Comparison, incremental comparison, and the syntax of *ve* in Mbyá

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Relevant phenomena in Mbyá comparative constructions. Two forms of comparison of superiority are available in Mbyá, as illustrated in (1) and (2).

(1) Pedro o-juka-ve mboi Aureliano gui.
Pedro 3-kill-VE snake(s) Aureliano from
'Pedro killed more snakes than Aureliano'

(2) Pedro o-juka heta-ve mboi Aureliano gui.
Pedro 3-kill many-VE snake(s) Aureliano from
'Pedro killed more snakes than Aureliano'

In (1), the comparative suffix *-ve* is realized on the verb. In (2), *-ve* is realized on the quantifier *heta*, whose use in Mbyá corresponds most closely to *many* in English. These two forms of comparison differ in at least two respects. (2) does not require that Pedro killed many more snakes than Aureliano. The difference might be of one snake. However, (2) can only be uttered felicitously if Pedro killed a great number of snakes. For instance, (2) is infelicitous if Pedro killed two snakes some day and Aureliano killed one snake that same day, but is felicitous if Pedro killed six snakes some day and Aureliano killed between one and five snakes that same day. (1) on the other hand is fine in either context. Hence, *hetave* comparatives but not comparatives in which *-ve* occurs on the verb come with a requirement that the cardinality of the internal argument of *heta* be superior to some standard. Additionally, comparatives in which *-ve* occurs on the verb but not *hetave* comparatives can be used to express what we will call 'incremental comparison', as illustrated in (3).

(3) Kuehe, che-irũ o-jogua irundy meme ka'ygua che-tienda gui, ha'e ange
yesterday 1sg-friend 3-buy four twice mate pot 1sg-shop from and today
o-jogua-ve (ka'ygua).
3-buy-VE mate pot
'Yesterday, my friend bought eight pots in my store, and he bought more pots today.'

(3) has a possible interpretation according to which the number of pots that were bought on the day of utterance (say, five pots) is non null but smaller than the number of pots that were bought the day before (eight). Incremental comparison is not possible with *hetave*:

(4) Kuehe, che-irũ ojogua irundy meme ka'ygua che-tienda gui, ha'e ange o-jogua
yesterday 1sg-friend 3-buy four twice mate pot 1sg-shop from and today 3-buy
heta-ve (ka'ygua).
many-VE mate pot
'Yesterday, my friend bought eight pots in my store, and he bought more pots today.'

The only available interpretation of (4) is that more pots were bought on the day of utterance than on the previous day.

The goal of this work is to propose an analysis of comparison in Mbyá that predicts that (1) *ve* occuring on the verb can relate either to a parameter of the eventuality described by the verb or to the cardinality of the notional absolutive argument of the verb and (2) *ve* occuring on *heta* can only be interpreted as standard comparison of superiority and not as incremental comparison.

Analysis. We assume an analysis of comparison that make use of degrees, represented in the semantics as variables of type *d*. Degree variables are never introduced by lexical heads (verbs, adjectives, nouns) but always by measure functions, μ. These functions encode maximality (they

measure the maximal degree that is true of their argument) and can be applied either to a (possibly plural) individual (measuring a number of individuals) or to an eventuality (measuring a parameter related to the eventuality, for instance its duration). *Ve* is given a number of different but related meanings, in its role as operator of comparison of superiority:

(5) $[\![\text{ve}]\!] = \lambda D_{\langle l,t\rangle}\lambda e\lambda d.\ D(e)\ \&\ \mu(e) > d$

(6) $[\![\text{ve}]\!] = \lambda D_{\langle e,t\rangle}\lambda x\lambda d.\ D(x)\ \&\ \mu(x) > d$

(7) $[\![\text{ve}]\!] = \lambda D_{\langle l,et\rangle}\lambda e\lambda x\lambda d.\ D(e)(x)\ \&\ \mu(e) > d$

(8) $[\![\text{ve}]\!] = \lambda D_{\langle e,lt\rangle}\lambda x\lambda e\lambda d.\ D(e)(x)\ \&\ \mu(x) > d$

All these denotations are covered by two more abstract lexical meanings for *ve*, related by type shifting. Here, τ_n stands for either the type of eventualities *d* or the type of individuals *e*:

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

In addition to this semantics for *ve*, it is assumed that the argument corresponding to the subject of intransitive verbs and the object of transitive verbs is introduced in the denotation of verbs, whereas the subject of transitive verbs is introduced in a separate voice projection (in the spirit of Kratzer 1996), cf. the denotations of *nha* ('to run') and *jeroky* (to dance):

(10) $[\![\text{nha}]\!] = \lambda x\lambda e.\ \text{run'}(e)\ \&\ \textsc{agent}(e) = x$ $[\![\text{jeroky}]\!] = \lambda x\lambda e.\ \text{dance'}(e)\ \&\ \textsc{agent}(e) = x$

It is also assumed that functions can be freely Curried/Schönfinkeled in any order. Given these assumptions, it is predicted that *ve* as defined in (9) can combine with a verb to measure and compare a degree corresponding either to some parameter of the eventuality described by the verb, or to the cardinality of the intransitive subject or the object of the verb. It is correctly predicted that *ve* occuring on the verb cannot asssociate with the subject of a transitive verb. Crucial to this analysis is the assumption that *ve* combines locally with the verb to which it is suffixed, and does not move from this position. Also, our analysis of which arguments are directly introduced by verbs entails that no difference between unergative and unaccusative verbs is reflected in this aspect of the semantics of verbs. *Heta* is analysed as follows:

(11) $[\![\text{heta}]\!] = \lambda x.|x| > c$

Given this analysis, it is predicted that *heta* can associate with non incremental *ve*. Incremental *ve* is defined as (cf. Thomas 2009 and Greenberg 2009):

(12) $[\![\text{ve}_{inc}]\!] = \lambda D_{\langle d,\langle l,t\rangle\rangle}\lambda d\lambda e:\ \underline{\neg e\otimes e'\ \wedge\ D(e')(d')}.\ D(e)(d)\ \wedge\ D(e\oplus e')(d+d')$

ve_{inc} combines with a relation between degrees and eventualities D, and outputs a function from a degree *d* and an eventuality *e* to the truth value 1 iff D(e)(d) and D(e⊕e')(d+d') is true. The eventuality *e'* and the degree *d'* introduced in the presupposition (underlined) must be resolved anaphorically: *e'* is a particular eventuality made salient by the context together with its associated degree *d'*. This analysis predicts that ve_{inc} can associate with verbs but not with *heta*. As defined above, *heta* lacks the eventuality argument that is required of the argument of ve_{inc}. This analysis of ve_{inc} is also supported by independent empirical predictions concerning the kind of predicates with which ve_{inc} can combine.

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