Modality in the nominal domain: The Chuj *yalnhej+wh* series

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1 Introduction

1.1 Context

Crosscategorial modality. Work on modality has traditionally focused on verb auxiliaries, but modal expressions outside the verbal domain have started to receive attention (Arregui et al. 2017). With this perspective, crosscategorial questions arise, for instance:

Q1 **Type of modality:** What's the range of modal flavors for DPs? To what extent do they parallel those in the verbal domain?

Q2 **Domain projection:** In the verbal domain, interpretation seems to correlate with syntactic position: epistemic modals seem to scope higher than circumstantial ones (Brennan 1993; Hacquard 2006) Does the syntactic position of modals outside the verbal domain affect their possible interpretations, too? If so, to what extent does domain projection work uniformly across categories?

Modal indefinites: Existential DPs that convey modal inferences.

- These items have received considerable attention (see Alonso-Ovalle and Menéndez-Benito 2015, and references therein) and are therefore well-suited to establish crosscategorial comparison.
- Yet, our understanding of the typological variation remains limited.

1.2 Today's goal

We explore "*yalnhej* DPs", a type of modal indefinite in Chuj, an understudied Mayan language. Why?

1. *Yalnhej* DPs exemplify new typological possibilities within the class of modal indefinites.
2. The behavior of *yalnhej* DPs has direct relevance to Q1 and Q2 above:
   - the modal flavor of *yalnhej*-DPs can be restricted by their syntactic position, with potential parallels to draw with modal auxiliaries.

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Yalnhej-DPs : preview

1. **Modal component:** (a) existential quantification over individuals, and (b) a modal component.

(1) [**Yalnhej tas** libro'-al] ix-s-man waj Xun.
YALNHEJ WHAT book-SUF PFV-A1S-buy-TV CLF Xun
'Xun bought *yalnhej what* book(s).' ≈ (a) & (b)

(a) Xun bought one or more books. (existential quantification)
(b) Xun *could* have bought *any* book or group of books. (random choice modality)

2. **Two modal flavors:** (a) (agent-oriented) random choice modality (as in (1)), or (b) epistemic modality:

(2) [**Yalnhej mach**] ix-chanhalw-i t'a k'inh.
YALNHEJ who PFV-dance-IV PREP party
'*Yalnhej who* danced at the party.'

(a) A person or group of people danced, (existential quantification)
(b) speaker doesn't know who danced, maybe all did. (epistemic modality)

3. **Syntax matters: subjects vs. objects:**
   - object of volitional verbs, as in (1), can convey random choice modality, or epistemic modality,
   - (non passive) subjects, as in (2) must convey epistemic modality.

4. **No upper bound:** e.g. (2) is *compatible* with all people having danced (and the speaker knowing that).

Main claims

i. *Yalnhej*-DPs are existential DPs that convey a free choice effect truth-conditionally.
   - In line with other Free Choice Items (FCIs) that convey random choice modality, like Spanish *uno cualquiera* (Alonso-Ovalle and Menéndez-Benito 2018), but unlike the modal component of other modal indefinites, like Spanish *algún* (Alonso-Ovalle and Menéndez-Benito 2010) or German *irgendein* (Kratzer and Shimoyama 2002), and possibly unlike the case of English *wh- ever* free relatives under their epistemic interpretation (von Fintel 2000).

ii. Hacquard 2006, 2009, 2010; Kratzer 2013: modal auxiliaries project their domains of quantification from an event/entity (a 'modal anchor'). Under Hacquard's proposal, this is an event variable, which can get different values in different positions, explaining the correlation between position and interpretation.
   - We propose the same is true for *yalnhej* DPs (in line with Alonso-Ovalle and Menéndez-Benito's analysis of *uno cualquiera*).
   - But *yalnhej*-DPs impose less restrictions than other items on their anchors, and so, can express more modal flavors.

iii. The lack of upper bound results in a modal component that is *compatible* with lack of ignorance or indiscriminate decision, unlike that of other modal indefinites.

Roadmap

Section 2: basic background on Chuj, section 3: data, section 4: analysis, section 5: conclusions.

2 Background on Chuj

2.1 Language family, data sources

Chuj is a Mayan language of the Q'anjob'alan sub-branch, spoken by ≈70,000 speakers in Guatemala and Mexico (Piedrasanta 2009, Buenrostro 2013).

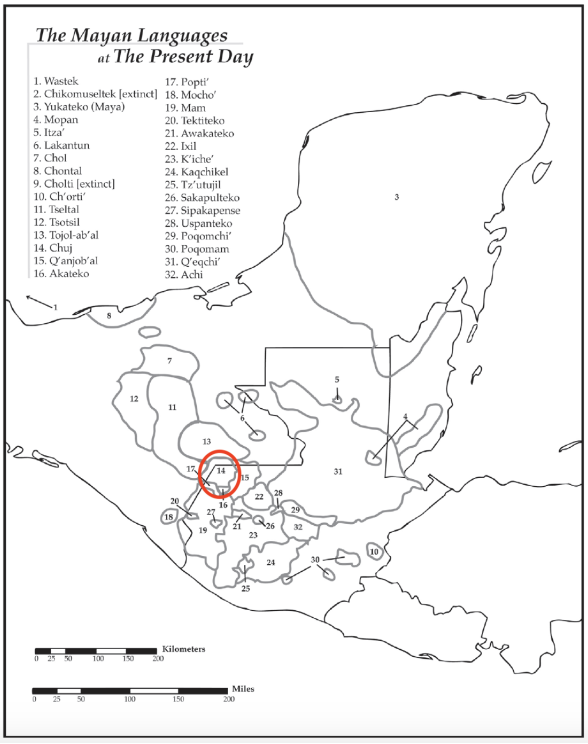

Figure 1: Current-day Mayan-speaking area (Law 2014, p. 25)

Data collection and methodology. Data come from two sources:

1. Original fieldwork conducted with speakers of the San Mateo Ixtatán variant of Chuj, collected in communities in Guatemala and Mexico, and with two consultants in Montreal.
2. A corpus of narratives (Mateo Pedro and Coon 2017).

We used a hypothesis-driven fieldwork methodology (Matthewson 2004, Davis et al. 2014).

2.2 Basics of Chuj DPs

Chuj is head-marking, exhibits no case morphology on nominals, and features basic VOS word order:[1]

(3) Ix-y-il [$_{Obj}$ winh icham] [$_{Subj}$ ix ix].
PFV-A3-see CLF elder CLF woman
Lit. 'Saw the elder the woman.' ('The woman saw the elder.')

[1]For grammatical descriptions of Chuj, see Hopkins 1967, 2021, Maxwell 1981, García Pablo and Domingo Pascual 2007, Buenrostro 2013, and Royer et al. to appear.

Fronting Despite being VOS, arguments in Chuj frequently appear preverbally.[2]

- Strong quantifiers are strongly preferred preverbally:

(4) a. [**Masanil** heb' winh winak] ix-il-an nok' tz'i' .
all PL CLF man PFV-see-AF CLF dog
'All of the men saw / cared for the dog.'
b. ??Ix-y-il nok' tz'i' [**masanil** heb' winh winak].
PFV-see-AF CLF dog all PL CLF man

- *Nhej* 'only' must appear preverbally:

(5) a. [Ha=**nhej** waj Xun] ix-in-il-an-i.
FOC-only CLF Xun PFV-B1S-see-AF-IV
'Only Xun saw me.'
b. *Ix-in-y-il [**nhej** waj Xun] .
PFV-B1S-A3-se only CLF Xun

- *Wh*-words in questions must appear preverbally:

(6) a. **Mach** ix-il-an winh icham.
who PFV-see-AF CLF elder
'Who saw the elder?'

b. **Tas** (libro'al) ix-a-man-a'.
what (book) PFV-A2S-buy-TV
'What (book) did you buy?'

c. **Mach** libro ix-a-man-a'.
which book PFV-A2S-buy-TV
'Which book did you buy?'

- No *wh-in situ*; this is also the case in other Mayan languages (see Coon et al. to appear):[3]

(7) a. *Ix-y-il winh icham **mach**.
PFV-A3-see CLF elder who
Intended: 'Who saw the elder?'

b. *Ix-a-man **tas** (libro'al).
PFV-A2S-buy what (book)
Intended: 'You bought what book?'

Number neutrality. *Wh*-items don't trigger a uniqueness presupposition:[4]

(8) a. Q: (6a) (Who saw the elder?):
b. A: Kixtup.
c. A: Kixtup, Xun, and Malin.

(9) a. Q: (6b) (What book did you buy?):
b. A: This book.
c. A: This book and that book.

(10) a. Q: (6c) (Which book did you buy?):
b. A: This book.
c. A: This book and that book.

[2] As in other Mayan languages (Aissen 2017), focused TRANSITIVE SUBJECTS trigger a particular type of verbal inflection glossed "AGENT FOCUS (AF)".

[3] Kotek and Erlewine (2019: 70-71) report the possibility of *wh-in situ* for echo questions, but we have not been able to corroborate these judgments. Note though, that certain *wh*-expressions can be used as *wh*-indefinites, as also reported by Kotek and Erlewine (2019) (see also discussion in Royer 2020). In such cases, *wh*-words are possible in postverbal positions.

[4] *Wh*-items can be pluralized with the suffix *-tak*, in which case a non-uniqueness presupposition arises (Royer 2020).

3 *Yalnhej* DPs

3.1 Morphosyntactic distribution

Wh-expressions combine with the complex morpheme *yalnhej* in order to create a **modal indefinite**; like other quantificational items, *yalnhej* DPs are typically preverbal:

(11) [**Yalnhej tas** libro'-al] ix-y-awtej ix Malin
YALNHEJ WHAT book-SUF PFV-A3-read CLF Malin
≈ 'Malin read *yalnhej what* book.'

Range of *wh*-expressions compatible with *yalnhej*-DPs Most *wh*-expressions can combine with *yalnhej* (see Royer 2020, §4.1.3, for relevant data), with the only exception being *tas yuj* 'why':

Table 1: List of *wh*-expressions in Chuj and corresponding *yalnhej* forms (Royer 2020)

wh-expression	form	modal DP
'what'	*tas* (+N)	✓ *yalnhej tas* (+N)
'who'	*mach*	✓ *yalnhej mach*
'which'	*mach* (+N)	✓ *yalnhej mach* (+N)
'where'	*b'aj/b'ajt'il/ajt'il*	✓ *yalnhej b'aj/b'ajt'il/ajt'il*
'when'	*b'ak'inh*	✓ *yalnhej b'ak'inh*
'how'	*tas* + light verb	✓ *yalnhej tas* + light verb
'how much'	*jantak*	✓ *yalnhej jantak*
'how many'	*jantak / jay*-NUM.CLF	✓ *yalnhej jay*-NUM.CLF
'why'	*tas yuj*	✗ *yalnhej tas yuj*

Number neutrality *Yalnhej* DPs pattern with *wh*-items in that, in the absence of plural marking on the *wh*-phrase, they are always number neutral (contrary to other Chuj DPs, which are not):

(12) [**yalnhej tas** libro'-al]
YALNHEJ WHAT book-SUF
⇝ '(a) book(s), any book'

(13) [**yalnhej mach**]
YALNHEJ WHO
⇝ 'a person/people, any person/people'

Apparent internal composition (Buenrostro 2009, Kotek and Erlewine 2019):

- *yal*, a modal which normally appears with aspect marking as an auxiliary:

  (14) Ix/tz/ol-**yal** ha-lolon w-et'ok.
  PFV/IPFV/PROSP-MODAL A2S-speak A1S-with
  'You were/are/will.be allowed to speak with me.'

- *nhej* "only":

  (15) [Ha=**nhej** waj Xun] ix-in-il-**an**-i.
  FOC-only CLF Xun PFV-B1S-see-AF-IV
  'Only Xun saw me.'

We leave the issue of internal compositionality open for now, glossing *yal+nhej* as a unit.

- NB: separating *yal* and *nhej* is very limited; only second position clitics can intervene:

(16) [Yal-**xo**-nhej b'aj] tz-k-il juntzanh y-ik mejikano.
YAL-ADV.NOW-NHEJ where IPFV-A1P-see some A3-by mexican
≈ 'Now we see Mexican things everywhere (anywhere we go).' (txt, CP010815)

- Moreover, contrary to its auxiliary use, *yal* is never inflected in *yalnhej* DPs.
- Like other quantifiers, *yalnhej-wh* DPs (in argument positions) must generally front overtly to a preverbal position, but the effect is less strong than in the case of *wh*-interrogatives or phrases containing *only*.

(17) a. [**Yalnhej tas**] ol-s-man waj Xun.
YALNHEJ what PROSP-A1S-buy-TV CLF Xun
'Xun will buy anything.'
b. ?Ol-s-man [**yalnhej tas**] waj Xun.
PROSP-A1S-buy YALNHEJ what CLF Xun

3.2 Interpretation: Subjects *vs.* objects

While typically fronted, the modal meaning of *yalnhej* DPs depends on their base position.

3.2.1 Subject position: Epistemic modality

Consider an instance of *yalnhej*-DP in subject position:

(18) [**Yalnhej mach**] ix-chanhalw-i t'a k'inh.
YALNHEJ who PFV-dance-IV PREP party
'*Yalnhej who* danced at the party.'
⇝ A person or group of people danced, speaker doesn't know who danced (maybe all did).

(19) COMMENT FROM CONSULTANT:
When you hear (18), you could conclude that just some people danced (and the speaker doesn't know who), or that everybody danced.

(20) a. Context 1 (ignorance): *Speaker was at a party; they know for a fact that not everyone danced, but couldn't really tell you who exactly danced.* (18) = ✓
b. Context 2 ("universal"): *Speaker was at a party; they know everyone danced.* (18) = ✓
c. Context 3 (¬ignorance, ¬universal): *Only Kixtup and Xun danced at the party.* (18) = ✗

Transitive subjects give rise to the same interpretations: (21) is felicitous in the two first contexts in (22).

(21) [**Yalnhej mach**] ix-chi'-an chi'b'ej t'a k'inh.
YALNHEJ who PFV-eat-AF meat PREP party
'*Yalnhej who* ate meat at the party.'
⇝ 'A person/some people (maybe all) ate meat at the party.'

(22) a. Context 1 (ignorance): *There was a town party, and as always, meat is served to everyone who wants it. Speakers knows that at least some people ate meat, but they couldn't tell who.* (21) = ✓
b. Context 2 ("universal"): *There was a town party; no one in town is a vegetarian, so speaker thinks everyone ate meat.* (21) = ✓
c. Context 3 (¬ignorance, ¬universal): *Speaker knows only Kixtup and Xun ate meat.* (21) = ✗

3.2.2 Object position: Epistemic modality & random choice modality

Ignorance. (23) can convey that the speaker does not know which dish Xun liked.

(23) [**Yalnhej tas** tekal] ix-s-nib'-ej waj Xun.
YALNHEJ what dish PFV-like-DTV CLF Xun
'Xun liked *yalnhej what* dish.'
⇝ 'Xun liked some dish or some group of dishes, maybe all dishes.'

(24) Context (ignorance): *Xun went to a food market and tried a few dishes. Speaker knows that Xun liked at least one dish (maybe more), but they're not sure which.* (23) = ✓

As was the case in subject position, interpretation is *compatible* with every NP satisfying the existential claim: what the hearer learns from (23) does not exclude that Xun liked all dishes.

- With *yalnhej* DPs, speakers can *pretend* to be ignorant (cf. teasing effects with *wh-ever*; von Fintel 2000):

(25) a. Context: *Your child bought lots of candy, even though you prohibit it. You ask him what he bought. He answers:*
b. [**Yalnhej tasi**] < ix-in-man-a' >
YALNHEJ what PFV-A1S-buy-TV
⇝ 'Something, and anything is a possibility.'

Random choice modality. In the object position of volitional transitive verbs, *yalnhej* DPs can also convey random choice modality (as well as epistemic modality).

- (26) can convey i) that Xun bought a book, and ii) that he, the agent of the event described, was indifferent about what book to buy.

(26) [**Yalnhej tas** libro'al] ix-s-man waj Xun.
YALNHEJ what book PFV-A3-buy CLF Xun
'Xun bought *yalnhej what* book(s).'
⇝ 'Xun bought (a) random book(s).'

(27) Contexts for (26)
a. Context 1 (random choice): *Xun wanted to read, but didn't have any specific book in mind. He went to the bookstore and bought one at random.* (26) = ✓
b. Context 2 (¬random choice): *Xun wanted to read a specific book, the Popol Wuj, went to the bookstore and bought it.* (26) = ✗

- Random choice *yalnhej*-DPs are also compatible with all individuals satisfying the existential claim:

(28) Context (buying all books): *Xun is very wealthy, and a bit insane. He goes to a bookstore, and he starts buying books indiscriminately, to the point where he ends up buying all books.* (26) = ✓

With non-volitional predicates, only epistemic interpretations are possible:

(29) [**Yalnhej tas** tekal] ix-s-nib'-ej waj Xun.
YALNHEJ what dish PFV-like-DTV CLF Xun
'Xun liked *yalnhej what* dish.'
'Xun liked some dish(es) or other.' / not: 'Xun liked a dish at random.'

3.3 No maximality

The interpretation of *yalnhej*-DPs, and the fact that they are impossible with *why*, is reminiscent of English *wh*-ever free relatives:

(30) {what/who/which/where/when/how/*why}-ever

Question: Could *yalnhej*-DPs = Chuj equivalent of *wh*-ever in English (Royer 2020)?

- No, unlike *wh*-ever free relatives (Jacobson 1995), *yalnhej*-DPs do not convey maximality:

(31) [**Yalnhej** tas yamk'ab'il] ix-s-yam ix.
YALNHEJ what tool PFV-A3-grab she
'She grabbed *yalnhej what* tool(s).'
⇝ 'She grabbed some tool(s) at random.'
Not: 'She randomly grabbed **the** tools.'

(32) Context (no maximality): *There are ten tools in a box in front of Malin. A hammer, a screwdriver, etc. Malin doesn't need one in particular. She grabs only three at random.* (31) = ✓

(33) Given the context in (32).
She grabbed whatever tools were in the toolbox.

- Also notice that, unlike *wh*-ever free relatives (Jacobson 1995), *yalnhej*-DPs do not require relativization.[5]

(34) She grabbed whatever tools *(were in the toolbox).

[5]That being said, *yalnhej + wh* DPs can be relativized to form 'free choice free relatives' (Royer 2020); in such cases, they still do not trigger a maximality presupposition:

(i) Context: *Telex cooked 10 meals yesterday, five of which Xuwan tasted. The speaker doesn't know what meals Telex cooked.* (ii) = ✓

(ii) [**Yalnhej tas** [$_{RC}$ ix-s-b'o' ix Telex ewi]], ix-y-ab'lej ix Xuwan.
YALNHEJ what PFV-A3-make CLF Telex yesterday PFV-A3-eat CLF Xuwan
⇝ 'Xuwan ate *yalnhej what* that Telex made yesterday, but I don't know what exactly.'

3.4 Status of modal component

The status of the modal component of other modal DPs differs (see Alonso-Ovalle and Royer to appear):

- In some cases, it is an implicature (*algún*, *irgendein*):

(35) Si Juan compró **algún** libro, hablaré con su padre.
if Juan bought ALGÚN book, I will talk to his father
'If Juan bought a book / books, I will talk to his father.'/ (Spanish)
not: 'If Juan bought a book and I do not know which one, I will talk to his father.'

(36) Hans hat *nie* **irgend**-ein Buch gekauft.
Hans has never irgend-a book bought.
≈ 'Hans never bought any book.' (German: Buccola and Haida 2017)

- In other cases, it is truth-conditional (*uno cualquiera*).

(37) Nadie cogió un libro **cualquiera**.
no.one grabbed a book CUALQUIERA
≈ 'Nobody grabbed a book at random.' (Spanish)

In the case of *wh-ever* phrases: the modal component projects like a presupposition when epistemic, but not when random choice (von Fintel 2000) (see Condoravdi (2015) for doubts about presuppositional status).

Yalnhej DPs' modal component seems to be truth-conditional, whether epistemic or random choice.

3.4.1 Embedded random choice

The random choice modal component contributed by *yalnhej* DPs in object position survives embedding under negation (38a), within the antecedent of conditionals (38b).

(38) Context: *You're playing a board game, and as part of the rules you must first pick one card at random (with your eyes closed). Some cards give you a clear advantage, others put you at disadvantage. If you don't respect this rule, you're cheating …*

a. Negation: *…Xun didn't close his eyes and selected a specific card, that of course, gave him an advantage. I ask you, how did Xun cheat?*
Man **yalnhej tas** karta-ok laj ix-s-yam winh.
NEG YALNHEJ what card-IRR NEG PFV-A3-grab CLF
'He didn't grab *yalnhej what* card.'
⇝ 'He didn't grab a card at random.'

b. Conditional: *… You're explaining how not to cheat, using Xun as an example player*
Tato **yalnhej tas** karta'-il ix-s-yam waj Xun, wach' winh.
if YALNHEJ what card-SUF PFV-A3-grab CLF Xun, good CLF
'If Xun grabs *yalnhej what* card, he's playing well.'
⇝ 'If Xun grabs a card at random, he's playing well.'

3.4.2 Embedded ignorance interpretations

The epistemic modal component also survives embedding under negation:

(39) a. Maj s-nib'-ej laj waj Xun [**yalnhej tas** wa'el-al].
NEG.PFV A3-like-DTV NEG CLF Xun YALNHEJ what dish-SUF
'Xun didn't like *yalnhej what* food.'
'It's not the case that Xun liked some dish and I don't know what dish that is.'

b. Ha tas maj s-cha laj s-k'o'ol masanil chi', ha-chi' ix-y-ab'l-ej winh.
FOC what NEG.PFV A3-like NEG A3-stomach all DEM FOC-DEM PFV-A3-eat-DTV PRON
'The dish that everybody didn't like, that's the one he ate.'

And conditionals:

(40) Context: *You're a firefighter, so you know how to stop fire. If you know where the fire is coming from, you don't get worried. You only get worried if you do not know where the fire is coming from.*
Tato tz'-och k'ak [t'a **yalnhej** b'ajt'i'il], tz-in-och hin-k'o'ol-al y-u'uj.
If PFV-enter fire PREP YALNHEJ where IPFV-A1S-enter A3-stomach-SUF A3-for
'If fire starts in *yalnhej where*, I get worried.'
$\rightsquigarrow$ 'If fire starts in some place (and I don't where that place is), I get worried.'

4 A modal quantifier

4.1 Existential quantification + a free choice component

We propose that *yalnhej*-DPs convey as part of their truth-conditions

i) a non-modal *existential* claim, and

ii) a modal component that hardwires a free choice effect.

- We build our analysis of *yalnhej*-DPs on the analysis of the Spanish random choice modal indefinite *uno cualquiera* presented in Alonso-Ovalle and Menéndez-Benito 2018.

(41) $[\![\text{[yalnhej wh-NP] } e_1]\!]^g =$

$$\lambda P_{\langle e,\langle v,st\rangle\rangle}.\lambda e.\lambda w.\ \underbrace{\exists x \left[\begin{array}{l} P_w(x)(e)\ \& \\ [\![\text{wh-NP}]\!](x)(w) \end{array} \right]}_{\text{existential component}}\ \&\ \underbrace{\forall y \left[\begin{array}{l} [\![\text{wh-NP}]\!](y)(w) \rightarrow \\ \exists w' \in f(\mathbf{e_1}) \exists e' [e' \approx e\ \&\ P_{w'}(y)(e')] \end{array} \right]}_{\text{modal component}}$$

- In (41), we assume that VPs denote relations between individuals, events and worlds (have type $\langle e, \langle v, st\rangle\rangle$, using v as the type of events),
- we give *wh*-NPs a predicative type ($\langle e, st\rangle$), and
- that the extension of *wh*-NPs that are not inflected in the plural is closed under sum formation.

The existential component

The existential claim conveys what a non-modal existential quantifier would convey: that there is at least one individual x in the extension of the *wh*-NP involved in the relation expressed by the VP.

The modal component: modal projection from an event

The modal component hardwires a free choice effect: it conveys, roughly, that every individual in the extension of the *wh*-phrase is involved in the relation expressed by the VP in some world in a domain of accessible worlds.

We hypothesize that the set of accessible worlds (the modal domain of *yalnhej*-DPs) is determined in much the same way it is determined for modal auxiliaries.

- Hacquard (2006, 2009, 2011); Kratzer (2013): modal auxiliaries can project their domain of quantification from an eventuality (their 'modal anchor').

We assume that *yalnhej*-DPs project their modal domain out of the value of an event variable, via a domain fixing function f that maps events to sets of possible worlds.

- Alonso-Ovalle and Menéndez-Benito (2018): the random choice modal indefinite *uno cualquiera* projects its modal domain from the value of an event variable.

The modal flavor of *yalnhej*-DPs depends on which type of event their modal domain projects from. Possible anchors and projection modes differ depending on syntactic position.

4.2 Random choice modality

Alonso-Ovalle and Menéndez-Benito 2018: random choice interpretations correspond to modal projection from the type of event described by the VP. In (42), with explicit quantification and abstraction over event and world variables, the modal anchor of the *yalnhej* DP is co-bound with the event argument of the VP.

(42) a. [**Yalnhej tas** libro'al] ix-s-man waj Xun.
YALNHEJ what book PFV-A3-buy CLF Xun
'Xun bought *yalnhej what* book(s).'
⇝ 'Xun bought a random book / group of books.'

b. LF: $\lambda w_1\ \exists_e$ Xun [Agent^0 [$_{\text{VP}}$ $\lambda \mathbf{e_1}$ [[[yalnhej what book $\mathbf{e_1}$] λx_1 bought t_1] $\mathbf{e_1}$] w_1]] cf. (42a)

- In (42), *yalnhej what book*, when combined with its modal anchor, operates over the relation in (43), and returns a relation between events and worlds (type $\langle v, st\rangle$). After saturation with an event and a world variable, and after abstraction over the event variable, we get a property of events, which combines with Agent^0 via Event Identification (Kratzer 1996).

(43) $[\![\lambda x_1 \text{ bought } t_1]\!] = \lambda x_e \lambda e_v \lambda w_s .\text{BUY}_w(x)(e)$

Ignoring temporal and aspectual information, and assuming external Existential Closure over the event argument, (42b) denotes the proposition in (44).

(44) $$[\![(42b)]\!] = \lambda w.\exists \mathbf{e}\left[\underbrace{\exists x\left[\begin{array}{l}\text{BUY}_w(x)(\mathbf{e})\ \&\\ {}^*\text{BOOK}_w(x)\ \&\\ \text{AGENT}(\text{XUN})(\mathbf{e})\end{array}\right]}_{\text{existential component}}\ \&\ \underbrace{\forall y\left[\begin{array}{l}{}^*\text{BOOK}_w(y) \rightarrow\\ \exists w' \in f(\mathbf{e})\exists e'[e' \approx e\ \&\ \text{BUY}_{w'}(y)(e')]\end{array}\right]}_{\text{modal component}}\right]$$

The proposition in (44) conveys

(i) the existence of an event **e** of buying one or more books by Xun, and

(ii) information about a set of possibilities that project from **e**.

Alonso-Ovalle and Menéndez-Benito (2018): any volitional event e is caused by a decision to act on the part of its agent (d_e), that d_e is part of the preparatory stage of e (see Grano 2011), and that a decision to act d_e by agent a establishes a goal, which is fulfilled by events performed by a.

We follow Alonso-Ovalle and Menéndez-Benito 2018 in assuming that when if e is a volitional event with no informational content, $f(e)$ yields a set of worlds that have a duplicate of d_e and where the goal established by d_e is fulfilled

> (by an event with the same spatiotemporal location as e, in (44) "$\approx$" conveys that e and e' have the same spatiotemporal location, we omit the possible requirement that e' shares other event participants with e.)

The modal component in (44) gives information about the actual decision: it looks at the worlds compatible with Xun's actual decision where that decision is fulfilled and conveys that for any book or groups of books y, there is a world compatible with Xun's actual decision where that decision is fulfilled and y is bought. For this to be the case, Xun's actual decision must be one that does not discriminate between types of books (see fig. 2: a specific decision cannot be fulfilled by different outcomes.)

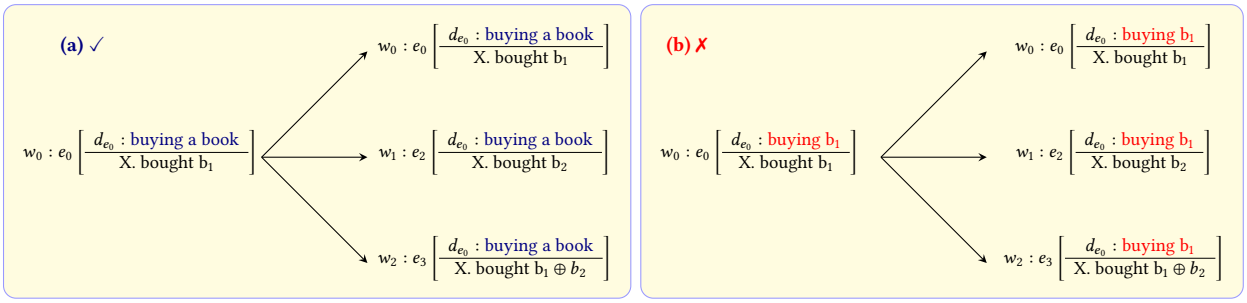

Figure 2: Information contributed by the modal component, assuming ${}^*\text{BOOK}_w = \{b_1, b_2, b_1 \oplus b_2\}$. Actual decisions consistent (a) and inconsistent (b) with modal component.

This captures the **random choice** interpretation: the sentence in (42a) excludes the possibility that the agent decided to only buy one particular book or one particular group of books.

> Unless he decides to buy them all. We will get back to this point later.

Volitionality

Recall that *yalnhej*-DPs as objects of non-volitional verbs only have an epistemic interpretation.

(45) a. [**Yalnhej tas** tekal] ix-s-nib'-ej waj Xun.
YALNHEJ what dish PFV-like-DTV CLF Xun
'Xun liked *yalnhej what* dish(es).'
$\rightsquigarrow$ 'Xun liked some dish or group of dishes, I don't know which one, maybe all.'
Not: 'Xun liked a dish at random.' (repeated from (23))

b. LF: $\lambda w_1\ \exists_e$ Xun $[\text{v}^0\ [_{\text{VP}}\ \lambda \mathbf{e_1}\ [[[\text{yalnhej what dish } \mathbf{e_1}]\ \lambda x_1\ \textbf{liked}\ t_1]\ \mathbf{e_1}]\ w_1]]$

With non-volitional verbs, f cannot project from e from the agent's decision if the anchor is co-bound with the event argument, since e does not contain a decision subevent (i.e. e should be volitional.)

4.3 Epistemic interpretations

We hypothesize that *yalnhej* DPs have a second option: to project their domain from the assertion made by the speaker of the utterance, as suggested in Hacquard 2006 for non-root auxiliaries.

To illustrate, we assume that event variables can be restricted so that they can only range over the assertion:

(46) $[\![\textsc{assertion}]\!]^c = \lambda e_v : e \text{ is the assertion made by the speaker of } c.\ e$

When the event argument of the *yalnhej* DP is restricted to the assertion, it cannot be cobound with the event argument of the VP, as in (47). In (47), $\textsc{assertion}(e_1)$ requires e_1 to be an assertion, but for e_1 to be in the relation denoted by *like*, e_1 cannot be an assertion.

(47) LF: $\lambda w_1\ \exists_e$ [Xun [v^0 [$_{VP}$ $\lambda \mathbf{e_1}$ [[yalnhej what dish $\textsc{assertion}(\mathbf{e_1})$] λx_1 liked t_1] $\mathbf{e_1}$] w_1]] ✗

The event argument can be left free, in which case f *can* project from the assertion.

(48) LF: $\lambda w_1\ \exists_e$ [Xun [v^0 [$_{VP}$ $\lambda \mathbf{e_1}$ [[yalnhej what dish $\textsc{assertion}(\mathbf{e_2})$] λx_1 liked t_1] $\mathbf{e_1}$] w_1]] ✓

When f projects from the assertion (and, more generally, from an eventuality with informational content) we assume that it yields the set of worlds compatible with the speaker's beliefs (more generally, the holder of the information state) (cf. Hacquard 2006).

(49) $$[\![(45b)]\!] = \lambda w.\exists \mathbf{e}\left[\underbrace{\exists x\left[\begin{array}{l}\textsc{like}_w(x)(\mathbf{e})\ \&\\ {}^*\textsc{dish}_w(x)\ \&\\ \textsc{experiencer}(\textsc{xun})(\mathbf{e})\end{array}\right]}_{\text{existential component}}\ \&\ \underbrace{\forall y\left[\begin{array}{l}{}^*\textsc{dish}_w(y) \rightarrow\\ \exists w' \in f(\mathbf{e}_{\textsc{assertion}})\\ \exists e'[e' \approx e\ \&\ \textsc{like}_{w'}(y)(e')]\end{array}\right]}_{\text{modal component}}\right]$$

The modal component is *compatible* with situations where, as far as the speaker believes, Xun might have liked any dish or group of dishes, and *incompatible* with situations where the speaker knows that Xun didn't like all dishes and knows which dish or groups of dishes Xun liked (see figure 3).

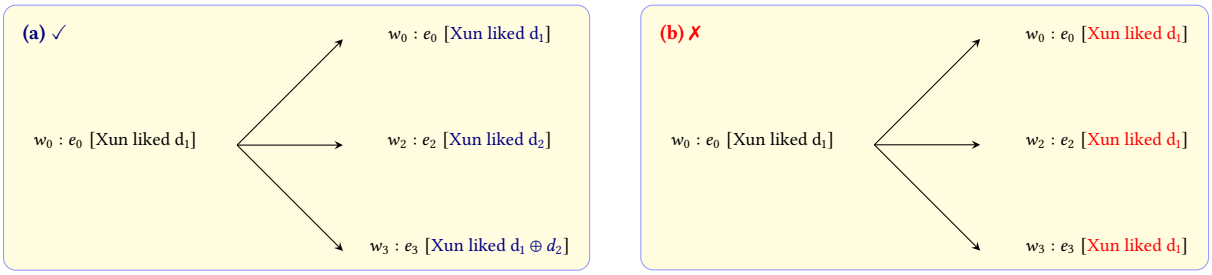

Figure 3: Speaker belief states (a) compatible, (b) incompatible with epistemic content.

4.3.1 Lack of random choice interpretation in subject position

When *yalnhej* DPs are in **subject position**, we assume their event anchors are too high to be cobound with the VP event argument and that, therefore, the modal anchor is free, and restricted to refer to the assertion—in cases where *yalnhej*-DPs are not embedded under external modals.

(50) a. [**Yalnhej mach**] ix-chanhalw-i.
YALNHEJ who PFV-dance-IV
'*Yalnhej who* danced.'
⇝ 'A person or group of people danced, speaker doesn't know who danced, maybe all did.'
b. LF: $\lambda w_1\, \exists_e$ [yalnhej what person $\textsc{assertion}(e_2)$] λ_1 [t_1 [Agent^0 [$_{\text{VP}}$ λe_1 [danced] e_1] w_1]]

(51) $[\![(50b)]\!] = \lambda w.\exists \mathbf{e}\Big[\underbrace{\exists x\left[\begin{array}{l}\textsc{dance}_w(x)(\mathbf{e})\ \&\\ {}^*\textsc{people}_w(x)\&\\ \textsc{agent}(x)(\mathbf{e})\end{array}\right]}_{\text{existential component}}\ \&\ \underbrace{\forall y\left[\begin{array}{l}{}^*\textsc{people}_w(y)\rightarrow\\ \exists w'\in f(\mathbf{e}_{\textsc{assertion}})\\ \exists e'[e'\approx e\ \&\ \textsc{agent}(y)(e)\ \&\ \textsc{dance}_{w'}(y)(e')]\end{array}\right]}_{\text{modal component}}\Big]$

4.3.2 No upper bound

The epistemic modal component is compatible with different degrees of ignorance: complete ignorance ((a) on figure 4 below), partial ignorance ((b) on figure 4), no-ignorance if all individuals satisfy existential claim ((c) on figure 4).

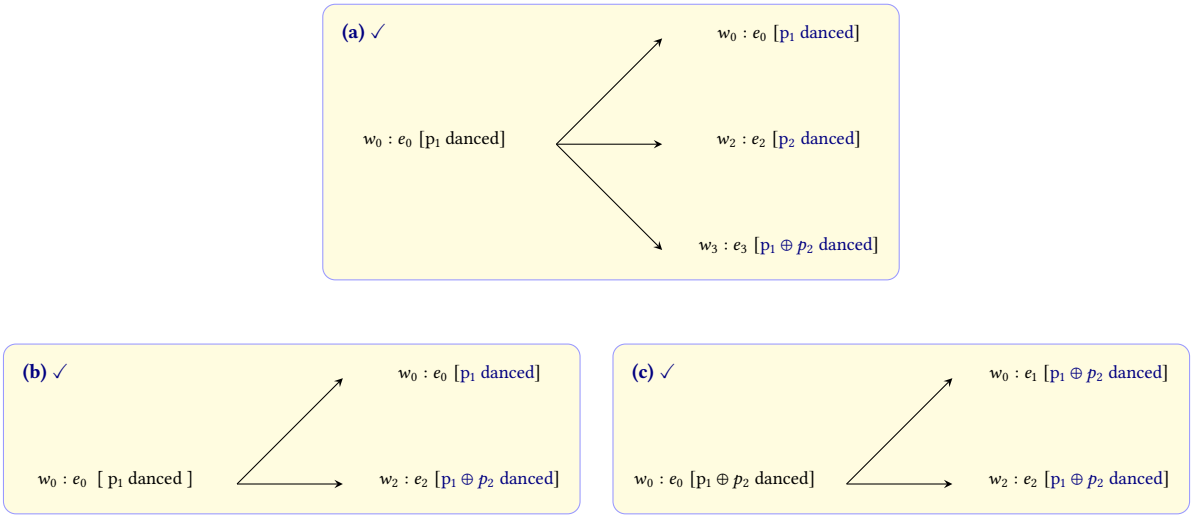

Figure 4: Degrees of ignorance

This captures (52):

(52) COMMENT FROM CONSULTANT:
When you hear (50b), you could conclude that just some people danced (and the speaker doesn't know who), or that everybody danced.

Recall: the random choice interpretation is also compatible with the agent making a decision to buy *all* books.

(53) Context: *Xun is very wealthy, and a bit insane. He goes to a bookstore, and he starts buying books indiscriminately, to the point where he ends up buying all books.*
[**Yalnhej tas** libro'-al] ix-s-man waj Xun.
YALNHEJ what book-SUF PFV-A3-buy CLF Xun
'Xun bought *yalnhej what* book(s).'
⇝ 'Xun bought any book (there was).' (repeated from (28))

4.3.3 Correlates of high type

Fronting. Recall that *yalnhej*-DPs pattern with *wh*-phrases and other quantificational elements in that they front overtly.

(54) Examples repeated from (17)
a. [**Yalnhej tas**] ol-s-man waj Xun.
YALNHEJ what PROSP-A1S-buy-TV CLF Xun
'Xun will buy anything.'
b. ?Ol-s-man [**yalnhej tas**] waj Xun.
PROSP-A1S-buy YALNHEJ what CLF Xun

We take the fronting to correlate with the high, quantificational type of *yalnhej*-DPs .

No predicative uses.

(55) a. ***Yalnhej tas** anima'-il waj Xun.
YALNHEJ what person-SUF CLF Xun
b. ***Yalnhej b'ajt'il** jun chonhab' tik.
YALNHEJ where one village DEM

According to (41), *yalnhej* DPs operate over functions of type $\langle e, \langle v, st\rangle\rangle$. We assume that this blocks them from **copular sentences** (for arguments against type shifting traces to predicative type, see Poole (2017))

4.4 Prediction: 'harmonic' interpretations

If other modal expressions project their possibilities from an anchor, when *yalnhej*-DPs are embedded under external modals, their modal anchors could be coreferential to those of the external modals, deriving interpretations where the external modal and *yalnhej*-DPs share a modal domain ('harmonic interpretations', Alonso-Ovalle and Menéndez-Benito 2018)

The prediction is borne out both for modal expressions with volitional anchors and for those with non-volitional anchors (doxastic or epistemic attitudes).

4.4.1 Imperatives

The imperative sentence in (56), for instance, can convey that the addressee must grab a card at random.

(56) [**Yal-nhej tas** karta'-il] tz-a-yam-a'!
YALNEHJ what card-SUF IPFV-A2S-grab-TV
'Grab *yalnhej what* card(s)!' Possible interpretation: 'Grab a card at random!'

Assuming a modal analysis for the imperative, and assuming that the imperative modal projects from an anchor, this interpretation is derived from letting the *yalhnej* DP project its modal domain locally:

(57) LF: $\lambda w_1 \, \Box_{e_2} \exists_e$ [you [Agent^0 [$_{\text{VP}}$ $\lambda \mathbf{e}_1$ [[yalnhej what card NP $\mathbf{e}_1$] λx_1 grab t_1] $\mathbf{e}_1$] w_1]]

Assuming projection for the *yalnhej* DP from the event argument as in the random choice cases discussed above (and assuming that e_2 refers to the ordering event) the predicted truth-conditions convey that in every permitted world, the addressee makes an indiscriminate decision to grab a card—any card.

(58) Embedded random choice interpretation
$[\![(57)]\!] =$

$$\lambda w.\forall w' \in f_{\text{imperative}}(\mathbf{e}_2)\exists \mathbf{e}\left[\underbrace{\exists x\left[\begin{array}{l}\text{GRAB}_{w'}(x)(\mathbf{e}) \,\&\\ {}^*\text{CARD}_{w'}(x) \,\&\\ \text{AGENT}(\text{XUN})(\mathbf{e})\end{array}\right]}_{\text{existential component}} \,\&\, \underbrace{\forall y\left[\begin{array}{l}{}^*\text{CARD}_{w'}(y) \rightarrow\\ \exists w'' \in f(\mathbf{e})\\ \exists e'[e' \approx e \,\&\, \text{GRAB}_{w''}(y)(e')]\end{array}\right]}_{\text{modal component}}\right]$$

The same sentence can convey a second interpretation (what Alonso-Ovalle and Menéndez-Benito (2018) called a 'harmonic' interpretation). Under this interpretation, the sentence conveys that the addressee is required to grab a card, and that any card is a permitted possibility for the speaker—the addressee does not need to grab a card at random.

(59) Context (harmonic): *At the beginning of a boardgame, players must select any card they want from the game. It's the first time you play, and you ask me what you need to do.* I tell you (56).

- This type of harmonic interpretation is also detected with *uno cualquiera*: (60) is compatible with the speaker not wanting the addressee to pick a book at random.

(60) ¡Coge un libro cualquiera!
grab a book CUALQUIERA
'Grab a book, any book!' (cf. Alonso-Ovalle and Menéndez-Benito (2018))

Alonso-Ovalle and Menéndez-Benito (2018) derive this interpretation by letting *uno cualquiera* project from a modal anchor coindexed to the modal anchor of the imperative, as *yalnhej card* does in (61).

(61) LF: $\lambda w_1 \, \Box_{\mathbf{e}_2} \exists_e$ [you [Agent^0 [$_{\text{VP}}$ λe_1 [[yalnhej what card NP $\mathbf{e}_2$] λx_1 grab t_1] e_1] w_1]]

They assume that the modal anchor of the operator picks up an order (cf. Hacquard 2006 on performative modals) and that *uno cualquiera* projects its modal domain from that order by looking at the worlds consistent with the decision leading to that order where the order is obeyed. Following their approach, we can assume that the modal component *yalnhej card* in (61) invokes the worlds where the decision leading to the order is fulfilled.

The resulting truth-conditions convey (i) that the addressee is required to pick a card, and (ii) that picking any card is compatible with the order. There is no requirement to pick a card at random.

(62) 'Harmonic' interpretation: imperatives
$[\![(61)]\!] =$

$$\lambda w.\forall w' \in f_{\text{imperative}}(\mathbf{e_2})\exists \mathbf{e}\left[\underbrace{\exists x\left[\begin{array}{l}\textsc{grab}_{w'}(x)(\mathbf{e})\ \&\\ {}^{*}\textsc{card}_{w'}(x)\ \&\\ \textsc{agent}(\textsc{xun})(\mathbf{e})\end{array}\right]}_{\text{existential component}}\ \&\ \underbrace{\forall y\left[\begin{array}{l}{}^{*}\textsc{card}_{w'}(y)\rightarrow\\ \exists w' \in f(\mathbf{e_2})\\ \exists e'[e' \approx e\ \&\ \textsc{grab}_{w'}(y)(e')]\end{array}\right]}_{\text{modal component}}\right]$$

4.4.2 Epistemic harmonic interpretations

(63) Context: *Xun thinks that some people danced at the party, but he doesn't know exactly who. As far as he can tell, it could be anyone.*
Tz-s-na' waj Xun to [**yalnhej mach**] ix-chanhalw-i t'a k'inh.
PFV-A3-believe CLF Xun COMP YALNHEJ who PFV-dance-IV PREP party
'Xun believes that a person or group of people danced, any person is a possibility for Xun.'

Assuming projection of the attitude's modality from an anchor (Kratzer 2006), these can be treated as cases where the anchor of *yalnhej* is coreferential to the attitude's anchor. In these cases, f could project from the modal anchor of the *yalnhej DP* the set of worlds consistent with Xun's belief state.

(64) a. LF:
λw_2 Xun believes$_{w_2}$ (e_2) λw_1 $\exists_e$ [yalnhej what person (e_2)] λ_1 [t_1 [Agent^0 [$_{\text{VP}}$ λe_1 [danced] e_1] w_1]]

b. $[\![(64a)]\!] =$

$$\lambda w.\forall w' \in f_{\text{belief}}(\mathbf{e_2})\exists \mathbf{e}\left[\underbrace{\exists x\left[\begin{array}{l}\textsc{dance}_{w'}(x)(\mathbf{e})\ \&\\ {}^{*}\textsc{people}_{w'}(x)\ \&\\ \textsc{agent}(x)(\mathbf{e})\end{array}\right]}_{\text{existential component}}\ \&\ \underbrace{\forall y\left[\begin{array}{l}{}^{*}\textsc{people}_{w'}(y)\rightarrow\\ \exists w'' \in f(\mathbf{e_2})\\ \exists e'[e' \approx e\ \&\ \textsc{ag}(y)(e)\ \&\ \textsc{d}_{w''}(y)(e')]\end{array}\right]}_{\text{modal component}}\right]$$

- A possibility not attested for *uno cualquiera* (which cannot have epistemic interpretations in unembedded contexts, either) (Alonso-Ovalle and Menéndez-Benito 2018):

(65) Juan tiene que haber ido a ver una película cualquiera.
Juan must that have gone to see UNA film CUALQUIERA.
Not: 'Juan must have gone to watch a movie, any movie is a possibility for me.'

5 To conclude

We started the talk with two general questions about the crosscategorial nature of modality:

Q1 **Type of modality** What modal flavors do DPs express?

Q2 **Domain projection:** Does the syntactic position of non-verbal modals affect their possible interpretations? If so, to what extent does the projection of modal domains work uniformly across categories?

Re. Q1: In the absence of external modals, the modal component of *yalnhej*-DPs can be epistemic or random choice. These modal flavors are common within the class of modal indefinites, but *yalnhej*-DPs contrast with other modal indefinites in that the modal component seems to be truth-conditional.

- The epistemic interpretation of *yalnhej*-DPs has parallels in the verbal domain. Are there parallels of the random choice modal flavor outside the nominal domain? It doesn't seem to be the case for modal auxiliaries. Potential parallel types of low modal elements that track agent goals in the domain of main verbs: defeasible causatives (Martin and Schäffer 2012; Martin and Schäfer 2017).

Re. Q2: The type of modal flavor expressed by *yalnhej*-DPs correlates with their syntactic position. We captured this by assuming, in line with recent proposals for modal auxiliaries, that *yalnhej*-DPs project their modal domains from the value of an event argument.

Finally, *yalnhej*-DPs contrast with other modal indefinites in that the existential claim that they express does not convey an upper bound. This typological possibility has theoretical significance. In Chierchia 2013, the modal component of modal indefinites (derived via grammatical strengthening) is the consequence of a modal operator intervening to prevent the derivation of a contradictory implicature that involves an upper bound. *Yalnhej*-DPs convey a modal component, but no upper bound.

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