that (and)
     mada Tom-o   kodomo-da to]] omottei-ru.
     still Tom-ACC child-COP   that think-PRS
     'John and Mary each think that Bill is a full grown adult and Tom is only a child.'

An astute reader may wonder whether (7) involves VP-coordination with the matrix predicate *omottei-* 'think' included in the conjuncts. However, this is not the case because *sorezore* 'each/respectively' is not properly interpreted if *omottei-* is pronounced in the first conjunct.

Furthermore, (8) is degraded when the argument together with the embedded adjunct undergoes A-movement out of the embedded clause over another adjunct *tuyoku* 'strongly', which modifies the matrix predicate. Based on the observations, we conclude that RtO is optional in Japanese.

(8) a. *John-wa [rippani   Bill-o]$_i$ tuyoku [t_i otona-da to] omottei-ru.
         John-TOP admirably Bill-ACC strongly   adult-COP that think-PRS
         Intended: 'John strongly thinks that Bill is a full grown adult.'
     b. John-wa tuyoku [rippani Bill-o otona-da to] omottei-ru.

Why is RtO obligatory in English, while it is optional in Japanese? We propose that the existence of ϕ-agreement makes raising in RtO obligatory in English. The movement in English RtO (1) is obligatory because the embedded subject DP (DP$_2$ in (9)) must raise to the matrix clause so that it values the unvalued ϕ-features on the matrix verb via Agree. Along with Chomsky (2013, 2015), we dispense with the *probe-goal* Agree and instead we assume the *top-down* Agree: Minimal Search applies in a top-down fashion to an Syntactic Object, and Agree occurs when Minimal Search finds [uF] and [vF], one unvalued and the other with an inherent value, of equal depth in the structure. In (9), V cannot Agree with DP$_2$ in the base position since V and the D$_2$ head are not of the same depth in the structure. In order to enter ϕ-agreement with V, DP$_2$ must internally merge to the matrix clause, as illustrated in (10). Adhering to the Extension Condition (Chomsky 1993, 1995), we assume with Epstein et al.'s (2012) two-peaked structure. The phasal complement in (10) is immediately transferred upon Agree of V and the D$_2$ head; hence, the derivation does not violate any constraints on interpretation of the structure at the interfaces.

(9)   [$_{Matrix}$ DP$_1$ T [$_{vP}$ ~~DP~~$_T$ v [$_{VP}$ V$_{[u\phi]}$ [$_{Embedded}$ DP$_2$ T$_{defective}$ [$_{vP}$ ...]]]]]]

(10)   [$_{Matrix}$ DP$_1$ T [$_{vP}$ ~~DP~~$_T$ v [$_{VP}$ V$_{[u\phi]}$ DP$_2$ [$_{Embedded}$ ~~DP~~$_2$ T$_{defective}$ [$_{vP}$ ...]]]]]]

We proposed an analysis that the difference between RtOs in Japanese and English stems from the presence/absence of ϕ-agreement via top-down Search (cf. Chomsky 2013). A-movement in Japanese RtO is optional because Japanese lacks ϕ-agreement to begin with. As long as (Internal) Merge is free (Chomsky 2004), the embedded subject may either move or stay in-situ in Japanese. On the other hand, A-movement in English RtO is obligatory because the derivation would crash with ϕ-features on V being unvalued, unless the embedded subject raises to the matrix clause.

Selected Refs: Chomsky, N 2013 Problems of projection. *Lingua*. **Takahashi, M** 2021 Reconsidering the optionality of raising in Japanese exceptional-case-marking constructions. *Syntax*.

The Reflexive-Possessive Rule in Mongolian as Binding Principle A and Its Implications on English

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Three uncontroversial facts about Binding Principle A -- One copy of an anaphor in a chain must be bound within the smallest CP or DP containing it and a potential antecedent (Carnie 2006: 427) -- observed with English among many:

    a)   Rebinding is disallowed (see (1)).

    b)   The reflexive *SELF* is out in a nominative position (Carnie 2006: 428) (see (2)).

    c)   A DP dominating an anaphor can't serve as that anaphor's antecedent (see (3)).

(1)   [$_{CP}$ Heidi$_i$ believes [$_{DP}$ Martha$_j$'s description of herself$_{*i/j}$]].

(2)   *Chris$_i$ said [$_{CP}$ that himself$_i$ was appealing].[1]

(3)   *There is [$_{NP}$ a picture of itself$_i$]$_i$ on the mantelpiece.

Similar facts can be observed with the Mongolian reflexive-possessive suffix (RX), *-aa* (and its allomorphs), which occurs at least in three different contexts (Anisman 2010, Guntsetseg 2011, Janhunen 2012, Kullmann and Tserenpil 2015).

・It is attached to a non-nominative possessive DP, whether the possessor is explicit or not:

(4)   Baatar   [(öörin) nom(-ig)[2]]-**oo**   marta-b.
         Baatar-NOM   (own)   book-ACC-**RX**   forget-PST
         'Baatar forgot his (own) book.'

・It is attached to a non-nominative DP containing a relative clause:

(5)   Baatar   [bagš-aas-aa   sur-san   hičeel-(ϕ)]-**ee**   marta-b.
         Baatar-NOM   teacher-ABL-RX   learn-CV   lesson-ACC-**RX**   forget-PST
         'Baatar forgot the lesson that he learned from his teacher.'

・It is attached to a non-finite verb signaling the boundary of an object clause:

(6)   Baatar   [ger-t-ee   hari-h]-**aa**   marta-b.
         Baatar-NOM   home-DAT-RX   return-CV-**RX**   forget-PST
         'Baatar forgot to return home.'

    a)   The element E to which RX is attached is obligatorily interpreted as referring to something possessed by or associated with a nominative subject (see (3-6)). This is known as "Ерөнхийлөн Хамаатуулах Нөхцөл", which translates as "Reflexive-Possessive Rule" (RPR) in Mongolian grammar. Notable with RPR is that switch reference is disallowed for the subjects of the matrix and subordinate clauses. In (7), for example, *bagš* 'teacher', the subject of the relative clause, is not co-referential with *Baatar*, the matrix subject, which leads to the failure of RPR. This is because *hičeel* 'lesson', the logical object of *zaa* 'teach', is first associated with the subject of the my clause, *bagš* 'teacher',[3] before the merger of the matrix verb, which is subject to RPR, and then it (*hičeel* 'lesson') enters an association relationship again, but this time with the matrix subject. That is, RPR applies to the same item twice, leading to the ungrammaticality. This resembles the fact in (1).

    b)   RX is never attached to a nominative phrase; that is, E never occurs in a nominative position (see (8)). This resembles the fact in (2).

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[1] (2) is out because, according to Carnie, the anaphor occurs in a position, Spec-TP, where nominative case is assigned. Note that sentences like the following do not serve as counterexamples of the conclusion that *SELF* is excluded in a nominative position. In (i), *himself* arguably functions as an adjunct rather than an argument.

  (i) I expected Bill$_i$ to win even when he$_i$ himself didn't.   (Culicover and Jackendoff 2005: 297)

[2] The accusative marker *-ig* may or may not be present in colloquial Mongolian.

[3] In the surface, this subject is genitive but not nominative because it is not a matrix subject. *Hičeel* 'lesson' itself remains bare, without being attached by RX. Note that RX is attached to the whole DP.

c) RX is never attached to an element inside a nominative phrase (see (9)). This resembles the fact in (3).

(7)　*Baatar　　　　[bagš-in-(h)aa　　zaa-san　　hičeel]**-ee**　　marta-b.
　　　Baatar-NOM　teacher-GEN-RX　teach-CV　lesson-ACC**-RX**　forget-PST
　　　'Baatar forgot the lesson that his teacher taught.'

(8)　a. *[Baatar-in　　bagš]**-aa**　　　hičeel　　　zaa-b.
　　　　Baatar-GEN　teacher-NOM**-RX**　lesson-ACC　teach-PST
　　　　'Baatar's teacher taught a lesson.'

　　　b. *Baatar　　　bagš**-aa**　　　hičeel　　　zaa-h-ig　　　hara-b.
　　　　Baatar-NOM　teacher-NOM**-RX**　lesson-ACC　teach-CV-ACC　see-PST
　　　　'Baatar saw that his teacher taught a lesson.'

(9)　*Baatar-in　　bagš-in**-aa**　　　nom-n　　　　huučira-b.
　　　Baater-GEN　teacher-GEN**-RX**　book-NOM-PS　become-old-PST
　　　'Baatar's teacher's book is aged.'

All this indicates that RPR in Mongolian is a special type of binding, with RX behaving the same way as *SELF*, as described below.

Binding Principle A can be viewed as a type of simplex association in the sense that in *John hit himself*, for example, *him* (in *himself*) are coreferential, where *SELF* is employed as a marker of the coreferentiality. RPR, by contrast, is a complex association in the sense that in (3-6), for example, the referent of *Baatar* and the possessive pronoun *öörin* 'own', which is optionally present, are coreferential, where RX is employed as a marker of the coreferentiality.

For Binding Principle A, a simplex association, the binder and the bindee are present simply as an antecedent (e.g. *John*) and a pronoun (e.g. *him*) in an anaphor (e.g. *him-SELF*). By contrast, RPR, a complex one, the binder is present as a nominative subject, whether explicit or not, and the bindee is optionally realized as the possessive pronoun *öörin*. As is already clear, for the former the bindee is an accusative pronoun (in the case of third person), while for latter it is a genitive/possessive one if realized. Of most importance is that *SELF* and RX, both reflexive morphemes, are attached only on non-nominative elements.

A consequence of this is that the so-called "lexical" ambiguity of *his* in (10-11), for example, between a reflexive and a pronoun (Truswell 2014: 224) is in fact a structural ambiguity; that is, [CP Bill$_i$ loathes [DP [D his$_j$ [N shoes]]]] versus [CP Bill$_i$ loathes [DP his$_i$ [D own$_i$ [N shoes]]]] (D is optionally spelled out as *own*). Consequently, English, in fact, has a possessive reflexive pronominal, contra the previous claim, for example, Truswell (2014: 226). That pronominal is *own*. In this sense, the bindee is the complex *his-own*. Therefore, (11) is subject to Principle A, not to Principle B. This explains why sentences like (11) give rise to the prima facie violation of Principle B. If this analysis is on the right track, it can eliminate a dilemma concerning the size of binding domain that varies between pronominals and anaphors in English given the same syntactic structure, as discussed by Carnie (2006: 430) among others.

(10)　Bill$_i$ loathes his$_j$ shoes.
(11)　Bill$_i$ loathes his$_i$ shoes.

It is hoped that further exploration will reveal more facts about Binding Principle A both in Altaic languages centering on Mongolian and in English-type languages.

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# Two Types of Additional *Wh*-Effects and *Wh*-Construals

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Goal: This presentation aims to account for how the in-situ *wh*-questions in Japanese are interpreted within the recent Minimalist Program, focusing on multiple *wh*-questions in Japanese. More concretely, we concentrate on two types of additional *wh*-effects, and demonstrate that *wh*-interrogatives in Japanese require at least one *wh*-phrase in the specifier position of C.

Issues: It has been observed in the literature that the island effects are subject to additional (or higher) *wh*-effects (Watanabe (1992), Saito (1994), Richards (1997), among others). For example, the sentence in (1a) is ungrammatical since the adjunct *wh*-phrase *naze* 'why' is contained within a complex NP island. However, the additional *wh*-argument *dare-ga* 'who-Nom' within the island improves the grammaticality of the example, as in (1b).

(1) a. * John -ga [_{NP}[_{IP} Mary -ga   **naze** hagesiku hihansita] hon] -o   sagasiteru no
           -Nom   -Nom why severely criticized   book -Acc looking-for Q
        'Q John is looking for [the book [that Mary criticized severely why]]'   (Saito (1994:236))

     b. ?? John -ga [_{NP}[_{IP} **dare-ga**   **naze** hagesiku hihansita] hon] -o   sagasiteru no
           -Nom   who-Nom   why severely criticized   book-Acc looking-for Q
        ' Q John is looking for [the book [that who criticized severely why]]'   (*ibid.*)

Saito (1994) argues that (1a) is ruled out since the LF movement of the *wh*-adjunct leaves an unbounded trace, which yields an ECP violation. On the other hand, in (1b), the potentially problematic *wh*-adjunct *naze* 'why' adjoins to the additional *wh*-phrase at LF and thereby avoids an ECP violation, as schematized in (2).

(2)
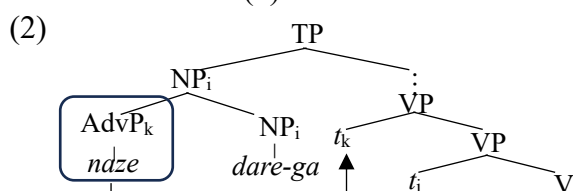
In (2), *naze* 'why' licenses the trace t_i from the adjoined position. After that, the NP containing the two *wh*-phrases moves to the specifier position of matrix CP. Since NPs are taken to be an argument, their traces are not required to be bound. Therefore, all the traces in (2) are licensed at LF, satisfying the antecedent government requirement. To put it simply, the problematic *wh*-adjunct adjoined to the higher *wh*-argument can be moved out of the island as a free rider.

Although several properties of additional *wh*-effects are well-captured under Saito's (1994) analysis, some theoretical problems arise with this approach within the current Minimalist Program. For one thing, the notion of the trace is no longer applicable in the minimalist framework. Under the copy theory of movement (Chomsky (1995)), movement does not leave a trace but instead a copy in its lower position. Since ECP is a constraint on empty elements such as traces, it also seems to be untenable within the recent minimalist framework. Without the ECP, the cornerstone of Saito's (1994) account of the additional *wh*-effects was lost. In addition, in light of recent developments in the Minimalist Program, the LF movement is also no longer tenable (see Hsu (2009) and Murphy (2017)).

Tsai (1999, 2008) claims that unselective binding takes care of the scopal properties of the in-situ *wh*-phrases. According to Tsai (1999, 2008), *wh*-nominals are assumed to be variables and bound by a *wh*-operator, which directly merges in its scope-taking position at Spec CP; no actual movement is involved with the in-situ *wh*-nominals. On the other hand, *wh*-adverbials, including causal adjuncts such as *naze* 'why,' are taken to be operators, which must be raised to Spec CP in order to take wide scope. Although the non-movement approach nicely captures the asymmetry between *wh*-arguments and *wh*-adjuncts in Japanese, one question arises here: If in-situ *wh*-argument in Japanese is always interpreted via unselective binding, it remains unclear why the status of the island violation in (1b)

improves by adding the higher *wh*-argument within the island. In other words, if the additional higher *wh*-argument does not move at all, the problematic *wh*-adverbials cannot become free riders and escape from the island.

It is also well-known that Japanese *wh*-arguments exhibit intervention effects (IEs), where scope-bearing elements block the covert *wh*-movement (=(3a)), but the effects are alleviated when *wh*-phrases that c-command the problematic interveners are added (=(3b)).

(3) a. ??? John-ga   [MIT-ka Harvard]-ni   nani-o a geta no?   (Pesetsky (2000: 86))
        John-Nom [MIT-or Harvard]-Dat what-Acc gave Q
        'What did John give MIT or Harvard?'

    b. **Dare**-ga   [MIT-ka Harvard]-ni   nani-o   ageta no?   (*ibid.*)
        who-Nom   [MIT-or Harvard]-Dat what-Acc gave Q
        'What did who give MIT or Harvard?'

Richards (1997) argues that a well-formed movement first pays a "tax" that allows later instances of movement to escape the blocking effects. In (3b), the additional *wh*-phrase *dare* 'who' covertly moves to the Spec CP, eliminating the uninterpretable *wh*-feature on the complementizer. However, the island violation in (1a) cannot be obviated even though a *wh*-phrase is added outside the island, as in (4).

(4)   * Dare -ga [NP [IP Mary -ga   naze hagesiku hihanshita] hon] -o   sagasiteru no
                -Nom   -Nom why severely   criticized   book -Acc looking-for Q
        'Q who is looking for [the book [that Mary criticized severely why]]'   (Saito (1994:236))

Under the "tax"-based approach, we wrongly predict the sentence in (4) to be grammatical since the *wh*-movement can take place from the additional *wh*-phrase, deleting uninterpretable *wh*-feature on C.

Proposal: This presentation proposes that in *wh*-questions in Japanese, at least one *wh*-phrase must be moved to Spec CP for the purpose of the clausal typing, regardless of whether it is *wh*-nominals or *wh*-adverbials. Once the sentence is typed as a *wh*-interrogative, the movements of other *wh*-phrases turn out to be optional. Evidence for this proposed analysis is supplied by the multiple questions in (5).

(5) a. ?* [John-ka Bill]-ga   **dare**-ni **nani**-o   ageta no?
        John-or   Bill -Nom who-Dat what-Acc gave Q
        'What did John or Bill give to who?'   (Pesetsky (2000:87))

    b. ? **Dare**-ni [John-ka Bill]-ga _____   **nani**-o ageta no?   [single-pair only]   (*ibid.*)
    c. ?? **Nani**-o [John-ka Bill]-ga **dare**-ni _____   ageta no?   [single-pair only]   (*ibid.*)
    d. **Dare**-ni **nani**-o [John-ka Bill]-ga _____ _____ ageta no? [pair-list OK]   (*ibid.*)

In (5a), the *wh*-phrases are c-commanded by the intervener, which yields a sentence unacceptable. If we assume with Tsai (1999, 2008) that the *wh*-nominals are variables and interpreted via unselective binding, it is unclear why the *wh*-phrases in (5a) are ungrammatical since there is no movement at all. On the other hand, under the current approach, the sentence in (5a) is correctly ruled out since the sentence fails in clausal typing. On the other hand, the *wh*-phrases in (5b) and (5c) are moved above the interveners via overt *wh*-scrambling, which is not subject to the IEs. Therefore, in (5b) and (5c), the requirement of clausal typing is satisfied by the scrambled *wh*-phrases. Notice here that these sentences are grammatical but limited to the single-pair reading. This is because in (5b) and (5c), the unselective binding is the only option for the *wh*-phrase c-commanded by the intervener. According to Dayal (2002), pair-list answers are available so long as the *wh*-operator moves to the position higher than the IP, while a single-pair-reading is derived via a binding. Consequently, the sentences in (5b) and (5c) receive single-pair readings. In (5d), both *wh*-phrases are scrambled over the offending intervener, which enables them to be raised to Spec CP. Therefore, a pair-list reading is available.

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Contextually Determined Last Resorts: A View from English *Do*-Support and French *C'est*-Cleft.

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Introduction: This study explores the nature of the "last resort" in natural languages from the cross-linguistic perspective. The term "last resort," originally coined by Chomsky (1986), states that all transformations must be formally forced (e.g. movement driven by the need for case checking). The emergence of (Early) Minimalist Program (MP; cf. Chomsky 1995) further reinforced the "last resort" view of syntactic operations. On the other hand, the notion of Free Merge, which appeared later (Chomsky 2004, 2013, 2015), in principle allows "free" applications of the UG-based operation, i.e. Merge; there may be operations without which derivations would crash, but Merge itself is considered to be not motivated by any grammatical "requirement." In this rather permissive framework, the notion of "last resort" is not easily maintainable, since "last resort" strictly treated in the current system would necessarily state that derivations themselves are forced by certain formal inadequacy (cf. Bošković 2011), but the spirit of MP disfavors the alleged existence of a superfluous condition in the derivational level. Given the dilemma stated above, this study revises the notion of last resort in the way in which it is evaluated contextually and functions representationally, each morpho-syntactic operation being able to consider the result of its application. This essentially states that a given operation can be a last resort in some cases and not in other cases. The representational treatment of the last resort goes well with the current MP, where the "obligatoriness" of a certain operation is nothing more than a "hindsight" (see above). The contextual approach to the last resort established here is argued to be able to finely capture constructions in various languages which, though identical in form, change meanings depending on environments where they appear. As instances, this study concerns two phenomena, namely English *do*-support and French *c'est*-cleft, and argues that they both exhibit sensitivity to the motivation of using them; they convey strong focal meanings in cases where their use is optional, but these meanings go away when they are used as a last resort. The environment-sensitive semantics instantiated by these phenomena would be hard to capture if "last resort" were defined dichotomously, as has traditionally been the case.

English *do*-support: English *do*-support is generally considered as an instance of a last resort. *Do*-insertion in (1a) is widely analyzed as a "repair" strategy forced by the unavailability of affix hopping (cf. Chomsky 1957). Importantly, (1b), the *do*-less version of (1a), is ungrammatical in present-day standard English, which means that *do*-support is by no means optional in this particular case.

    (1) a. You *do* not look pale today.   b. *You not look pale today.

On the other hand, the use of *do* is optional in environments like (2a-b).

    (2) a. You *do* look pale today, but you should finish the work anyway.
        b. You *do* look pale today. You should go home immediately.

Given (1) and (2), saying that *do*-insertion is obligatory or optional without considering contexts is senseless. It is suggested that the traditionally assumed dichotomy between last-resort and non-last-resort is not appropriate. *Do*-insertion is a last resort in some cases and optional in other cases. In other words, the (non-)last-resort-hood of *do*-insertion is not the intrinsic property of *do* but is contextually determined in the environments where it is used. Crucially, the last resort *do* and optional *do* have different semantic status. While in (2a-b) *do* adds some focal meaning (e.g. concessive focus in (2a)), such inference is absent in (1a): *do* is nothing more than a "remedy" there. The observations in (1)-(2) indicate that the last resort *do* does not convey the focal meaning that would otherwise be present. This essentially means that *do*-support is not a last resort in its own right. It *is* a last resort in (1a), but is clearly not in (2a-b). It can then be claimed that *do*-support "loses" its emphatic meanings when it is used as a last resort.

French *c'est*-cleft: Interestingly, this idea, essentially stating that emphatic meanings conveyed by focus strategies are weakened when they are used as a last resort, has a crosslinguistic support. Specifically, French *c'est*-cleft is argued to essentially be *do*-support, in that its focal meaning disappears when its use is obligatory. In French, as shown in (3), an

answer to a subject *wh*-question must be formed as a cleft sentence, if one is to reply to the question in a full sentence. Importantly, this cleft, unlike in other environments, does not express any focal meanings like exhaustivity. In contrast, an object *wh*-question is generally answered by a canonical non-cleft sentence; the use of cleft in this situation leads to the conveyance of exhaustivity.

(3) Q: Qui est arrivé ?
       who is arrived
       "Who arrived?"

    A1: #Pierre est arrivé.   A2: C'est Pierre qui est arrivé.
          Pierre is arrived   it-is Pierre who is arrived
          "Pierre arrived."   "It's Pierre who arrived."

In order to address the subject/object asymmetry just described, this study concerns syntactic and semantic properties of subjects in French, examining various phenomena including scope relations and left-dislocation constructions. To take an instance, French canonical SVO sentences (4a) do not permit inverse scope, unlike in English (4b). Besides the semantic peculiarity of subjects, there is evidence that French matrix verbs move beyond the verbal domain, so that they are obligatorily followed by sentential adverbs like *probablement* "probably", as in (5).

(4) a. Quelqu'un aime tout le monde.
     someone loves all the world
     "Someone loves everyone."   (SOME>EVERY, *EVERY>SOME)
   b. Someone loves everyone.   (SOME>EVERY, EVERY>SOME)

(5) Antoine { confond probablement / *probablement confond } le
   Antoine confuses probably   probably confuses the
   poème avec un autre.
   poem with a other
   "Antoine is probably confusing the poem with another."   (Schifano 2018: 63)

These data, together with the asymmetry in the interpretation of dislocated elements between subjects and objects—the concrete data of which are omitted due to limitations of space—can be taken as indicating that French matrix verbs raise to the C domain, with subjects serving as topics, which can be analyzed as occupying Spec,TopP in Rizzi's (1997) finely articulated structure of the left periphery. It is then argued that French *c'est*-cleft is used as a "last resort" operation in the case of the answer to subject *wh*-questions; French subjects, which serve as topics in their canonical position, cannot convey new information, and an alternative "repair" strategy to break this constraint—such as putting phonological stress on the subject—is not available in French either, hence the necessity of resorting to syntax, i.e. the "last resort" use of the *c'est*-cleft to satisfy Question-Answer Congruency. Since this is nothing more than a remedy, there is no focal meaning like exhaustivity. Notice that the situation is similar to English *do,* which does not play any role in semantics when inserted as a last resort.

Conclusion: The generalization drawn from the analyses of English *do*-support and French *c'est*-cleft is that constructions which occur in the last resort strategy are semantically weak. The contextual approach to the last resort advocated in this study has the potential to draw a finer picture of various constructions in different languages which, though identical in form, change meanings depending on environments where they appear.

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A Search-Based Treatment of Adjuncts
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1. Introduction: Chomsky's (2021: 17) Duality of Semantics dictates that "EM is associated with θ-Roles and IM with Discourse/Information-Related functions." We are naturally led to the question of how an adjunct, which has generally been assumed not to be assigned any θ-Role, can be introduced into syntactic computation in the first place. This paper proposes that an adjunct in the workspace (WS) can serve as a probe and search for its modifee in the WS for establishing a modification relation. With the assumption that adjuncts in general have an uninterpretable feature which is related to categorial selection, it is also claimed that an adjunct can sometimes serve as a goal and form a relation with $v*$. This relation is a syntactic cause of the Single Event Grouping Condition in the sense of Truswell (2011).

2. Adjuncts as a probe: Let us take relative clauses as an instance of adjuncts. Perlmutter (1970) observes that the definite article attached to a head noun crucially depends on the presence of its relative clause:

(1) a. the Paris that I love (Perlmutter (1970: 241))
     b. In England there was never the problem that there was in America. (Ibid: 243))

In the absence of the relative clauses, *the* in (1) can never occur. The definite article cannot be a lexical item selected from the lexicon for syntactic derivation, but it emerges in the course of the derivation of the relative clauses. It is reasonable to interpret *the* in (1) to be realized due to the search relation between a relative clause and its head noun. More specifically, *the* is the manifestation of a feature valued by the relative clause, with the structure of the relative clause plus its modifying noun phrase labeled as *the* (or its underlying feature of [+definite]). With the above Search-Based analysis of adjuncts in mind, let us now shift our focus to the Argument-Adjunct asymmetry regarding condition C effects.

(2) a. * Which claim that John$_i$ likes Mary did he$_i$ deny ?
     b. Which claim that John$_i$ made did he$_i$ later deny ?

Lebeaux (1988) and following literature account for the asymmetry with recourse to Late Merge, which enables a relative clause to be merged with the moved *Wh*-Element. This account, however, is faced with theoretical and empirical difficulties. Under Chomsky's (2021) framework, Late Merge is unavailable. Moreover, the Late-Merge analysis of the asymmetry is undermined by the following data ((3a): the availability of an idiom interpretation, (3b): the binding of a reflexive pronoun, (3c): scope ambiguity [two>every, every>two]):

(3) a. The headway that Mel made was impressive. (Aoun and Li (2003: 110))
     b. The portrait of himself$_i$ that John$_i$ painted is extremely flattering. (Ibid: 109))
     c. I phoned the two patients that every doctor will examine tomorrow. (Ibid: 113))

Based on the above data, Aoun and Li (2003) conclude that *That*-Relatives, unlike *Wh*-Relatives, are generated via head raising. It follows that the derivation of (2b), which contains a *That*-Relative, involves head raising. It is interesting to notice that for the antecedent NP to undergo head raising, its relative clause has to be introduced at an earlier stage of the derivation. There is no difference between relative clauses as in (2b) and appositive clauses as in (2a) with respect to their Base-Generated position. In the face of this situation, we are now in a position to consider the contrast in (2) as an Argument-Adjunct asymmetry regarding condition C reconstruction. The most obvious difference between an argument and an adjunct is whether or not they must receive a θ-Role. Contra Chomsky (2021), we claim that θ-Marking is achieved by agreement between a θ-Assignor and a syntactic object. The fact that reconstructability is controlled by the presence of agreement is supported by the following data:

(4) a. Sono hon o$_i$ John ga [$_{S'}$ Mary ga t_i katta to] omotte iru

that book ACC John NOM   Mary NOM   bought COMP   think
(koto)
fact
'John thinks that Mary bought that book.'   (Saito (1985: 156))
b. * Riyuu mo naku$_i$ Mary ga   [$_{S'}$ John ga t_i sono   setu   o
reason even without Mary NOM   John NOM   that   theory ACC
sinzite   iru   to]   omotte   iru   (koto)
believe   COMP   think   fact
'Mary thinks that John believes in that theory without any reason.'   (Ibid: 175)

(5) ? Naze Mary ga   [$_{CP}$ John ga   sono setu o   sinziteiru ka] sitteiru.
why   Mary NOM   John NOM   that theory ACC believe   Q   knows
'Mary knows why John believes in that theory.' (Bošković and Takahashi (1998: 356))

Given the radical reconstruction property of Long-Distance scrambling (Saito (1989), et. seq.), the scrambled element is required to be interpreted in the embedded clause.   The (un)acceptability of (4) shows that while the argument *sono hon o* can undergo reconstruction, the adjunct *riyuu mo naku* cannot.   In the movement analysis of Long-Distance scrambling, *sono hon o* in (4a) originally occupies the complement position of the verb in the embedded clause and is agreed with/θ-Marked by the *v** of the clause.   In (4b), *riyuu mo naku*, whose scope is over propositions, is located in a higher position than the *v** and the two establish no agreement relation.   The difference in reconstructability observed in (4a, b) is tied to the presence/absence of an agreement relation.   In contrast to *riyuu mo naku* in (4b), the adjunct *naze* in (5) can be reconstructed.   Being a *Wh*-Element, *naze* is endowed with an additional Wh-Feature and enters into an agreement relation with the interrogative C (*ka*).   It is this agreement relation that makes the reconstruction possible.

3. Adjuncts as a goal: It has been observed that not all adjuncts are islands.
   (6)   Which book did John design his garden [after reading __] ?   (Truswell (2011: 31))
Narita (2014: 124) argues that such adjuncts are "low" ones, located within the domain C-Commanded by *v**.   Given the agreement approach to θ-Marking, a low adjunct, which has an uninterpretable feature related to categorial selection, can be "θ-Marked" by *v**.   This type of adjuncts is transparent for extraction and hence the acceptability of (6) (cf. Miyamoto (2012)).   Truswell (2011: 31) observes that the question in (6) should be answered as indicated in (7) and formulates the Single Event Grouping Condition in (8).
   (7)   An introduction to landscape gardening. / # *Finnegans Wake.*
   (8)   An instance of *Wh*-Movement is legitimate only if the minimal constituent containing
         the head and the foot of the chain can be construed as describing a single *event*
         grouping.   (Ibid: 157, emphasis in original)
Under our proposal, when a low adjunct is agreed with/θ-Marked by *v**, the denotation of the adjunct is interpreted to be a participant of the event described by a verb.   In (6), the adjunct in the square brackets is one of the key ingredients for the designing event and the contrast in (7) follows.   Condition (8) is derived in syntactic terms.   Note in passing that an adjunct which functions as a probe is a "high" one and thus is structurally higher than its modifee.

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The Syntax of Clausal Arguments from a Comparative Perspective

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For the past years, a fair amount of literature working on finite clausal arguments has shown that, despite surface resemblance, clausal arguments differ from arguments of other syntactic categories in several fundamental ways. The status of clausal arguments (or complementizer phrases, CPs for short) as natural arguments is still an undecided issue. In light of this, the current study investigates the distribution and structural properties of CPs from a comparative viewpoint, focusing on English and Mandarin, with an aim to understand their syntactic nature.

Despite the apparent challenge to the general view that only nominal categories can stay in SpecTP, many languages are argued to allow clausal subjects. Some, like Greek, even show overt evidence (e.g., determiners) for the nominal status of CP subjects. Two main approaches have been offered in the literature to address the noted DP-like properties of CP subjects. One approach, including works of Rosenbaum (1967), Davies & Dubinsky (1998), Han (2005) and Takahashi (2010), is to argue that clausal subjects are not truly CPs. Instead, they are CPs embedded in a (null) DP shell, as illustrated in (1):

(1) DP shell analysis:

[$_{TP}$ [$_{DP}$ **D** [$_{CP}$ that John shows up]] [$_{T'}$ will [$_{vP}$ shock everyone here.]]]

The other approach, dating to Koster (1978) and recently defended by Alrenga (2005) and Moulton (2009), proposes that clausal subjects are not truly subjects. Rather, they are topic phrases linked to a DP null subject. In particular, Alrenga's analysis is illustrated in (2), according to which the topic phrase is base-generated in SpecCP and what occupies SpecTP is a phonologically empty DP serving as a proxy.

(2) Topic analysis:

[$_{CP}$ [$_{CP}$ that John shows up]$_i$ [$_{CP}$ [$_{DP}$ e]$_i$ [$_{TP}$ [$_{DP}$ t]$_i$ [$_{T'}$ will [$_{vP}$ shock everyone here.]]]]]

To date, there is still an ongoing debate in English, though English data do not seem to provide clear supporting arguments for either side of the views.

Mandarin CPs have received some attention in the literature. One known fact is that Mandarin has clausal subjects which pattern with DP subjects (Tsai 1995, Zhang 2008). Based on this, some works (Tsai 1995) argue that Mandarin CPs are just like DPs in their ability to take Case. Nevertheless, in this talk I argue that CPs and DPs distribute differently in Mandarin and thus they have distinct syntactic representations.

First, predicates like *xiwang* 'hope' and *yiwai* 'surprised' cannot select DP objects but are compatible with CP complements as in (3). If Mandarin CPs were the same as DPs in requiring their Case to be checked, as argued in previous works, we should expect (3a) to be unacceptable just like (3b), contrary to the fact. Accordingly, the distinct distribution of CPs and DPs militates against treating CPs as DPs unconditionally.

(3) a. Wo hen xiwang/yiwai [Akiu hui lai].

       I very hope/surprised Akiu will come

       'I {hope/am surprised} that Akiu will come.'

b. *Wo hen xiwang/yiwai [zhe-jian shi].

       I very hope/surprised this-CL matter

       Lit. 'I {hope/am surprised} this matter.'

Second, prior scholarship suggested that, unlike in English, CP arguments in Mandarin can appear as the object of prepositions, just like regular DPs. However, there is a group of prepositions that must occur with their complements in the pre-subject position, modifying the whole clause; crucially, I argue these 'peripheral' prepositions *cannot* take clauses as their objects but have to be followed by DPs, as shown in (4).

(4) a. guanyu [zhe-jian shi], laoshi bi er bu tan.

       about this-CL matter teacher avoid and not talk

       'About this matter, the teacher avoided talking about it.'

b. *guanyu [Lisi bei qifu-le], laoshi bi er bu tan.

       about Lisi PASS bully-ASP teacher avoid and not talk

       Lit. ''About Lisi was bullied, the teacher avoided talking about it.'

I suggest this range of Mandarin facts lend support for the DP shell analysis. To begin with, the topic account would have obvious difficulty capturing the Mandarin data. For the topic account, the very reason to assume the connection between a null operator and a silent subject DP is to ascribe the DP effect created by the CP movement to the DP delegate that actually moves. However, in Mandarin it is not only in the subject position that a CP argument behaves like a nominal; therefore, the assumed existence of a covert DP delegate high in the structure would not help. On the other hand, a more promising direction to go is to re-examine the DP-shell approach. I propose that CPs in Mandarin can always occur within complex nominal structure with an embedding covert noun phrase, though given the nominal dominating the CP is a null element which is in a way 'defective', its occurrence in the structure needs to meet certain licensing conditions following standard assumptions in syntactic theories. Specifically, when a CP argument occurs in the subject position, its dominating covert nominal structure is allowed since the EPP property of T requires its specifier be filled with a DP. When a clausal argument occurs in the object position, it is only licensed to appear in a null DP shell if the verb/preposition lexically selects DP complements. In this sense, the proposed analysis is a resurrection of the Empty Category Principle that the null DP structure of the clausal complement must be properly governed, or directly theta-marked by a lexical category.

Overall, there seems to be a macro-parameter of linguistic variation in the syntactic representation of CP arguments, possibly with more than one possible locus of variation: languages may either differ in whether they permit the null DP shell structure to dominate CP arguments or differ in the specific licensing conditions of null nominals, just as suggested in other cross-linguistic studies on silent elements.

A Syntactic Investigation of Conditional Conjunctions
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1. Introduction

This paper aims to elucidate why argument extraction is possible from certain types of coordinate structures that employ *and* in English. Generally, displacement of the argument from its base position is prohibited in the coordinate structure, as shown in (1).

(1) a. * This is the pizza$_i$ Sam ordered t_i and Mary asked for an orange juice.   (Weisser (2015a: 46))

   b. * This is the beverage$_i$ Sam ordered a pizza and Mary asked for t_i.   (Weisser (2015a: 46))

The argument *the pizza* in (1a) and *the beverage* in (1b) are extracted from the first and second conjunct respectively. The relevant movement results in ungrammaticality in (1a, b) and this is typically called the Coordinate Structure Constraint in (2).

(2) Coordinate Structure Constraint (CSC)

   In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.   (Ross (1967: 89))

Although CSC is regarded as a stringent condition encompassing all coordinate structures, instances of exceptional data have been uncovered and discussed in the literature (see Schmerling (1975), Goldsmith (1985), Lakoff (1986), Na and Huck (1992), Weisser (2015a, b), Altshuler and Truswell (2022) for details). Lakoff (1986) argues that exceptional data are sorted into three types, as given in (3)-(5).

(3) Type A (narration)

   What$_i$ did Hary go to the store and buy t_i?   (Lakoff (1986: 152))

(4) Type B (violated expectation)

   How much$_i$ can you drink t_i and still stay sober?   (Lakoff (1986: 152))

(5) Type C (result)

   That's the stuff$_i$ that the guys in the Caucasus drink t_i and live to be a hundred.   (Lakoff (1986: 156))

Type A, known as 'narration', represents events in chronological order through coordinated constituents. In type B, referred to as 'violated expectation', the first conjunct derives a concessive condition and the second conjunct conveys results that contradict the hearer's expectations. Finally, in type C, identified as 'result', the first conjunct expresses the condition and the second conjunct represents its (natural) result. For the sake of simplicity, we refer to these examples as the Conditional Conjunctions (CCs). According to Lakoff (1986) as well as Altshuler and Truswell (2022), argument extraction from the first conjuncts is possible but not from the second conjuncts in CCs (the type B and C), while the extraction patterns are not uniform in type A. Based on the rigidness of extraction patterns, this paper focuses on the derivation of the CCs, and gives a principled account for these constructions from a syntactic perspective.

2. Previous Research

Weisser (2015a, b) gives a syntactic approach to the CCs in (4) and (5). He assumes that TP coordination is necessary to derive the CCs from the results of coordination tests in (6).

(6) a.   You know, of course, [$_{CP}$ that [$_{TP}$ you drink one more beer] and [$_{TP}$ you get kicked out]].   (CC)
                                                                (Culicover and Jackendoff (1997: 198))

   b. # You know, of course, [$_{CP}$ that you drink one more beer] and [$_{CP}$ that you get kicked out].   (ibid.)

   c. # You [$_{vP}$ drink one more beer] and [$_{vP}$ leave].   (Weisser (2015a: 43))

The examples in (6b, c) indicate that, in the cases of CP or vP coordination, the conditional construal cannot hold. Based on this test result, he suggests the following structure. In (7), the first conjunct TP1 adjoins to the vP of the second conjunct TP2. At this point, the topicalized argument DP_{TOP}, extracted from TP1, enters the specifier of vP. Weisser argues that since the conjuncts TP1 and TP2 have not yet been conjoined by '&', the extraction of DP_{TOP} is permissible. Once TP1 moves to the specifier of '&P', TP1 and TP2 form a coordinate structure, prohibiting any extraction from either conjunct. Therefore, to perform argument extraction without violating the CSC, it must occur before TP1 moves to the specifier of '&'. The topicalization movement of DP_{TOP} takes place after TP1 has merged with '&'. Weisser's analysis sounds plausible but there are two separate problems.
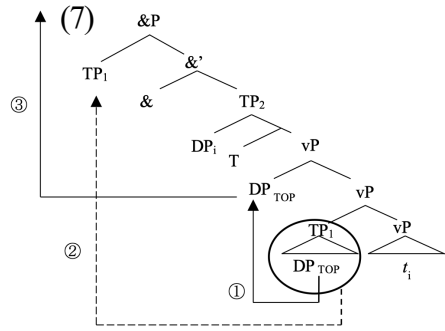
Firstly, while he assumes that DP_{TOP} merges into the specifier of vP in TP2, this position should also accommodate the DP serving as the subject of TP2. When merging an element into the specifier of TP2, both DPs are competitive for that position. The second issue pertains to the intervention effect. When DP_{TOP} is topicalized, TP1 serves as the conditional clause is in the specifier of '&P'. However, Weisser does not address the mechanism by which TP1 is interpreted as the conditional clause.

3. Proposal

First, we assume that the conditional clauses possess discourse functions as topics and demonstrate agreement by merging into the specifier of TopP, employing a series of studies on the correlation between topics and conditionals by Marchese (1977), Haiman (1978), Ramsay (1987) among others. Second, CCs are derived by CP coordination but not TP coordination as opposed to Weisser (2015a, b). This is supported by the fact that CP adverbs, which adjoin to a structurally high position, can be added to the first conjunct in CCs, as in (8).

(8) a. You know, of course, that {fortunately/cleverly/stupidly} the guys in the Caucasus drink the stuff and live to be a hundred.

b. If {fortunately/cleverly/stupidly} the guys in the Caucasus drink the stuff, they live to be hundred.

In (9), the first conjunct initially resides within the vP domain of the second conjunct, which serves as the main clause. At this juncture, the DP serving as the subject of the second conjunct also merges into the specifier position of vP. What differs from Weisser's approach is the absence of any extraction from the first conjunct at this stage. As a result, when TP2 is projected, there is no competition for the movement of the DP to its specifier, resolving the aforementioned issue. Subsequently, the first conjunct moves to the specifier of '&P'. In the case of CCs, however, the first conjunct expresses conditionality, so it moves to the specifier of TopP. We assume that Topic Agreement between the SubP of the first conjunct and the TopP of the main clause activates the Force of SubP. As Force is presumed to possess an edge feature (Haegeman 2006, 2012), the DP within the first conjunct can move to the edge of SubP, ultimately rising to specifier of ForceP/TopP in the main clause. This analysis can be extended to the argument extraction from the conditional *if*-clauses (Hornstein (2001), Taylor (2007)).
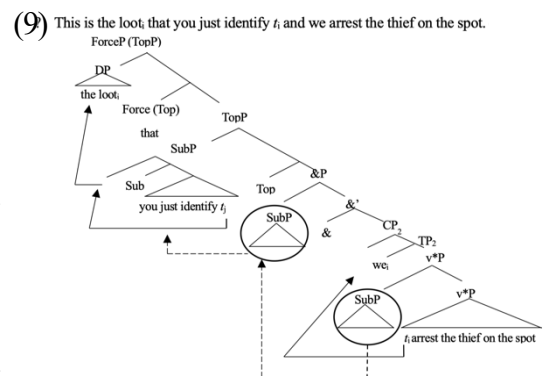
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Idiolectal Google Search Patterns as Forensic Linguistic Evidence

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Forensic linguists are increasingly asked to assist in cases involving internet search data where investigators want to find out which of a set of suspects with access to a seized device had researched topics associated with an offence. On the surface, such cases present a classic authorship attribution problem, where the incriminating searches are the questioned documents (e.g. search queries on accidents where babies suffocated), and the known documents consist of internet search histories of the suspects prior to the offence. While researchers have studied linguistic diversity on the internet across languages (e.g. Gerrand, 2007), there is no existing research on individual search engine behaviour, meaning that such authorship attribution tasks are difficult, and conclusions only have limited value for the investigation.

This paper is a contribution to the authorship analysis literature, where we address the abovementioned research gap by conducting empirical research on language data collected from 112 individuals. All data were collected remotely via Microsoft Teams during 2021. Our participants completed a vignette-based task in which they acted as a CEO's personal assistant who had to complete the following brief:

Dear PA. The CEO is travelling to Helsinki for a 2-day conference from 2.-4. September 2021. Please could you find the following itinerary items for her trip:

1. *A central hotel, budget around £200 per night. Note that she likes to stay close to the water.*
2. *A café to have breakfast at.*
3. *A museum to learn about the city's history.*
4. *A restaurant that serves a typical national dish. Note that she is allergic to seafood.*
5. *A shop to buy a typical Helsinki souvenir for her children.*
6. *Something to do in the evening. Note that she loves live music but does not like*
7. *opera.*

Participants were given a rough time window of 20 minutes to complete the task. Their internet search behaviour was screen-captured, and search strings transcribed manually into plain text.

Our findings demonstrate cross-author variation, e.g. when researching item 1 (a central hotel in Helsinki, around £200 per night, ideally close to water) participants use both singular and plural forms ('hotel' vs. 'hotels'), include and omit determiners ('by water' vs. 'by *the* water'), and list specific bodies of water ('river', 'beach', etc.). Word order also varies, e.g. 'Helsinki' occurs at the start of the search string or in the middle/at the end, sometimes with a preposition ('*in* Helsinki').

The data overall show low levels of within-author consistency; the majority of participants (76%) are not consistent syntagmatically in their search behaviour. Participant 113, for example, places the term 'Helsinki' in various positions in his search strings:

- Clarion Hotel Helsinki
- helsinki souvenir shop
- live music helsinki
- cafes helsinki central

Only a few participants (14%) show clear signs of consistency, e.g. by always placing the word 'Helsinki' at the start of their search string, as exemplified by Participant 39:

- helsinki live music bar
- helsinki central breakfast cafe/restaurant
- helsinki finnish food restaurant
- helsinki things to do

Our findings suggest that internet users' patterns of Google search behaviour are more complex than anticipated. Using a factor analysis approach, we further map individual behaviours on a bidimensional space to cluster data based on linguistic variables (e.g. singular vs. plural, word order, word choice, prepositions), and we measure Jaccard distances to provide us with concrete values.

This research has clear implications for forensic linguistic casework and can serve as a valuable basis for authorship queries in the search engine domain.

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Accommodation in English Computer-Mediated Communication:
Do Age and First Language Affect Alignment with Textisms and Emoji?

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People's linguistic behaviour in interactions depends on their interlocutor: according to Communication Accommodation Theory, we often adapt our language in interpersonal and intergroup contexts to match that of our conversation partners (Giles et al., 1991). In sociolinguistics, this has been called '(linguistic (style)) accommodation', '(linguistic) alignment', or 'convergence'. Accommodation reduces social differences and can make communication more effective, allowing interlocutors to understand each other better or to like each other more (Giles, 2016; Pickering & Garrod, 2006). In oral communication, speakers can align on different levels, both verbally (e.g., through pronunciation, word choice, syntax) and non-verbally (e.g., with gestures). Because of the increasing popularity of social media, researchers are beginning to explore the applicability of CAT in the context of computer-mediated communication (CMC) (Danescu-Niculescu-Mizil et al., 2011, on Twitter; Muir et al., 2017, on instant messaging). However, research on accommodation with linguistic style elements that are typical of digital language ('digi-talk' or 'textese') remains scarce. Some evidence of accommodation with textisms and emoji in written CMC has been found (Adams et al. 2018, 2023; Kroll et al., 2018; Marko, 2022; Siebenhaar, 2018), but much remains unknown about which factors besides power/hierarchy or gender affect this. The present research aims to find additional evidence of CAT in CMC and aims to explore the effects of age and first language (L1) on such accommodation.

This presentation reports on a large-scale empirical study to investigate whether accommodation takes place in English written CMC. Native English speakers and Japanese speakers of English as a foreign language (EFL) of different ages participate in the study. Since written CMC has become highly multimodal, consisting of both textual and visual elements, this study focuses on accommodation with two salient elements that are characteristic of digital language, involving orthography and visuals respectively. The first element that is studied are textisms, including non-standard abbreviations or 'phrase-shorteners' such as 'omg' (*oh my god*) and 'lol' (*laughing out loud*) and phonetic respellings such as 'cuz' (*because*) and 'tho' (*though*) (Thurlow & Poff, 2013; Adams et al. 2023). The second element are emoji. These small ideograms represent smileys, people, animals & nature, food & drinks, activities, travel & places, objects, symbols, and many flags. Emoji can compensate for a lack of non-verbal cues in writing (😌 👩‍💻), can add expressivity or emotion to text (😭 😁), can visualize or disambiguate messages (🖌️ ✉️), and can increase the informality or playfulness of writing (🧌 😜) (Evans, 2017).

A between-subjects experiment was designed with three conditions (textisms, emoji, or none). Two experimental groups are presented with a number of texting scenarios that deliberately contain multiple instances of digital language elements (textisms or emoji), while a control group sees the same messages but without any textisms or emoji. The topics and style of the messages are kept casual, so that any textisms or emoji would not be out of place. Participants are asked to type responses to the messages. Their responses are analysed for the relative frequency of textisms and emoji. The research design includes the presence of textisms/emoji in the texting stimuli as independent variables, the use of textisms/emoji in participants' responses as dependent variables, and age and L1 as moderating variables.

In line with prior research, the presence of digital language elements (textisms and emoji) is hypothesized to be significantly higher in the experimental groups' responses as compared to the control group. In addition, four interaction effects are expected. First, based on several pilot studies, it is hypothesized that *more* accommodation with the use of both

textisms and emoji will occur in the English written CMC of younger participants than in that of older participants, because the younger participants are 'digital natives' who have grown up with digital communication tools and are thus more familiar with and sensitive to differences in textese, while the older participants are 'digital immigrants' who have learnt to communicate through social media at a later age (Prensky, 2001). Furthermore, *more* accommodation with the use of emoji is hypothesized to occur in the English written CMC of Japanese EFL participants than in that of the native English-speaking participants, because prior research has found an impact of culture or first language in communication style accommodation in CMC, with East-Asian EFL participants accommodating more than native speakers of English (Wang et al., 2009). Finally, *less* accommodation with the use of textisms is hypothesized to occur in the English written CMC of Japanese EFL participants than in that of the native English-speaking participants, because as opposed to emoji which are to a certain extent 'universal' and even originated in Japan, Japanese EFL participants may be less familiar with non-standard English orthography. Data are collected using the online survey and recruitment platforms Qualtrics and Prolific. The results of the empirical study will be presented and implications for CAT will be discussed.

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Passivization by Voice: A Merge-Based Approach

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At least two syntactic views on how passive semantics is assigned are available in the generative literature. On the mainstream (Chomskyan) view, passive semantics is configurationally assigned by promoting the internal argument (IA) and suppressing the external one (EA). By contrast, it was recently proposed that passive semantics is assigned by a dedicated Voice head that does not project EA (Embick 2004b, Schäfer 2008b, Bruening 2012, Harley 2013, Alexiadou et al. 2015, Legate et al. 2020). I label such a head and its equivalents "Inert Voice". Inert Voice was postulated in parallel with Kratzer's (1996) Voice, which introduces EA. Inert Voice has nothing to do with passivization as a syntactic operation, yet it was assumed to contribute to producing a passive meaning. On the mainstream (Chomskyan) view, however, passivization as a syntactic operation goes hand in hand with producing a passive meaning.

This controversy, as we will see in this paper, is due to the failure to correctly identify passivization as successive-cyclic movement and correctly characterize Voice as a syntactic head introducing (potential) subjects. Ever since Chomsky (1981), it has been assumed that passivization is one-step movement of IA to the surface subject position. Call it "the one-step approach" (OSA). However, passivization may be successive-cyclic, as indicated by Legate's (2003) observation about the reconstruction effect in English passives. But because OSA has become a tradition in generative syntax, researchers have paid little attention to the successive-cyclicity of passivization. In this paper, I present "the successive-cyclicity approach" (SCA), arguing that the subject of passives stops over in an intermediate position before reaching the NOM position.

As a diagnostics of the successive-cyclic property of passives, the following construction is available. In (1), IA (*Hanako*) can appear with a dative case (DAT), indicating that it has moved away from its base-generated position, where it would otherwise be assigned an accusative case (ACC), to a position lower than Spec of T, a NOM position (See Saito 1982: 92, Hoshi 1999: 204, Aoyagi 2021: 99, etc. for relevant discussion on this construction). As indicated by the passive morpheme (*-are*) in (1) and (2), what *Hanako* underwent is passivization, followed by causativization in (1). In both (1) and (2), *Hanako* cannot be base-generated in its surface position because its surface position is not thematic; the passivizing head, spelled out as *-are*, is not a theta-role assigner. I label this type of movement "A-to-D raising" (raising from ACC to DAT).

(1) Ziroo-ga   Hanako-o/ni   Taroo-ni   sikar-are-sase-ta.
    Ziroo-NOM   Hanako-ACC/DAT   Taroo-DAT   scold-PASS-CAUS-PST
    'Ziroo made Hanako be scolded by Taroo.'   (Tsujimura 1996: 259)

(2) Hanako-ga   Taroo-ni   sikar-are-ta.
    Hanako-NOM   Taroo-DAT   scold-PASS-PST
    'Hanako was scolded by Taroo.'   (Tsujimura 1996: 258)

Importantly, as indicated by Mirror Principle, *Hanako* is introduced by the passivizing head (-*are*), not by the causativizing head (-*sase*), which introduces the causer *Ziroo*. Given that A-to-D raising of IA (*Hanako*) and the suppression of the external argument EA (*Taroo*) make up the

core property of the passive, the voice proper, it is not deniable that a passivizing head can introduce an argument. Importantly, this yields no difference between passives and transitives with respect to their ability to introduce arguments. Given that the passive is the voice proper and that passivization is diagnosed to be successive-cyclic, it is reasonable that passives are derived by internal-merging IA through a Voice head. Following Kratzer (1996), EA is introduced by Voice in transitives. Combining these, it can be concluded that EA and IA are both introduced by a particular Voice head, one via external merge, the other via internal merge.

It then follows that Kratzerian Voice (EA-introducing) and IA-introducing Voice are of the same substance. But they are not the very same one; they are distinct instances of Voice instead. That is, VoiceP is split into two projections and the head of each (re)introduces EA and IA respectively. Thus, the voice domain is in fact a Voice-over-Voice configuration as in (3) and it is this configuration that assigns passive semantics and causative semantics as well (Nie 2020, Bai 2023).

(3) … [$_{VoiceP2}$ DP2(IA) [$_{VoiceP1}$ DP1(EA) [$_{VP}$ V …

The consequences of this are the following.

(4) a. SBJ (surface subject), whether it is that of passives or that of transitives, is a Voice-internal subject in that it is introduced beforehand by a Voice head to get assigned subjecthood.
b. Clauses are formed by introducing Sbj (potential subject) through Voice and promoting a last-merged Sbj to the NOM position, with others being suppressed or demoted.
c. Voice is not merely an EA-introducing head; it is a Sbj-introducing one.
d. Passives and transitives including causatives as voice alternants are manipulated by the single engine, Voice.

The rationale behind the Split-VoiceP analysis is that introducing arguments comes down to the simplest operation Free Merge (Chomsky 2013, 2015): (Re)merger of an argument, external or internal, is unconstrained; UG requires just this much for voice phenomena; no dedicated heads such as Passive, Voice$_{[non-act]}$, Cause/v, Voice$_{[act]}$ and their equivalents are necessary, nor are dedicated voice-specifying features. The dispute that arises between the mainstream view and the Inert-Voice view is thus resolved.

Keywords: Passivization, Voice, Merge, Argument-Introducing

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Understanding English *let alone* construction: A corpus-based approach

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key words: let alone, corpus, negative polarity item, discourse-oriented

The expression *let alone*, starting to be used as an NPI (negative polarity item) in the 1760s, displays peculiar syntactic, semantic, and pragmatic properties that are quite unpredictable from general grammar rules (Fillmore et al. 1988). The expression *let alone* is typically used after a negative statement to emphasize that the statement also applies even more to the referent of its (bracketed) complement (Harris 2016, Toosarvandani 2008, Toosarvandani 2009):

(1) a.   Brian would never even read a newspaper, let alone [a book].

b.   I hardly have time to think these days, let alone [relax].

In these examples, *let alone* has a remnant complement (*a book* and *relax*) which is associated with its correlate (underline waved). With these two in a contrastive focus relation, the first clause including the correlate expresses the improbability of a negative statement, and the expression *let alone* plus the remnant at the sametime describes a more general, related situation that has not happened, either. Reflecting syntactic and semantic properties of the construction, Harris (2016), Carlson & Harris (2017), and others suggest that the construction is a type of coordination and further derived from move-cum-delete operations. For instance, (1a) would be derived from the following:

(2)   Kim never got to high school, let alone [$_{FOCP}$ college$_i$] ~~Kim got to ___$_i$>~~.

The remnant *college* moves to the focus position, and the remaining clause (e.g., TP) undergoes ellipsis. Thisderivation, borrowed from other move-and-delete accounts of ellipsis, then resorts to the clausal source for thesemantic resolution.

Our corpus investigation yields a variety of examples, including those in (3), that argue against taking theconstruction as a simple coordination (COCA: Corpus of Contemporary American English):

(3) a.   Well, didn't think of [$_{NP}$ that today], let alone [$_S$ when I was younger].
(COCA 2014 SPOK)

b.   I haven't had the chance [$_{PP}$ for a break], let alone [$_{VP-INF}$ to make a phone call].
(COCA 2011 SPOK)

In addition, the process of positing clausal sources becomes complicated when the construction appears in the sentence medial position, as seen from the following attested data:

(4) a.   A shortage of [fuel] and [lubricating oil], let alone gasoline, would be disastrous to industry.

b.   That he was likely to [break his own mark], let alone approach Nurmi's, was a possibility whichappeared so remote to sportswriters last week.

The postulation of clausal sources for such cases requires a cataphoric interpretation, but in real-time process-ing, there is no need to wait until the end of sentences to assign a proper meaning to the construction. Attesteddata like (5) also tell us that we could not assign a negative meaning to *let alone*, either:

(5) a.   How did you get here, let alone find me?

    b.   The gaming community needs more people like you, let alone the atheist movement.

    c.   Todd would be able to go to work, let alone to an amusement park.

Based on a comprehensive corpus investigation, unlike Fillmore et al. (1988) and others, we suggest that the construction is a family of subordination that modifies a nonveridical (non-assertive) situation (Giannakidou2009). The antecedent clauses in (5) do not have a strong NPI licenser, but all depict a nonverdical situation. The coordination-like properties are inherited from the contextually-controlled Parallelism Condition betweenan ellipsis and its antecedent on all elliptical constructions (Hartman 2011).

(6)   Let-Alone Construction (↑*elliptical-cxt*)

    The let-alone construction, describing a situation s1, modifies a nonveridical situation s0 whose contextualscale is smaller than s1.

As implied by this, the let-alone XP is interpreted as denoting a situation referring to a discourse. This discourse-oriented approach places further contextual constraints on the construction with respect to the con-textual scale and prominence between the antecedent situation and the situation evoked from the construction,as supported from the unnaturalness of examples like the following:

(7) a.   # He was incapable of leading a country, let alone a team.

    b.   # The doctors doubted that he would ever play golf, let alone walk.

These are unacceptable since the first situation *s0* is more general in the given contextual scale than the secondsituation *s1* evoked from the LA CONSTRUCTION. Further, the former is less-prominent than the latter. This discourse-based direction, which is also hinted by seems to be much more feasible to account for its flexible distributions in real-life situations including dialogues.

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Question-Response Pairs with Subjective Predicates

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The part of an answer that corresponds to the wh-phrase of a constituent question is generally assumed to function as focus (Krifka & Musan 2012, Rooth 1992). In the following exchange, *John* is the focused phrase:

(1) Q: Who stole the cookie?

　　A: John stole the cookie.

Against this background, Kuroda (2005) argues that the particle *wa* in Japanese is not a topic marker but can be attached to a focused phrase.

In this presentation, I will show that the phenomenon discussed by Kuroda is sensitive to selection of the predicates involved and that the key to understanding this restriction is the notion of faultless disagreement, which has been explored extensively since Kölbel (2002) and Lasersohn (2005) in relation to predicates of personal taste and subjective predicates more generally.

Kuroda's arguments: Kuroda observes that (2b) is a possible response to (2a), and claims that the *wa*-marked subject here counts as a focused phrase.

(2) a. Dare-ga Nihon-ichi-no sakka-desu-ka?

　　　 'Who is the greatest writer of Japan?'

　　b. Natsume Soseki-wa, dare-ga nan-to itte-mo, Nihon-ichi-no sakka-desu.

　　　 'Natsume Soseki is the greatest writer of Japan, no matter who says what.'

Kuroda adds that the version without *dare-ga nan-to itte-mo* might be judged odd.

The Japanese version of (1) behaves differently, however. (3) cannot be construed as a proper answer to the Japanese version of the wh-question in (1).

(3) 　 [#]John-wa (dare-ga nan-to itte-mo) kukkii-o nusunda.

　　　 'John stole the cookie(, no matter who says what).'

What is responsible for the contrast?

Faultless disagreement and answerhood: I would like to suggest that (2b) is not an answer to (2a) in the technical sense and that a response like (2b) is made possible by the type of predicates used. In fact, Kuroda describes (2b) as a response, not as an answer.

Since Kölbel (2002) introduced the notion of faultless disagreement, various aspects of the predicates that allow it have been discussed. The typical case of faultless disagreement is found with predicates of personal taste, illustrated below.

(4) John: The chili is tasty.

　　Mary: No, the chili is not tasty.

In this exchange, both John and Mary are expressing a relative truth without being at fault. The situation is rather different in (5), where one of the interlocutors is wrong.

(5) John: Bill stole the cookie.

　　Mary: No, he didn't.

The difference comes from the fact that an objective predicate is used in (5), whereas that is not the case in (4), where perspectives of the interlocutors matter.

Returning to (2b), notice that *dare-ga nan-to itte-mo* 'no matter who says what' is a declaration that forestalls a possible disagreement. Adding it to an assertion involving an objective predicate as in (3), on the other hand, results in oddness in a rational discourse. I would also like to claim that Beltrama's (2018) suggestion that assertions with a subjective predicate have a different illocutionary status from assertions with an objective predicate applies to Q&A pairs as well. Subjective predicates easily allow a response to a wh-question that does not match the information structure configuration required by Q&A pairs. (2b) is simply a response, and the *wa*-marked subject there is a topic, after all.

Properties of subjective predicates: The predicate used in (2) displays other hallmarks of subjective predicates. For example, they invite what Ninan (2014) calls an acquaintance inference. The continuation in (6) sounds strange.

(6) The Eiffel Tower is beautiful, ??but I've never seen it.

To make it sound natural, hedges like *apparently* are needed for the first sentence. *Nihon-ichi-no sakka* behaves in the same way. The continuation in (7) sounds unnatural.

(7) Natsume Soseki-wa Nihon-ichi-no sakka-da. ??Watashi-wa yonda-koto nai-kedo.

'Natsume Soseki is the greatest writer of Japan. I haven't read his works, though.'

And again, adding hedges like *souda* 'it's said' at the end of the first sentence removes the unnaturalness.

Willer and Kennedy (2022) propose that acquaintance inference arises because assertions with a subjective predicate must be grounded in first-hand knowledge. Faultless disagreement is attributed to the leeway this experiential grounding leaves.

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Semantics of reduplicants

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Introduction. Japanese reduplicated words have been traditionally classified wrt their meanings (phonomimes, phenomimes, and psychomimes, Akita and Tsujimura 2016 etc.). This current study, however, shows that reduplicated words can also be classified into two morphosyntacic classes (Classes 1 and 2) wrt the criteria in (1). Zooming in on what we call Class 1 reduplication, we examine two distinct semantic effects involved in reduplication, and in so doing, we argue for the need to incorporate the event semantics to express the plurality in presupposition.

(1) a. whether it is repeated more than twice.
   b. whether the Rendaku of the reduplicant is suppressed.

(2) a. *kuru-{kuru/*guru}*
    phonomime for rotation
    'manner of rotation with little force'

   b. *sora-{*sora/zora}-sii*
    sky-sky-ADJ
    'pretentious'

(3) *guru-guru*
   phonomime for rotation
   'manner of rotation with force'

Data. (Obs 1) Subclasses. Class 1 consists of those that repeat exactly the same phonological material, whereas Class 2 allows additional phonological modifications (typically used with the adjectival ending), as in (2). Besides, Rendaku only applies to Class 2, as in (2)b, but not to Class 1 words, as in (2)a. This study only concerns the three robust properties of Class 1 expressions (the genuine reduplication) only, leaving the treatment of Class 2 expressions to future study.

(Obs 2) Voicing in Onset. When the onset consonant of the base has a distinction in VOICING, Class 1 distinguishes a certain aspect/manner of the depicted event. The relevant scale differs from base to base; *kuru-kuru* (2) and *guru-guru* (3), the voicing insinuates the speaker's recognition of power in rotation. As for *suru* and *zuru*, the voicing suggests that high friction is acknowledged. For descriptive purposes, in what follows, we abstractly say that the voiced instance is HEAVINESS/MIGHTINESS on the relevant scale specified by the base.
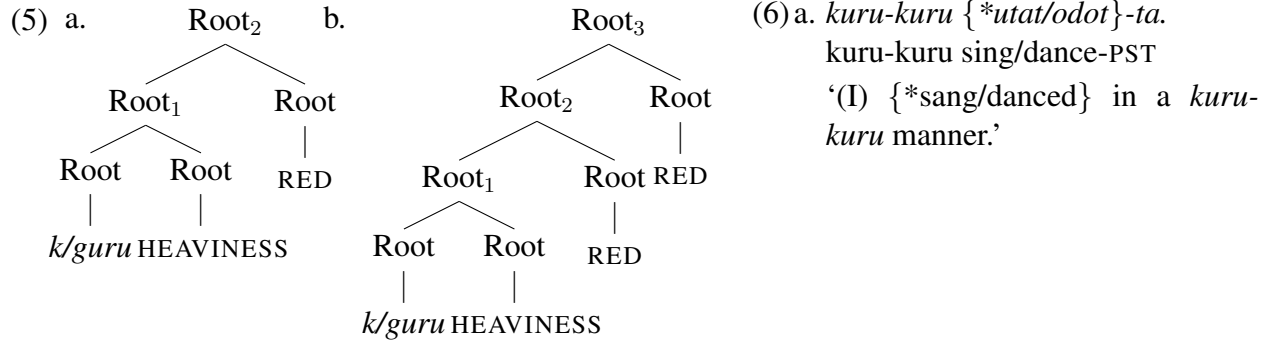
(Obs 3) Repetition. To express the excessive amount of repetition, more than two reduplicant can be pronounced: when *kuru-kuru* is repeated (= (4)a), it is suggested that the events of rotation are recognized more than twice. One can repeat the reduplicant as many times as one wishes (= (4)b):

(4) a. *kuru-kuru kuru-kuru*
    phonomime for rotation
    'manner of rotation with very little force'

   b. *kuru-kuru kuru-kuru kuru-kuru kuru-kuru*
    phonomime for rotation
    'manner of rotation with so little force'

Two remarks are in order. First, the Obs 2 & 3 can be put together (i.e., *guru-guru*), which emphasizes the excessiveness of the rotation with force. Second, the number of repetition does not sharply correspond to the number of rotating events, but it refers to the lower limit of the repetition. As in the table below, (2) can refer to any events as long as rotation is repeated. However, when the number of reduplicants is bigger than the number of referred events, the expression is illicit: neither (4)a nor (4)b is permitted in a situation where rotation takes place only twice.

sentence \ event	once	twice	five times	⋯	ten times
(2)	*	√	√		√
(4)a	*	*	√		√
(4)b	*	*	*		√

Analysis (Struture). We assume the structure in (5) for (2)a and (3), respectively. HEAVINESS determines whether the onset of the preceding Root is voiced or not (e.g., *k/guru* + [HEAVINESS:−] > *kuru*, and *k/guru* + [HEAVINESS:+] > *guru*), and decides whether it is positively or negatively heavy on the relevant scale. RED(uplicant) is supposed to be realized as a phonological sequence of the preceding sisternode (*kuru* + RED = *kuru-kuru*, and *kuru-kuru* + RED = *kuru-kuru kuru-kuru*), and introduces the presupposition as to how many times the referred events must take place.

(5) a.

Root$_2$

Root$_1$　　　Root

Root　Root　RED

k/guru HEAVINESS

b.

Root$_3$

Root$_2$　　　Root

Root$_1$　　Root RED

Root　Root　RED

k/guru HEAVINESS

(6) a. *kuru-kuru* {*utat/odot}-ta.
　　　kuru-kuru sing/dance-PST
　　　'(I) {*sang/danced} in a *kuru-kuru* manner.'

Analysis (Semantics). First, the semantics of the base specifies the category of the event to be combined. For example, in the case of *kuru-kuru*, the described event must be something that involves rotation, so it can be used with the verb *dance*, but not with *sing*. This condition differs from base to base. So it is reasonable to have it as a lexical specification, as in (7)a.

(7) a. (i) $[\![k/guru]\!] = \lambda e \in D_s.\,\lambda y \in D_e.\,\lambda d \in \mathbb{R}.\text{ROTATE}(y,d,e)$.
　　　(ii) ROTATE$(y,d,e) = e$ is an event of y's rotating with the intensity of d.
　b. (i) $[\![\text{HEAVINESS:+}]\!]^s = \lambda g \in D_{<s,<e,\mathbb{R}t>>}.\lambda e \in D_s.\lambda y \in D_e.\lambda\, d \in \{d : d \in \mathbb{R} \land d > s\}.\,g(y)(d)$.
　　　(ii) $[\![\text{HEAVINESS:+}]\!]^s = \lambda g \in D_{<s,<e,\mathbb{R}t>>}.\lambda e \in D_s.\lambda y \in D_e.\lambda\, \overline{d \in \{d : d \in \mathbb{R} \land d < s\}}.\,g(y)(d)$.
　c. $[\![\text{Root}_1]\!]^s = \lambda e \in D_s \backslash D_s^{SG}.\,\lambda y \in D_e.\,\lambda d \in \{d : d \in \mathbb{R} \land d \gtrless s\}.\text{ROTATE}(y,d,e)$.
　d. $[\![\text{Root}_2]\!]^s = \lambda e \in D_s \backslash D_s^{SG}\backslash D_s^2.\,\lambda y \in D_e.\,\lambda d \in \{d : d \in \mathbb{R} \land d \gtrless s\}.\text{ROTATE}(y,d,e)$.
　e. $[\![\text{Root}_3]\!]^s = \lambda e \in D_s \backslash D_s^{SG}\backslash D_s^2\backslash D_s^3.\,\lambda y \in D_e.\,\lambda d \in \{d : d \in \mathbb{R} \land d \gtrless s\}.\text{ROTATE}(y,d,e)$.

Second, HEAVINESS limits the relevant degree that is above or below the contextual standard s. For example, when it is positive, then the domain condition makes it to be the case that the only degrees that exceeds the threshold value are taken into consideration. Third, RED also restricts the domain condition, but this time for the event term. Based on the following notational rules in (8), the change in presupposition is expressed as in (7)c through e. The 'set-minus' operation as in (9) is truncation of a lattice structure, as shown by the figure above (Yamada, 2019).

(8) a. $D_s = \{e_1, e_2, \cdots, e_n, e_1 \oplus e_2, e_2 \oplus e_3, \cdots, e_1 \oplus e_2 \oplus e_3, \cdots\}$.
　b. $D_s^{SG} = \{e_1, e_2, \cdots, e_n\}$.
　c. $D_s^2 = \{e_1 \oplus e_2, e_2 \oplus e_3, \cdots, e_n \oplus e_1\}$.
　d. $D_s^3 = \{e_1 \oplus e_2 \oplus e_3, e_2 \oplus e_3 \oplus e_4, \cdots, e_n \oplus e_1 \oplus e_2\}$.
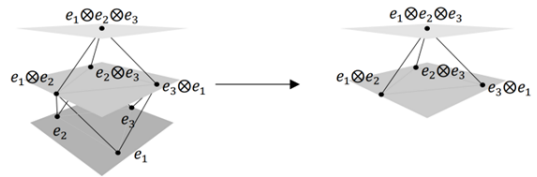
(9) $D_s \backslash D_s = \{e_1 \oplus e_2, e_2 \oplus e_3, \cdots, e_1 \oplus e_2 \oplus e_3, \cdots\}$.

Akita, Kimi, and Natsuko Tsujimura. 2016. "Mimetics." In *Handbook of Japanese lexicon and word formation*.● Yamada, Akitaka. 2019. "Syntax and semantics of aspectual constructions in Japanese: Defective T and habituality."