

Disjunction as Alternatives: Evidence from Phrasal Comparatives

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1. Approaches to disjunction

There are two main approaches to the semantics of natural language disjunction.¹ The first holds that disjunction can be identified with the Boolean join of propositional logic (e.g. Partee & Rooth 1983, Winter 2002, Fox 2007). The second proposes to treat disjunction as alternative-denoting (e.g. Simons 2005, Alonso-Ovalle 2006, Aloni 2007). These two broad approaches are sketched out in (1) for propositional disjunction.

(1) a. *The traditional Boolean approach:*

$$\llbracket P \text{ or } Q \rrbracket = \llbracket P \rrbracket \vee \llbracket Q \rrbracket$$

b. *The alternative approach:*

$$\llbracket P \text{ or } Q \rrbracket = \{ \llbracket P \rrbracket, \llbracket Q \rrbracket \}$$

The debate between the two approaches has hinged on several empirical phenomena, including free choice permission and the fact that disjunctions can take free upward scope. In this paper, I consider these two approaches from the perspective of narrow scope *ba* disjunction in Tiwa, a Tibeto-Burman language of northeast India, and present a novel test that differentiates the two. This test concerns the behavior of disjunctions of names, which on a Boolean account must be treated as generalized quantifiers. I show from their behavior in unreduced phrasal comparatives that *ba* disjunctions of names do not pattern with generalized quantifiers, but must be (in some sense) individual-denoting. While the behavior of *ba* disjunction in unreduced phrasal comparatives is incompatible with the traditional Boolean approach, I show that an alternative approach can derive the attested reading. This novel test can be applied to disjunction in any language that has unambiguously unreduced phrasal comparatives.

2. Disjunctions of names

The Boolean join of propositional logic fundamentally operates on truth values. On the traditional Boolean approach, cross-categorial disjunction therefore relies on the notion of a conjoinable type, defined recursively in (2), in which all conjoinable elements are either type *t* or functions that eventually return a type *t* expression. With this definition in hand, cross-categorial disjunction can be interpreted as in (3).

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¹ These two approaches are the most common, but are not the only options on the market. Zimmermann (2001) proposes that disjunctions express conjunctive lists of epistemically possible propositions, so that $\llbracket P \text{ or } Q \rrbracket = \diamond \llbracket P \rrbracket \wedge \diamond \llbracket Q \rrbracket$ (see Geurts 2005 for a similar proposal). Murray (2017) provides evidence from Cheyenne that this is an attested cross-linguistic strategy: languages sometimes do overtly form disjunctive meaning from conjunction and epistemic modal markers. I assume that monomorphemic disjunction particles like English *or* and Tiwa *ba* should not be decomposed in this way.

- (2) Definition: Conjoinable Type (Partee & Rooth 1983)
- a. t is a conjoinable type
 - b. if b is a conjoinable type, then for all a , $\langle a, b \rangle$ is a conjoinable type
- (3) $\llbracket A \text{ or } B \rrbracket = \llbracket A \rrbracket \sqcup \llbracket B \rrbracket =$
- a. $\llbracket A \rrbracket \vee \llbracket B \rrbracket$, if A and B are of type t
 - b. $\lambda\alpha_a. \llbracket A \rrbracket(\alpha) \sqcup \llbracket B \rrbracket(\alpha)$, if A and B are of type $\langle a, b \rangle$ and b is a conjoinable type

On this approach, typically individual-denoting elements such as proper names cannot be directly disjoined, but instead must be lifted to (at least) generalized quantifier type $\langle et, t \rangle$ (Partee & Rooth 1983). This is shown schematically in (4) and with a concrete example in (5).

- (4) $\llbracket a \text{ or } b \rrbracket = \lambda P. P(\llbracket a \rrbracket) \vee P(\llbracket b \rrbracket)$, where a and b are of type e
- (5) Amelia or Khaleda ran for office.
- a. $\llbracket \text{Amelia or Khaleda} \rrbracket = \lambda P. P(\text{Amelia}) \vee P(\text{Khaleda})$
 - b. $\llbracket \text{A. or K. ran for office} \rrbracket = [\lambda P. P(\text{Amelia}) \vee P(\text{Khaleda})](\lambda x. \text{ran-for-office}(x))$
 $= \text{ran-for-office}(\text{Amelia}) \vee \text{ran-for-office}(\text{Khaleda})$

While such a type shift for individual-denoting elements is not a heavy burden – and is independently necessary to interpret disjunctions of names with generalized quantifiers (Partee 1987) – it does make a concrete prediction, namely, the one in (6).

- (6) *Prediction of the traditional Boolean approach:*
 If genuine type $\langle et, t \rangle$ expressions necessarily behave in some way as a consequence of their type, disjunctions of names should show that same behavior.

This prediction is difficult to test for English. For instance, while disjunctions of names are scopally flexible, as we might expect of a type $\langle et, t \rangle$ expression, it's unclear whether this scopal flexibility is due to type. In particular, since disjunctions of any type in English are scopally flexible (including properties and propositions), it is necessary to assume a distinct non-QR disjunction scope mechanism (see Winter 2002, Schlenker 2006, Brasoveanu & Farkas 2011, and Charlow 2014 for proposals). As such, it's unclear in any given case whether the scopal flexibility of disjunctions of names arises due to its quantificational type, or whether it arises via the independently necessary scope mechanism.

While the prediction in (6) is difficult to test in English, other languages provide the right ingredients. In the remainder of this paper, I will argue that unreduced phrasal comparatives in languages like Tiwa provide a clear testing ground for the traditional Boolean approach to disjunction.

3. *ba* disjunction in Tiwa

Disjunction in Tiwa² can be expressed with the particle *ba*, as illustrated in (7)-(9).³ As these examples show, *ba* disjunction is cross-categorial, able to disjoin (among other things) proper names (7), numerals (8), and full clauses (9).

² Tiwa is a Tibeto-Burman language spoken by approximately 33,900 people in Assam, northeast India (Eberhard et al., 2020). I collected the data behind this project over four field trips to Umswai, Assam in 2015-2018, primarily through elicitation with two main consultants. For the scope data, consultants were presented with sentences in disambiguating verbal contexts and asked for felicity judgments (see Matthewson 2004). A reference to year, notebook number, and page number is given with each example. One example was elicited over WhatsApp in 2019. Abbreviations are: ACC 'accusative', ALL 'allative', AUX 'auxiliary', CL 'classifier', DAT 'dative', GEN 'genitive', HUM 'human', INF 'infinitive', IPFV 'imperfective', NEUT 'neutral aspect', NEG 'negation', PFV 'perfective', PL 'pl', PST 'past', REFL 'reflexive', SG 'singular'.

³ Tiwa has other strategies for forming disjunctions, including a dedicated wide scope disjunction particle. See Dawson 2019, 2020 for details.

- (7) [Saldi **ba** Mukton] khal lí-ga.
Saldi or Mukton flee AUX-PFV
'Saldi or Mukton ran away.' [2017.2.38]
- (8) Monbor-e [thin chonâ **ba** shâri chonâ] korkhyá-râw tong-o.
Monbor-GEN three CL.HUM or four CL.HUM child-PL exist-NEUT
'Monbor has three or four children.' [2018.1.36]
- (9) [Lastoi phi-ga **ba** Mansing phi-ga.]
Lastoi come-PFV or Mansing come-PFV
'Lastoi came or Mansing came.' [2017.1.33, 2018.1.7]

In most respects, *ba* shows the same behavior as familiar disjunctors like English *or*: in addition to its cross-categoriality, *ba* gives rise to ignorance and exclusivity effects in non-downward-entailing contexts, and free choice permission effects in modal contexts. These properties are illustrated respectively in (10)-(12).

- (10) Comment on (7): "Not sure. For Saldi not sure, for Mukton not sure."
- (11) [Lastoi **ba** Saldi] klas 4 sigai os-o.
Lastoi or Saldi class 4 teach AUX-NEUT
'Lastoi or Saldi teach fourth grade.' [2018.1.70]
Comment: "Cannot be both. It is either."
- (12) Saldi [sa **ba** coffee] -go nung-a phon-o.
Saldi tea or coffee -ACC drink-INF can-NEUT
'Saldi may drink tea or coffee.' [2018.1.6, 2018.3.72]
✓ Saldi is allowed to drink tea and she's allowed to drink coffee; it's her choice which.
✗ Saldi is allowed to drink tea, but not coffee.

The most significant (if not only) difference between *ba* and familiar disjunctors like English *or* is in their scope-taking abilities. Specifically, while *or* is scopally flexible, *ba* disjunctions must take narrow scope with respect to any operator higher in the structure (Dawson 2019, 2020). This is illustrated here for clausemate negation in (13) and the intensional verb *as hóng* 'want' in (14).

- (13) [Saldi **ba** Lastoi] Guwahati-jíng lí-ya-m.
Saldi or Lastoi Guwahati-ALL go-NEG-PST
'Neither Saldi nor Lastoi went to Guwahati.' [2017.2.38]
✓ Neither Saldi nor Lastoi went to Guwahati. Both stayed in Umswai.
✗ Either Saldi went to Guwahati, or Lastoi did, but I can't remember who.
- (14) Lastoi [PM **ba** president] -go lak mán-a as hóng-do.
Lastoi PM or president -ACC meet-INF want-IPFV
'Lastoi wants to meet the PM or the president.' [2018.1.56]
✓ Lastoi is interested in politics. It's her dream to meet the PM or the president of India. If she could meet either one, she would be happy.
✗ Lastoi hates Modi (the PM). She never wants to meet him. But we can't remember whether it's Modi or the president that she hates.

The obligatory narrow scope of *ba* disjunction already suggests that disjunctions of names may not be generalized quantifier type: they do not show the scopal flexibility we typically associate with quantificational elements. However, all the data and readings discussed in this section are derivable on a Boolean account (assuming free choice permission is implicated; Fox 2007), and there are scopally rigid quantifiers cross-linguistically. Instead, evidence against the traditional Boolean account for *ba* disjunction comes from their behavior in unreduced phrasal comparatives.

4. Comparatives in Tiwa

Languages differ in how they build up comparative meanings (i.a. Beck et al. 2009, Bhatt & Takahashi 2011, Berezovskaya & Hohaus 2015). One difference concerns phrasal comparatives, like those in (15) and (16), in which the standard of comparison appears, at least on the surface, to be a simple DP plus adposition.

- (15) Patricia is taller than Marianne.
- (16) Saldi_i [othê_i pai-na khúli] parâ chu-w.
 Saldi REFL.GEN sister-DAT than more tall-NEUT
 ‘Saldi_i is taller than her_i sister.’ [2018.1.80]

Bhatt & Takahashi (2007, 2011) argue that despite their surface similarity, phrasal comparatives in different languages can correspond to different underlying structures, with clear semantic ramifications. Specifically, they argue that in languages like English, phrasal comparatives are derived through clausal reduction, such that the standard of comparison is not in fact a DP, but a reduced CP. This CP is taken to denote a property of degrees, following the traditional standard analysis (Cresswell 1977, von Stechow 1984). This clausal reduction analysis is represented in (17). In contrast, Bhatt & Takahashi demonstrate that in languages like Hindi there is no clausal reduction: the standard is simply a DP. Phrasal comparatives in Tiwa, I argue, are like Hindi in this respect, with the underlying structure in (18). Instead of denoting a property of degrees, the standard in this sentence simply denotes an individual.

- (17) a. Patricia is taller [PP than [CP Maryanne ~~is tall~~.]]
 b. Type $\langle d, t \rangle$ standard: $\lambda d.tall(Maryanne, d)$
- (18) a. Saldi_i [PP [DP othê_i pai-na] khúli] parâ chu-w.
 Saldi REFL.GEN sister-DAT than more tall-NEUT
 ‘Saldi_i is taller than her_i sister.’ [2018.1.80]
 b. Type e standard: Saldi’s sister

Standards in Tiwa are always nominal: the comparative postposition *khúli* ‘than’ selects for a dative-marked DP (Dawson, 2020). Full clausal comparatives in Tiwa are consequently expressed with a nominalized clausal standard, as in (19). If phrasal comparatives like (18) were reduced from clausal comparatives, they would necessarily be reduced from the kind of structure in (19).

- (19) Saldi_i [PP [DP pe-ne_i pai-ne chu-wa-na] khúli] parâ chu-w.
 Saldi 3SG-GEN sister-GEN tall-NMLZ-DAT than more tall-NEUT
 ‘Saldi_i is taller than her_i sister is tall.’ [2018.1.80]

I provide three syntactic arguments against a reduction analysis of phrasal comparatives like (18) from a clausal structure like (19). (An additional semantic argument will be presented in the next section.) The first argument comes from binding. The pronoun *othê* is a genitive form of the reflexive pronoun which must be bound by the subject of its local clause (Dawson, 2020). Example (20) shows that this pronoun cannot be bound by the subject of the comparative from within a clausal standard: the subject is not in the reflexive’s local clause. In contrast, the pronoun in (18) above can be bound by the comparative subject, suggesting a monoclausal structure: there is no clausal reduction.

- (20) * Saldi_i [PP [DP othê_i pai-ne chu-wa-na] khúli] parâ chu-w.
 Saldi REFL.GEN sister-GEN tall-NMLZ-DAT than more tall-NEUT
 Intended: ‘Saldi_i is taller than her_i sister is tall.’ [2018.1.80]

The second argument comes from case marking. Case marking is preserved in Tiwa in clear cases of clausal reduction, as in the ellipsis within a nominalized clause shown in (21). Here, the remnant

DP *thin-tha miyâw* ‘three cats’ retains its genitive case marking. Since the nominalized clause itself is marked accusative, the result is a surface case-stacking configuration.

- (21) *Khóna ang* [_{DP} *kíning wá-ne thi-wa-go*] *nú-ga, arô ná* [_{DP} ***thin-tha miyâw-e-go***] *nú-ga.* (reduced from: *thin-tha miyaw-e thi-wa-go*)
 yesterday 1SG two.CL pig-GEN die-NMLZ-ACC see-PFV and 2SG three-CL
 cat-GEN-ACC see-PFV three-CL cat-GEN die-NMLZ-ACC
 ‘Yesterday I saw the death of three pigs, and you saw (the death of) three cats.’ [2018.2.102]

If phrasal standards in Tiwa were similarly reduced from full nominalized clausal structures, we would likewise expect case marking to be retained, with the dative assigned by the postposition *khúli* appearing after the preserved case marker. This is not the case. Example (22) shows that what would be the subject of the clausal standard cannot be marked with the expected genitive case (where subjects of nominalized clauses typically are, as in (19) and (21)). Example (23) similarly shows that what would be a comitative-marked adjunct in a clausal comparative cannot take comitative case marking.

- (22) *Saldi* [_{PP} *Lastoi(*-ne)-na khúli*] *parâ chu-w.*
Saldi Lastoi(-GEN)-DAT than more tall-NEUT*
 ‘Saldi is taller than Lastoi.’ [2018.2.108]
- (23) *Pángai líbng-râw* [_{PP} *Mukton(*-re)-na khúli*] *Lastoi-re parâ pasê-w.*
 plenty person-PL Mukton(*-COM)-DAT than Lastoi-COM more talk-NEUT
 ‘More people spoke with Lastoi than with Mukton.’ [2018.1.79]

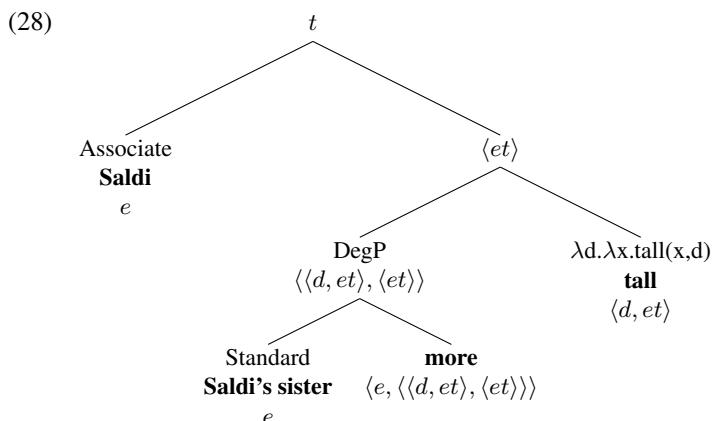
A third syntactic argument against clausal reduction comes from the impossibility of multiple standards in the absence of full clausal structure. (24) provides a baseline: a full clausal comparative can contain multiple points of comparison (specifically, *khóna* ‘yesterday’ and *Mukton*, compared with *táw* ‘today’ and *Lastoi*). If clausal reduction were possible, we would expect ellipsis to be able to derive the sentence in (25). While this is possible in English, as the translations show, it is not possible in Tiwa.

- (24) [_{PP} *Khóna Mukton-e lái-gô lekhé-wa-na khúli*] *táw Lastoi lái-gô parâ*
 yesterday Mukton-GEN book-ACC read-NMLZ-DAT than today Lastoi book-ACC more
lekhé-ga.
 read-PFV
 ‘Lastoi read more books today than Mukton read yesterday.’ [2018.1.80]
- (25) * [_{PP} *Khóna Mukton-a khúli*] *táw Lastoi lái-gô parâ lekhé-ga.*
 yesterday Mukton-DAT than today Lastoi book-ACC more read-PFV
 Intended: ‘Lastoi read more books today than Mukton yesterday.’ [2018.1.94]

These three arguments demonstrate that what look like phrasal comparatives on the surface are just that; there is not underlying clausal structure.

That Tiwa phrasal comparatives are not reduced clausal comparatives has semantic consequences for the denotation of the comparative morpheme. While clausal comparatives are standardly assumed to compare two predicates of degrees directly, unreduced phrasal comparatives contain only a single degree predicate. Instead, unreduced phrasal comparatives compare two individuals with respect to this degree predicate. Following Bhatt & Takahashi, I assume the phrasal comparative operator in (26). The truth conditions and underlying structure of (18) are given in (27) and (28) respectively.

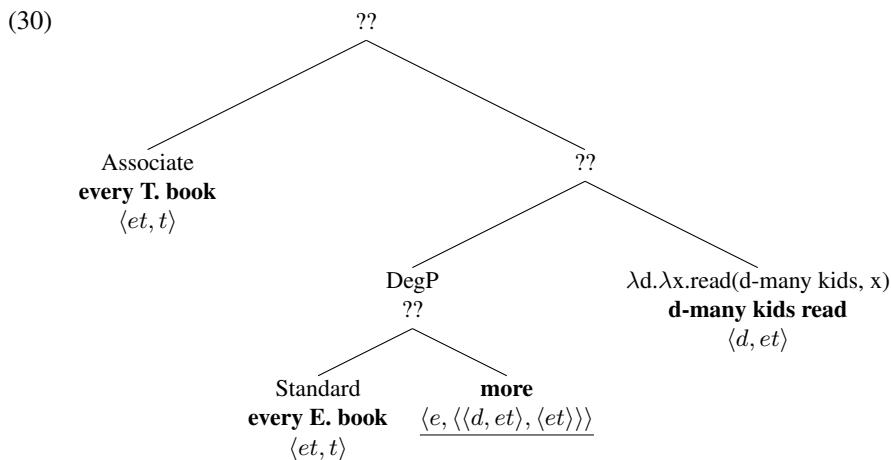
- (26) $[[\text{parâ}_{phr}]] = \lambda x. \lambda P_{\langle d, et \rangle}. \lambda y. \exists d [P(y, d) \ \& \ \neg P(x, d)]$
- (27) $[[18]] = \exists d [\text{tall}(\text{Saldi}, d) \ \& \ \neg(\text{Saldi's sister}, d)]$



5. Generalized quantifier standards

A key piece of semantic evidence that Bhatt & Takahashi present in favor of the denotation in (26) for unreduced phrasal comparatives comes from the behavior of generalized quantifier standards, like the one in (29). Since the comparative morpheme takes in a type e standard, the type $\langle et, t \rangle$ GQ standard leads to a type mismatch, as indicated in (30).

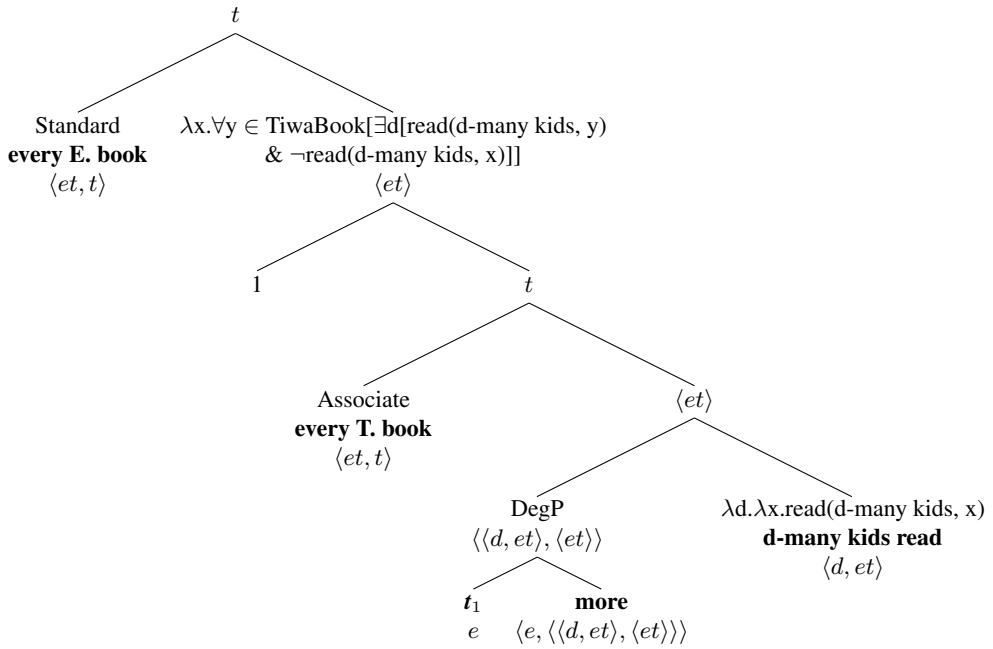
- (29) a. Korkhyá-râw [PP **mile** English lái-na khúli] [DP mile Tiwa lái-gô] parâ lekhé-ga.
 child-PL every English book-DAT than every Tiwa book-ACC more read-PFV
 ‘More children read every Tiwa book than every English book.’ [2018.2.22]
- b. Type $\langle et, t \rangle$ standard: $\lambda P. \forall x \in \text{EnglishBook}[P(x)]$



One way to resolve this type mismatch is to QR the standard, as in (31), leaving behind a type e trace.⁴

⁴ Alternatively, the GQ standard can be type-shifted. The effect is the same for our purposes.

(31)



If the quantificational standard must QR out of the degree phrase to resolve the type mismatch, it should necessarily take wide scope over the comparative morpheme along with the quantificational associate. For (29), this would result in the truth conditions in (32), in which English books and Tiwa books are compared pointwise.

(32) *Predicted wide scope reading of quantificational standard:* \rightarrow pointwise comparison
 $\forall x \in \text{EnglishBook}[\forall y \in \text{TiwaBook}[\exists d[\text{read}(d\text{-many children}, y) \& \neg(d\text{-many children}, x)]]]$

In contrast, a clausal reduction analysis, in which two predicates of degrees are compared directly, yields the distinct truth conditions in (33) in which both the quantificational standard and the quantificational associate scope under the comparative morpheme. (Note, this is the reading that the English translation of (29) receives.)

(33) *Unpredicted narrow scope reading of quantificational standard:*
 $\exists d[\forall y \in \text{Tiwa-book}[\text{read}(d\text{-many children}, y)] \& \neg \forall x \in \text{Eng-book}[\text{read}(d\text{-many children}, x)]]]$

The prediction of the unreduced phrasal analysis is borne out: (29) is judged felicitous in the context in (34), in which Tiwa and English books are compared pointwise, while it is rejected in (35).

(34) *Felicitous context for (29) (pointwise comparison):*
 ✓ There are three Tiwa books (A,B,C) and three English books (D,E,F). A and B were read by 5 children each. C was read by 4 children. D, E, and F were read by 3 children each.

(35) *Infelicitous context for (29) (English translation context):*
 ✗ There are four children: Mukton, Tonbor, Sonali, and Lastoi. Each child read every Tiwa book, but only Sonali and Lastoi read every English book.

This finding both supports an unreduced phrasal analysis of Tiwa comparatives, and provides a clear comparison point for *ba* disjunctions of names.

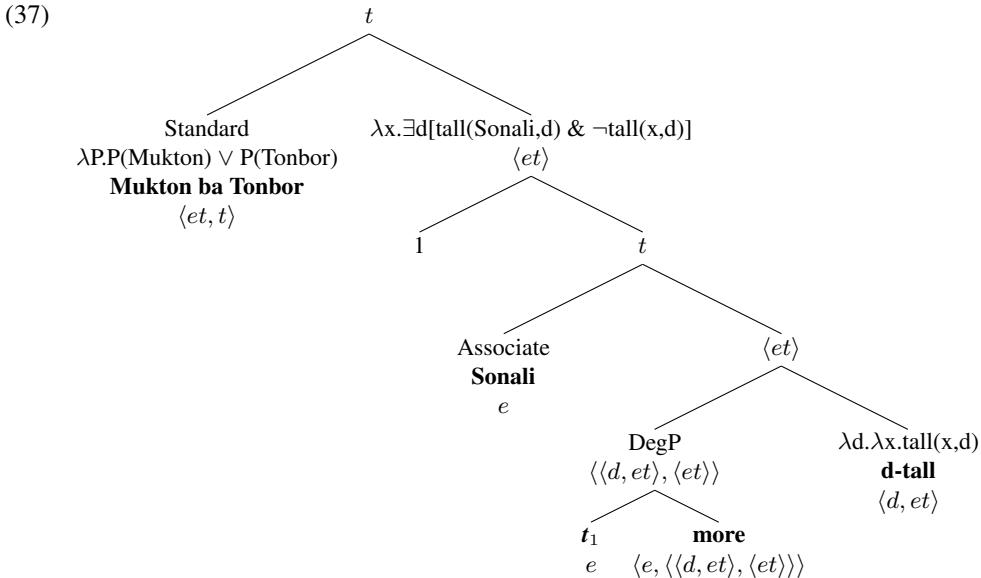
6. *ba* disjunctions in comparatives

In Tiwa, generalized quantifier standards necessarily scope out of phrasal comparatives to resolve a type mismatch. If *ba* disjunctions of names were also type $\langle et, t \rangle$, as is necessary on the traditional

Boolean account, we would expect them to also necessarily scope out of phrasal comparatives as a result of their type. That is, we would expect the disjunctive standard in a comparative like (36) to necessarily QR out of the degree phrase, as shown in (37).

- (36) a. Sonali [PP [Mukton **ba** Tonbor] -na khúli] parâ chu-w.
 Sonali Mukton or Tonbor -DAT than more tall-NEUT
 ‘Sonali is taller than Mukton or Tonbor.’ [2018.2.100]

b. Type $\langle et, t \rangle$ standard: $\lambda P.P(\text{Mukton}) \vee P(\text{Tonbor})$



Raising the disjunctive standard out of the degree phrase results in the truth conditions in (38), in which disjunction scopes over the comparative: Sonali is taller than Mukton, or she is taller than Tonbor.

- (38) $\llbracket (36) \rrbracket = \exists d[\text{tall}(\text{Sonali}, d) \ \& \ \neg \text{tall}(\text{Mukton}, d)] \vee \exists d[\text{tall}(\text{Sonali}, d) \ \& \ \neg \text{tall}(\text{Tonbor}, d)]$

This, however, is not a reading that’s available to (36), as it is rejected in the wide scope context in (39). Instead, it is only accepted in the narrow scope context in (40), in which Sonali is taller than both Mukton and Tonbor.

- (39) *Infelicitous wide scope context:*
 ✗ Sonali is taller than Mukton, or she’s taller than Tonbor, (but we can’t remember which.)
- (40) *Felicitous narrow scope context:*
 ✓ Sonali is taller than both Mukton and Tonbor.

This is the case even if the disjunctive standard overtly scrambles out of the degree phrase, as shown in (41). This sentence was likewise rejected in a wide scope context, but accepted in a narrow scope context, suggesting the standard reconstructs to its base position.

- (41) [PP [Tonbor **ba** Lastoi] -na khúli]₁ Mukton [DEGP *t*₁ parâ] chu-w.
 Tonbor or Lastoi -DAT than Mukton more tall-NEUT
 ‘Mukton is taller than Tonbor or Lastoi.’ [Elicited via WhatsApp, 08/13/2019]
 ✓ Mukton is taller than both Tonbor and Lastoi.
 ✗ Mukton is taller than Tonbor, or he’s taller than Lastoi, (but we can’t remember which.)

The attested narrow scope reading is unexpected – and underivable – on the traditional Boolean account. The only way to derive the narrow scope reading is for the disjunction to compose *in situ* within the

scope of the comparative operator. This is impossible if the disjunctive standard is type $\langle et, t \rangle$, as it results in the type mismatch. Instead, these data suggest that *ba* disjunctions of names are essentially type *e*, and therefore do not invoke the Boolean join of propositional logic.

7. An alternative analysis

In the rest of this paper, I will sketch out an alternative-based analysis which, unlike the traditional Boolean approach, can capture the narrow scope reading of disjunctive phrasal standards like the one in (36). While there are many different implementations of an alternative approach to disjunction (e.g. Simons 2005, Alonso-Ovalle 2006, Aloni 2007, AnderBois 2012, Charlow 2014), for simplicity I will adopt a standard Hamblin semantics, building largely on Alonso-Ovalle's (2006) approach to disjunction in English.

Concretely, I propose that *ba* disjunctions simply denote a set of alternatives made up of the individual disjuncts. For instance, the disjunction of full clauses in (42a), repeated from (9) above, denotes the set of propositions in (42b). Likewise, the disjunction of names in (43a), repeated from (7) above, denotes the set of individuals in (43b).

- (42) a. [Lastoi phi-ga **ba** Mansing phi-ga.]
 Lastoi come-PFV or Mansing come-PFV
 ‘Lastoi came or Mansing came.’ [2017.1.33, 2018.1.7]
 b. $\llbracket \text{Lastoi phiga ba Mansing phiga} \rrbracket = \{ \lambda w. \text{came}_w(\text{Lastoi}), \lambda w. \text{came}_w(\text{Mansing}) \}$
- (43) a. [Saldi **ba** Mukton] khál lí-ga.
 Saldi or Mukton flee AUX-PFV
 ‘Saldi or Mukton ran away.’ [2017.2.38]
 b. $\llbracket \text{Saldi ba Mukton} \rrbracket = \{ \text{Saldi}, \text{Mukton} \}$

Non-propositional alternatives, like those in (43b), can percolate up through the structure via pointwise function application⁵ to form sets of higher-typed elements. For example, the set of individuals in (43b) composes pointwise with the predicate to form the set of propositions in (44).

- (44) $\llbracket [\text{Saldi ba Mukton}] \text{ khál lí-ga.} \rrbracket$
 = $\{ [\lambda x. \lambda w. \text{run-away}_w(x)](\text{Saldi}), [\lambda x. \lambda w. \text{run-away}_w(x)](\text{Mukton}) \}$
 = $\{ \lambda w. \text{run-away}_w(\text{Saldi}), \lambda w. \text{run-away}_w(\text{Mukton}) \}$

Propositional alternatives are subject to existential closure, as defined in (45), yielding the appropriate disjunctive reading. Existential closure is shown for (42b) and (43a) in (46).

- (45) *Existential Closure over Propositional Alternatives:*
 $\llbracket [\exists \alpha] \rrbracket = \lambda w. \exists p \in \llbracket \alpha \rrbracket [p(w)=1]$, where $\llbracket \alpha \rrbracket \subseteq D_{\langle st \rangle}$
- (46) a. $\llbracket (42a) \rrbracket = \lambda w. \exists p \in \{ \lambda w'. \text{came}_{w'}(\text{Lastoi}), \lambda w'. \text{came}_{w'}(\text{Mansing}) \} [p(w)=1]$
 b. $\llbracket (43a) \rrbracket = \lambda w. \exists p \in \{ \lambda w'. \text{run-away}_{w'}(\text{Saldi}), \lambda w'. \text{run-away}_{w'}(\text{Mukton}) \} [p(w)=1]$

Following Alonso-Ovalle (2006), I assume that while propositional alternatives may be existentially closed, disjunctive alternatives are not always subject to existential closure. Instead, the alternatives may be quantified over directly by another element in the structure. While direct quantification was originally proposed to capture free choice permission effects with modals (Simons 2005, Aloni 2007)

⁵ From Shimoyama 2006 (p. 153, fn 20):

- (1) If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{w,g} \subseteq D_{\langle \sigma, \tau \rangle}$ and $\llbracket \gamma \rrbracket^{w,g} \subseteq D_{\sigma}$,
 then $\llbracket \alpha \rrbracket^{w,g} = \{ f(x) \in D_{\tau} : f \in \llbracket \beta \rrbracket^{w,g} \ \& \ x \in \llbracket \gamma \rrbracket^{w,g} \}$

This approach assumes that the material that the set of alternatives composes with also denotes a (singleton) set.

and inference patterns in counterfactual conditionals (Alonso-Ovalle 2006, 2009), the Tiwa comparative data provide further motivation for assuming the alternatives can be dealt with in this way. As discussed in the previous section, *ba* disjunctions must compose *in situ* within the degree phrase in order to receive the attested obligatory narrow scope reading in sentences like (47), repeated from (36).

- (47) Sonali [_{DEGP} [_{PP} [Mukton **ba** Tonbor] -na khúli] parâ] chu-w.
 Sonali Mukton BA Tonbor -DAT than more tall-NEUT
 ‘Sonali is taller than Mukton or Tonbor.’ [2018.2.100]

Existential closure cannot apply within the degree phrase, since there are no propositional alternatives; the *ba* disjunction denotes a set of individuals, as indicated in (48).

- (48)
- | | |
|-------------------------|------------------------------|
| DegP | |
| Standard | Comp |
| Mukton ba Tonbor | parâ |
| {e} | ⟨e, ⟨⟨d, ⟨e, st⟩⟩, ⟨e, st⟩⟩⟩ |

If existential closure were the only way of dealing with disjunctive alternatives, the disjunctive standard would need to compose pointwise with the comparative (and other, higher material) to yield a set of propositions. Existential closure at the propositional level would then result in the proposition in (49), which represents exactly the wide scope reading of disjunction that we are trying to rule out.

- (49) *With only existential closure over propositions:*
 $[[47]] = \lambda w. \exists p \in \{ \lambda w'. \exists d [\text{tall}_{w'}(S) \ \& \ \neg \text{tall}_{w'}(M)], \lambda w'. \exists d [\text{tall}_{w'}(S) \ \& \ \neg \text{tall}_{w'}(T)] \} [p(w) = 1]$

Instead, I propose that the comparative morpheme – like the conditional for Alonso-Ovalle (2006, 2009) and *may* for Aloni (2007) – universally quantifies over the alternatives introduced by the *ba* disjunction. In particular, I propose that the comparative morpheme in (47) has the denotation in (50).

- (50) $[[\text{parâ}]] = \lambda \alpha. \lambda P_{\langle d, \langle e, st \rangle \rangle}. \lambda y. \lambda w. \forall x \in \alpha [\exists d [P_w(y, d) \ \& \ \neg P_w(x, d)]]$, where $\alpha \subseteq D_e$

For (47), this denotation yields the proposition in (51), which captures the attested narrow scope reading: Sonali must be taller than both Mukton and Tonbor.

- (51) $[[47]] = \lambda w. \forall x \in \{ \text{Mukton}, \text{Tonbor} \} [\exists d [\text{tall}_w(\text{Sonali}, d) \ \& \ \neg \text{tall}_w(x, d)]]$

Crucially, the alternative-based analysis of *ba* disjunction is able to produce these truth-conditions where the traditional Boolean account fails. So long as other operators can directly quantify over disjunctive alternatives, as has been independently assumed by Alonso-Ovalle (2006) and Aloni (2007), the *ba* disjunction can be interpreted *in situ* in the degree phrase, allowing it to scope under the comparative morpheme despite not containing any propositional material.

8. Conclusion

In this paper, I have presented a novel test for the traditional Boolean account of disjunction. This test relies on a necessary assumption of the traditional account, which is that disjunctions of typically individual-denoting elements like proper names must be lifted to GQ type in order to be disjoined. I have shown that this necessary assumption predicts that disjunctions of names in unreduced phrasal comparatives should necessarily receive wide scope readings, just like *bona fide* generalized quantifiers. This prediction is not met in Tiwa: *ba* disjunctions of names instead receive narrow scope readings in unreduced phrasal comparatives, just as they do elsewhere. While the traditional Boolean account cannot capture these data, an alternative approach to disjunction can.

The test I discuss here has broad application beyond Tiwa. Many languages, including Hindi, Turkish and Russian (Bhatt & Takahashi 2007, 2011, Hofstetter 2009, Berezovskaya & Hohaus 2015) have unambiguously unreduced phrasal comparatives. If disjunctions of names in these languages can receive narrow scope readings in the standard of a phrasal comparative, the disjunction likely does involve the Boolean join of traditional approaches, but is instead alternative-denoting.

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