

Comparison across domains in Mbyá*

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This paper investigates comparisons of superiority in Mbyá. The comparative morpheme *ve* can occur either on a verb (verbal comparison), or on a determiner, *heta* (nominal comparison), that corresponds roughly to English *many*. When *ve* occurs on the verb, it can establish a comparison between a degree associated with the verb and the standard of comparison (eventive verbal comparison), or alternatively between the cardinality of some argument of the verb and the standard of comparison (individual verbal comparison). However, individual verbal comparison is restricted to notional absolutive arguments. We propose a compositional analysis of comparison of superiority in Mbyá together with this additional restriction.

1 Overview of comparisons of superiority in Mbyá

Mbyá is a Tupi Guaraní language spoken mainly in Argentina, Brazil and Paraguay. Its word order is flexible but mostly SOV, and its agreement system is active-stative (cf. Dooley 2006).

Comparisons of superiority are marked by the suffix *ve*, that can occur either on the main verb of the proposition being compared (cf. (1) and (2)) or on the determiner *heta* (3), whose meaning corresponds roughly to English *many*. Standards of comparison are realized as postpositional phrases headed by the postposition *gui* ‘from’.

- (1) *Pedro i-tuicha-ve Maria gui.*
Pedro 3-tall-ve Maria from
‘Pedro is taller than Maria.’
- (2) *Pedro o-juka-ve mboi Aureliano gui.*
Pedro 3-killve snake(s) Aureliano from
‘Pedro killed more snakes than Aureliano.’

* All the data presented in this paper are from field trips in Kuña Piru, Misiones, Argentina (Summer 2008 and Winter 2008/2009), with the exception of the data on *pa*, which were elicited in the Araxá’i community, (Piraquara, Paraná, Brazil) in 2006 and 2007. Thanks to my informants, especially Aureliano, Cirilio and Germino Duarte. I received useful comments from Sigrid Beck, Irene Heim, Giorgio Magri, Omer Preminger and Yasutada Sudo. All errors are mine.

- (3) *Pedro o-juka heta-ve mboi Aureliano gui.*
 Pedro 3-kill manyve snake(s) Aureliano from
 ‘Pedro killed more snakes than Aureliano.’

When *ve* occurs on the verb/adjective, it can bind a degree associated with the verb/adjective, cf. (4) and (5) (eventive reading).

- (4) *Juan o-i-pota-ve Maria Hugo gui.*
 Juan 3-OBJ-like-ve Maria Hugo from
 ‘Juan likes Maria more than Hugo does.’
- (5) *Juan i-tuicha-ve Hugo gui.*
 Juan 3-tall-ve Hugo from
 ‘Juan is taller than Hugo.’

ve occurring on a verb/adjective can also bind a degree associated with its notional absolutive argument (S or O), cf. (6) or (7) (individual reading). However, individual readings are not attested with subjects of transitive verbs, cf. (8) and (9).

- (6) *Hugo o-i-pota-ve tekoapygua Henrique gui.*
 Hugo 3-OBJ-like-ve villagers Henrique from
 ‘Hugo likes more villagers than Henrique does.’
 (or ‘Hugo likes the villagers more than Henrique does.’)
- (7) *Ava-kue o-u-ve kuña-gue gui.*
 man-pl 3-comeve woman-pl from
 ‘More men came than women.’
- (8) *Kuehe, irundy tekoapygua i-jayvu Maria reve. Ange, tekoapygua*
 yesterday four villagers 3-talk Maria with today villagers
i-jayvu-ve Maria reve kuehe gui.
 3-talk-ve Maria with yesterday from
 ✓ ‘Yesterday, four villagers talked to Maria. Today, they talked to her more than yesterday.’
 # ‘Yesterday, four villagers talked to Maria. Today, more villagers talked to her.’ [Context: but they spent less time talking.]
- (9) *Kuehe, irundy che-irũ ho-’u che-kure. Ange cheirũ ho-’u-ve*
 yesterday four 1-friend 3-eat 1-pork today 1-friend 3-eat-ve
che-kure.
 1-pork
 ✓ ‘Yesterday, four friends of mine ate some of my pork. Today, they ate more of my pork.’
 # ‘Yesterday, four friends of mine ate some of my pork. Today, more friends of mine ate some of my pork.’

Verbal comparison with *ve* also licenses incremental readings. In incremental readings, a measure of the event described by the verb or of the

number of participants to this event is incremented, without necessarily being greater than a standard of comparison. This is illustrated by the fact that (10) can be truthfully asserted in context (11).

- (10) *Kuehe, che-irũ o-jogua irundy meme ka'y-gua che-tienda gui,*
 yesterday 1-friend 3-buy four twice mate-NLZ 1-shop from
ha'e ange o-jogua-ve (ka'y-gua).
 and today 3-buy-ve mate-NLZ
 'Yesterday, my friend bought eight pots in my store, and he bought some more pots today.'
- (11) Context: My friend bought eight pots yesterday and he bought four other pots today.

In (10) in context (11), *ve* indicates that the quantity of pots that my friend bought today increments a quantity of pots that he bought on a previous occasion, without entailing that it exceeds it.

When *ve* occurs on the determiner *heta* 'many', the only available reading is individual related. Event related readings are not possible, cf. (15). The NP whose cardinality is being compared in such constructions is necessarily the one that is determined by *heta*, however, this NP can be any kind of argument of the verb, possibly its notional ergative argument, cf. (12), (13) and (14):

- (12) *Ange, heta-ve ava-kue o-u kuehe gui.*
 today many-ve man-pl 3-come yesterday from
 'More men came today than yesterday.'
- (13) *Ange, heta-ve juru-a kuery o-jogua ka'y-gua kuehe gui.*
 today many-ve mouth-hair GRP 3-buy mate-NLZ yesterday from
 'More Juruas (non indigenous persons) bought Maté pots today than yesterday.'
- (14) *Ange, juru-a kuery o-jogua heta-ve ka'y-gua kuehe gui.*
 today mouth-hair GRP 3-buy many-ve mate-NLZ yesterday from
 'The Juruas bought more Maté pots today than yesterday.'
- (15) *Heta-ve kirĩ-ngue o-vy'a karai gui.*
 many-ve child-pl 3-(get)happy adult_man from
 ✓ 'There are more children who are happy than there are adults who are happy.'
 # 'Children are happier than adults.'

Heta-ve does not license incremental comparison, as shown by the fact that (16) cannot be truthfully asserted in context (17), although it is true and felicitous in context (18):

- (16) *Kuehe, che-irũ o-jogua irundy meme ka'y-gua che-tienda gui,*
 yesterday 1-friend 3-buy four twice mate-NLZ 1-shop from
ha'e ange o-jogua heta-ve (ka'y-gua).
 and today 3-buy many-ve mate-NLZ

‘Yesterday, my friend bought eight pots in my store, and he bought more pots today than yesterday.’

- (17) Context: yesterday, my friend bought 8 pots from my store, and today he bought 4. (# (16))
- (18) Context: yesterday, my friend bought 8 pots from my store, and today he bought 10. (✓(16))

2 Analysis

2.1 Goals

My goal is to develop an analysis of the semantics and syntax/ semantics interface of *ve* that accounts for:

1. The nominal/verbal ambivalence of comparison introduced by *ve* when it occurs on the verb/adjective.
2. The possibility for *ve* to occur on *heta* and the fact that only comparison on the NP determined by *heta* is possible in this context.
3. The meaning of incremental comparison, and its unavailability with *hetave*.

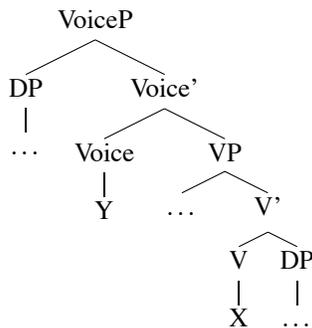
2.2 Syntactic and semantic assumptions

I use an event semantics with eventualities e (events or states) of type l . VP and VoiceP will be used (Kratzer 1996). V introduces its own internal argument; Voice introduces the external argument of V, cf. (21). However, I assume that all intransitive verb heads themselves introduce the argument/thematic role corresponding to their subject. No difference between unergatives (cf. (19)) and unaccusatives ((20)) are assumed at this level.

(19) $\llbracket \text{jeroky} \rrbracket = \lambda x \lambda e. \mathbf{dance}(e) \ \& \ \mathbf{agent}(e) = x$

(20) $\llbracket \text{'a} \rrbracket = \lambda x \lambda e. \mathbf{fall}(e) \ \& \ \mathbf{theme}(e) = x$

(21)



(22) $\llbracket X_V \rrbracket = \lambda e \lambda x. L(e) \ \& \ \mathbf{ROLE}_{\text{int}}(e) = x$

$$(23) \quad \llbracket Y_{\text{Voice}} \rrbracket = \lambda e \lambda x. \text{ROLE}_{\text{ext}}(e) = x$$

2.3 Non incremental comparison of superiority

2.3.1 Eventive readings of verbal comparison

I assume a semantics of comparison that uses degree variables. However, I assume that degree variables are never introduced by lexical heads (verbs, adjectives) but always by measure functions, μ . These functions encode maximality (they measure the maximal degree that is true of their argument). The non-incremental comparative morpheme of superiority *ve* introduces such functions lexically. A possible denotation for *ve* would be as in (24):

$$(24) \quad \llbracket ve \rrbracket = \lambda D_{\langle 1, t \rangle} \lambda e \lambda d. D(e) \ \& \ \mu(e) > d$$

In (24), *ve* measures the eventuality that saturates the predicate *D*, and compares the resulting value to a standard of comparison. (25) illustrates the semantic composition of *ve* with a property of eventualities: *oky*, ‘it rained’, cf. (26):

$$(25) \quad \llbracket ve \rrbracket(\llbracket oky \rrbracket) = (\lambda D_{\langle 1, t \rangle} \lambda e \lambda d. D(e) \ \& \ \mu(e) > d)(\lambda e. \mathbf{rain}(e)) \\ = \lambda e \lambda d. \mathbf{rain}(e) \ \& \ \mu(e) > d$$

(26) *Ange, o-ky-ve kuehe gui.*
today 3-rain-ve yesterday from
‘Today, it rained more than yesterday.’

Measure functions can map an eventuality to a parameter of the process that the eventuality instantiates. In the case of (26), it could be the duration of raining, or the intensity of raining calculated as the volume of water falling per unit of time/area, or the total quantity of water falling in the event. What μ measures is to some extent contextually determined, and to some extent limited by the lexical semantics of the property of eventuality that is saturated by the argument of μ (cf. Krifka 1998, Nakanishi 2007).

Assuming flexible types for *ve*, *ve* can be used to add a degree argument to the denotation of an intransitive verb, like *onha*, ‘run’, cf. (28):

$$(27) \quad \llbracket ve \rrbracket = \lambda D_{\langle 1, et \rangle} \lambda e \lambda x \lambda d. D(e)(x) \ \& \ \mu(e) > d$$

(28) *Juan o-nha-ve Hugo gui.*
juan 3-run-ve Hugo from
‘Juan ran more than Hugo.’

$$(29) \quad \begin{aligned} 1. \llbracket ve \rrbracket(\llbracket onha \rrbracket) &= (\lambda D_{\langle 1, et \rangle} \lambda e \lambda x \lambda d. D(e)(x) \ \& \ \mu(e) > d)(\lambda e \lambda x. \mathbf{run}(e) \\ &\ \& \ \text{AGENT}(e)=x) \\ 2. \llbracket ve \rrbracket(\llbracket onha \rrbracket) &= \lambda e \lambda x \lambda d. \mathbf{run}(e) \ \& \ \text{AG}(e)=x \ \& \ \mu(e) > d \\ 3. (\llbracket ve \rrbracket(\llbracket onha \rrbracket))(e_1) &= (\lambda e \lambda x \lambda d. \mathbf{run}(e) \ \& \ \text{AG}(e)=x \ \& \ \mu(e) > d)(e_1) \\ 4. (\llbracket ve \rrbracket(\llbracket onha \rrbracket))(e_1) &= \lambda x \lambda d. \mathbf{run}(e_1) \ \& \ \text{AG}(e_1)=x \ \& \ \mu(e_1) > d \\ 5. ((\llbracket ve \rrbracket(\llbracket onha \rrbracket))(e_1))(Juan) &= (\lambda x \lambda d. \mathbf{run}(e_1) \ \& \ \text{AG}(e)=x) \ \& \ \mu(e) > \end{aligned}$$

d)(**Juan**)

6. ($\llbracket ve \rrbracket(\llbracket onha \rrbracket)(e_1)(\text{Juan}) = \lambda d. \mathbf{run}(e_1) \ \& \ AG(e)=(\mathbf{Juan}) \ \& \ \mu(e) > d$)

7. $\llbracket Hugo \ gui \rrbracket = \iota d[\exists e \text{ st. } \mathbf{run}(e) \ \& \ AGENT(e) = \mathbf{Hugo} \ \& \ \mu(e) = d]$

8. ($\llbracket ve \rrbracket(\llbracket onha \rrbracket)(e_1)(\text{Juan})(\llbracket Hugo \ gui \rrbracket) = (\lambda d. \mathbf{run}(e_1) \ \& \ AG(e_1)=(\mathbf{Juan}) \ \& \ \mu(e) > d)(\iota d[\dots])$)

9. ($\llbracket ve \rrbracket(\llbracket onha \rrbracket)(e_1)(\text{Juan})(\llbracket Hugo \ gui \rrbracket) = \mathbf{run}(e_1) \ \& \ AG(e_1)=(\mathbf{Juan}) \ \& \ \mu(e) > \iota d[\dots]$)

10. $\lambda e_1(\llbracket ve \rrbracket(\llbracket onha \rrbracket)(e_1)(\text{Juan})(\llbracket Hugo \ gui \rrbracket)) = \lambda e. \mathbf{run}(e) \ \& \ AG(e)=(\mathbf{Juan}) \ \& \ \mu(e) > \iota d[\dots]$

Even when *ve* occurs on the verb, it can measure the cardinality of the absolutive argument of the verb, cf. (30).

- (30) *Pedro o-juka-ve mboi Aureliano gui.*
 Pedro 3-kill-ve snake(s) Aureliano from
 ‘Pedro killed more snakes than Aureliano.’

2.3.2 Individual readings of verbal comparison

Let us assume that the measure function introduced by *ve* can take an individual variable as an argument, and measure its cardinality. We can derive individual readings of verbal comparison this way. In the following derivation, we make use of the compositional principle of restriction (RE) (cf. Chung and Ladusaw 2003).

(31) $\llbracket ve \rrbracket = \lambda D_{\langle e, \iota t \rangle} \lambda x \lambda e \lambda d. D(e)(x) \ \& \ \mu(x) > d$

(32) $\llbracket ve \rrbracket(\llbracket ojuka \rrbracket) = (\lambda D_{\langle e, \iota t \rangle} \lambda x \lambda e \lambda d. D(e)(x) \ \& \ \mu(x) > d)(\lambda x \lambda e. \mathbf{kill}(e) \ \& \ \text{THEME}(e) = x)$
 $\llbracket ve \rrbracket(\llbracket ojuka \rrbracket) = \lambda x \lambda e \lambda d. \mathbf{kill}(e) \ \& \ \text{THEME}(e) = x \ \& \ \mu(x) > d$
 $(\llbracket ve \rrbracket(\llbracket ojuka \rrbracket)(\llbracket mboi \rrbracket)) = (\lambda x \lambda e \lambda d. \mathbf{kill}(e) \ \& \ \text{THEME}(e) = x \ \& \ \mu(x) > d)(\lambda x. \mathbf{snake}(x))$
 $\text{RE}(\llbracket ve \rrbracket(\llbracket ojuka \rrbracket)(\llbracket mboi \rrbracket)) = \lambda x \lambda e \lambda d. \mathbf{kill}(e) \ \& \ \text{THEME}(e) = x \ \& \ \mathbf{snake}(x) \ \& \ \mu(x) > d$
 $\text{EC}(\llbracket ve \rrbracket(\llbracket ojuka \rrbracket)(\llbracket mboi \rrbracket)) = \lambda e \lambda d. \exists x \mathbf{kill}(e) \ \& \ \text{THEME}(e) = x \ \& \ \mathbf{snake}(x) \ \& \ \mu(x) > d$

In the derivation in (31), the verbal head, its argument and $\llbracket ve \rrbracket$ have been Schönfinkeled/Curried in different orders, except for the fact that the degree argument remained the innermost argument of $\llbracket ve \rrbracket$. Some degree of freedom in Schönfinkelization is indeed taken for granted. This freedom allows us to define a denotation for *ve* that can generate both comparison in the nominal domain and comparison in the verbal domain, without postulating a lexical ambiguity. The fact that internal and external arguments of predicates are introduced by different heads protects us from confusing these arguments in the composition of the proposition.

2.3.3 The meaning of *ve*

ve is defined in (33) using variables over types (τ) and flexible types:

- (33) 1. $\lambda D_{\langle \tau, t \rangle} \lambda \alpha_{\tau} \lambda d. D(\alpha) \ \& \ \mu(\alpha) > d$
 2. $\lambda D_{\langle \tau_1 < \tau_2, t \rangle} \lambda \alpha_{\tau_1} \lambda \beta_{\tau_2} \lambda d. D(\alpha)(\beta) \ \& \ \mu(\alpha) > d$

τ_n ranges over type e and type l . $\llbracket ve \rrbracket$ takes a function D as its argument, and returns a function of the same type as D except for the introduction of a new degree argument. This new degree argument is obtained by measuring the highest argument of D with μ . The type of D itself is flexible. Depending on which Schönfinkelization of D (denotation of the verbal head) is used, μ will measure a parameter of the process/state described by the verb, or the cardinality of the individual argument introduced by the verb (if any):

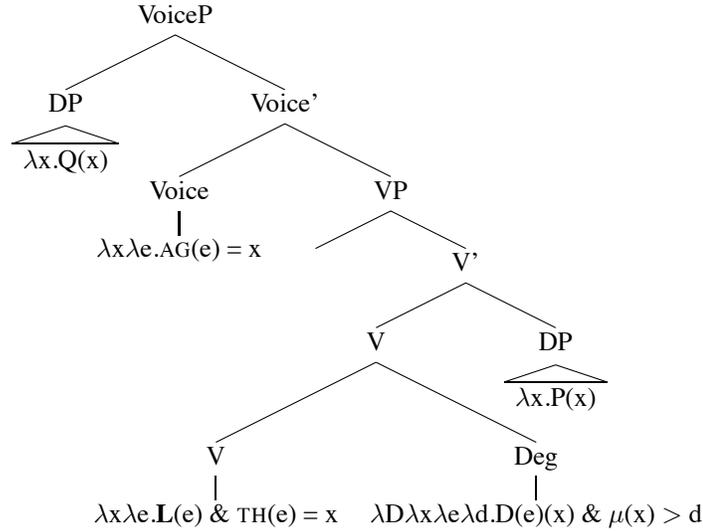
- (34) $\llbracket ve \rrbracket(\lambda e \lambda x. \mathbf{run}(e) \ \& \ \text{AGENT}(e)=x) = \lambda e \lambda x. \mathbf{run}(e) \ \& \ \text{AGENT}(e)=x \ \& \ \mu(e) > d$
 (35) $\llbracket ve \rrbracket(\lambda x \lambda e. \mathbf{run}(e) \ \& \ \text{AGENT}(e)=x) = \lambda x \lambda e. \mathbf{run}(e) \ \& \ \text{AGENT}(e)=x \ \& \ \mu(x) > d$

Some constraints are assumed to hold of measure functions introduced by $\llbracket ve \rrbracket$. Measure functions defined on eventuality arguments (of type l) measure parameters of the process or state described by the verbal head that *ve* combines with. What measure function is available then is partly determined by the context and partly lexically encoded in the verbal head. Measure functions defined on individual arguments (of type e) measure the cardinality of their argument, ie. $\mu(x)=|x|$.

2.3.4 Morphosyntactic constraints on *ve*

ve has to attach either to a verbal/adjectival head or to a determiner head (see next section), and cannot move from this position (surface true generalization). It is assumed that *ve* cannot attach to a Voice head. As a consequence, *ve* will never be able to measure the cardinality of the external argument of a transitive verb (introduced in the specifier of VoiceP):

(36)



2.4 *Hetave*: comparison from QP

Heta measures the cardinality of an individual and asserts that it is superior to a contextual standard *c*. *ve* as defined in (33) can combine directly with *heta*:

$$(37) \quad \llbracket \text{heta} \rrbracket = \lambda x. |x| > c$$

$$(38) \quad \llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket) = (\lambda D_{<\tau, t>} \lambda \alpha_\tau \lambda d. D(\alpha) \ \& \ \mu(\alpha) > d) (\lambda x. |x| > c)$$

$$\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket) = \lambda x \lambda d. |x| > c \ \& \ \mu(x) > d$$

Here is a sample derivation:

(39) *Heta-ve kuña-gue o-u ava-kue gui.*
 many-ve woman-pl 3-come man-pl from
 ‘More women came than men.’

- (40)
1. $\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket) = (\lambda D_{<\tau, t>} \lambda \alpha_\tau \lambda d. D(\alpha) \ \& \ \mu(\alpha) > d) (\lambda x. |x| > c)$
 2. $\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket) = \lambda x \lambda d. |x| > c \ \& \ \mu(x) > d$
 3. $(\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket)) (\llbracket \text{kuñague} \rrbracket) = (\lambda x \lambda d. |x| > c \ \& \ \mu(x) > d) (\lambda x. \text{women}(x))$
 4. $\text{RE}(\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket)) (\llbracket \text{kuñague} \rrbracket) = \lambda x \lambda d. \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > d$
 5. $((\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket)) (\llbracket \text{kuñague} \rrbracket)) (\text{ou}) = (\lambda x \lambda d. \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > d) (\lambda x \lambda e. \text{come}(e) \ \& \ \text{AG}(e) = x)$
 6. $\text{RE}((\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket)) (\llbracket \text{kuñague} \rrbracket)) (\text{ou}) = \lambda x \lambda e \lambda d. \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > d \ \& \ \text{come}(e) \ \& \ \text{AG}(e) = x$
 7. $\text{EC}(((\llbracket \text{ve} \rrbracket (\llbracket \text{heta} \rrbracket)) (\llbracket \text{kuñague} \rrbracket)) (\text{ou})) = \lambda e \lambda d. \exists x \text{ st. } \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > d \ \& \ \text{come}(e) \ \& \ \text{AG}(e) = x$
 8. $\llbracket \text{avakue gui} \rrbracket = \iota d [\exists x \exists e \text{ st. } \text{men}(x) \ \& \ |x| = d \ \& \ \text{come}(e) \ \& \ \text{AG}(e) = x]$

9. $((([ve])([heta]))([kuñague])(ou))(e_1) = \lambda d. \exists x \text{ st. } \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > d \ \& \ \text{come}(e_1) \ \& \ \text{AG}(e_1) = x$
10. $((([ve])([heta]))([kuñague])(ou))(e_1)([avakue \ gui]) = \exists x \text{ st. } \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > \iota d[\dots] \ \& \ \text{come}(e_1) \ \& \ \text{AG}(e_1) = x$
11. $\lambda e_1(((([ve])([heta]))([kuñague])(ou))(e_1)([avakue \ gui])) = \lambda e. \exists x \text{ st. } \text{women}(x) \ \& \ |x| > c \ \& \ \mu(x) > \iota d[\dots] \ \& \ \text{come}(e) \ \& \ \text{AG}(e) = x$

2.5 Incremental Comparison

Now we look at an interpretation of the morpheme *ve* that is available only when this suffix is realized on the verb, and not when it is realized on *heta*, and we produce an analysis that derives this restricted distribution.

2.5.1 Core semantics of incremental comparison

Consider the following sentences:

- (41) *Kuehe, o-ky. Ange, oky-ve.*
yesterday 3-rain today 3-rain-ve
'Yesterday, it rained, and today it rained (some) more.'
- (42) *Kuehe, Maria o-jeroky. Ange, o-jeroky-ve.*
yesterday Maria 3-dance today 3-dance-ve
'Maria danced yesterday and today she danced (some) more.'
- (43) *Kuehe, irundy che-irũ o-u che-ro py. Ange, che-irũ o-u-ve.*
yesterday four 1-friend 3-come 1-house in today 1-friend 3-come-ve
'Yesterday, four friends (of mine) came to my place. Today, (some) more friends came.'

(41) has an incremental reading according to which the duration (or some other measure of raining) of the rain on the day of utterance does not have to be superior to the duration of the rain on the previous day for the proposition to be true. Under this reading, what is required is that the duration of the rain on the day of utterance can be added to the duration of the rain on the previous day, to 'increment' it. A way to formulate this intuition is to say that the duration of the rain on day 1 plus the duration of the rain on day 2 has to be superior to the duration of the rain on day 1, for the sentence to be true in the incremental reading. Additionally, the second sentence in (41) presupposes that there was a previous event of raining. (42) and (43) can be interpreted in a similar way, with incrementation of duration (for instance) of dancing by Maria, in (42), and incrementation of number of friends coming to my place, in (43).

A way to capture the meaning of *ve* in (41) would be to assume a new lexical entry for *ve* along the following lines:

- (44) $[ve_{inc}] = \lambda D_{<1,t>} \lambda e: \underline{-e' \otimes e \ \& \ D(e')}. D(e) \ \& \ D(e \oplus e') \ \& \ \mu(e \oplus e') = \mu(e) + \mu(e')$

This function takes a property of eventualities D , asserts that D holds of an event e , presupposes that D holds of a non overlapping eventuality e' , and asserts that D holds of the sum of e and e' , such that the measure of $e \oplus e'$ equals the measure of e plus the measure of e' . In the current framework, this is can be understood as saying that D holds of the sum of e and e' to the degree $d = \mu(e) + \mu(e')$. An illustrative derivation is shown in (45):

- (45) 1. $\llbracket ve_{inc} \rrbracket(\llbracket oky \rrbracket) = (\lambda D_{\langle 1, t \rangle} \lambda e: \underline{\neg e' \otimes e \ \& \ D(e')}. \ D(e) \ \& \ D(e \oplus e') \ \& \ \mu(e \oplus e') = \mu(e) + \mu(e'))(\lambda e. \ \mathbf{rain}(e))$
 2. $\llbracket ve_{inc} \rrbracket(\llbracket oky \rrbracket) = \lambda e: \underline{\neg e' \otimes e \ \& \ \mathbf{rain}(e')}. \ \mathbf{rain}(e) \ \& \ \mathbf{rain}(e \oplus e') \ \& \ \mu(e \oplus e') = \mu(e) + \mu(e')$

This semantics for ve_{inc} can be extended to account for incremental comparison with predicates denoting relations between eventualities and individuals:

- (46) $\llbracket ve_{inc} \rrbracket = \lambda D_{\langle 1 \langle x, t \rangle \rangle} \lambda e \lambda x: \underline{\neg e' \otimes e \ \& \ D(e')(x)}. \ D(e)(x) \ \& \ D(e \oplus e')(x) \ \& \ \mu(e \oplus e') = \mu(e) + \mu(e')$

Here again, it is assumed that functions can be Schönfinkeled in different orders.

2.5.2 Predictions of the analysis

2.5.3 Neutralization with non cumulative properties of eventualities

It seems that the incremental reading is not attested with all predicates, such as *ovy'a*, ‘be happy’:

- (47) *Ko'ē-rā, Maria o-vy'a-ve-ta.*
 dawn-NmlFut Maria 3-happy-ve-FUT
 ‘Tomorrow, Maria will be happier.’
- (48) Context: Today, Maria is happy because her fiancé brought her flowers. Tomorrow, he is going to visit her again, but he won’t have flowers for her. She will be happy to see him, but she won’t be as happy as today.

(47) cannot be truthfully asserted in context (48), showing that no incremental reading is available with *ovy'a*. I suggest that the predicates that do not support an incremental reading are anticumulative:

- (49) P is anticumulative iff $\neg [\forall e, e' (P(e) \ \& \ P(e') \ \& \ P(e \oplus e')) \rightarrow (\mu(e \oplus e') = \mu(e) + \mu(e'))]$

Given our semantics for incremental *ve*, the absence of incremental readings with anticumulative predicates is straightforward.

2.5.4 Incompatibility with *heta*

The incompatibility of ve_{inc} with *heta* follows straightforwardly from the interpretation that we gave of ve_{inc} . $[[ve_{inc}]]$ requires its argument to be a property of eventualities, but *heta* is not of this type.

3 Conclusion

The comparative morpheme *ve* in Mbyá is bound to a head and cannot move from this position. Its flexible semantics allows it to measure a degree out of various semantic arguments of the function denoted by the head to which it is attached. Incremental *ve* denotes a function that must take a property of events as an argument. Because *heta* has a single individual argument but no event argument, *hetave* only supports nominal comparison, and no verbal or incremental comparison. The analysis developed here entails that the unergative/unaccusative distinction is not reflected in the way intransitive subjects are introduced by verbs/adjectives. We speculate that no such distinction is present at all in the language.

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