

Plurality and Distributivity in Juruna: Some Considerations About Verbal Cumulativity

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1. Goals

In this paper we will discuss the behavior of Juruna verbs (Juruna family, Tupi stock) taking into consideration phenomena of verbal pluralization (reduplication, suppletion, and number quantification). We will show that pluralization processes on verbs express more than plurality of events; they denote some semantic specificity concerning the way the event was performed (habituality and distributivity, for instance). In addition we will offer preliminary considerations about the parallelism between nominal and verbal quantification (quantification of entities and events, respectively) and cumulativity (based on Kratzer 2001, 2005) in Juruna.

2. Corpora

The language on which we will be based is Juruna. Juruna is a language that belongs to the Juruna family, Tupi stock, together with two other languages: Xipaya and Manitsawá (Rodrigues 1994; 96). The speakers of Juruna are approximately 241 people (Fargetti 2001; 25), who live in National Park Xingu, Mato Grosso, Brazil. This analysis will be based on data from Fargetti (2001) and data elicited by me and Luciana Storto in April 2006 and January 2007. The data will be presented in the orthography proposed by Fargetti (2001). We choose not to transcribe tone in this paper.

3. Juruna and Noun Phrases

To understand the questions associated to verbal cumulativity in Juruna, it is important to understand the behavior of noun phrases in this language and their relationship with pluralization processes. In Juruna, the plural morpheme {-i} is restricted to [+human] nouns, as exemplified in (1):

- (1) Iidja-i ali etaetaeta
 woman-plural child to bath.reduplicate
 “The women will bathe the child” (multiple events)
 “The women will bathe the children” (multiple events)

In case the noun is an object or an animal, the plural morpheme is zero, as we can see in (2) and (4) (Lima 2006a). If we try to pluralize nouns that have no [+human] feature with {-i}¹, the sentence is ungrammatical, as can be seen in (3) and (5):

- (2) Baʔi ali-i yaditu
 Paca child-pl to scare
 “The paca(s) scared the children” (once)
 “The paca(s) scared the children” (multiple events)
- (3) * baʔe-i ali-i yaditu
 Paca-pl child-pl to scare
- (4) Epa daeku na
 tree to knock down 1s
 “I knocked the tree down”
 “I knocked the trees down” (once or multiple events)
- (5) * Epa-i daeku na
 tree-pl to knock down 1s

It is important to emphasize that the same type of restriction happens in North American native languages, as described by Mithun (2001) and in other Tupi languages (Lima 2006a) such as Gavião (Moore 1984) and Kamayurá (Seki 2000).

In Juruna, even in cases where nouns are [+human] they can appear without plural morphology. We can contrast example (1), where the noun *ali* can express “child” or “children” with (2), where *alii* expresses only children. This fact shows that nouns are cumulative (Kratzer 2001; 2005), that is, they can denote both singular and plural entities. In (6), for instance, the noun *senahi* (man) appears without plural morphology. Because of this, it can have both singular and plural readings:

- (6) Senahi ani kota ixu
 Man that snake to eat
 “The man ate that snake”
 “The men ate that snake”

Once the noun is pluralized by {-i}, it has solely the plural reading, as can be seen in (7):

¹ Fargetti (2001) discusses the morpheme {-i} in the formation of the third person plural pronominal “abidai”. In this word, “abi” means man, {-da-} is a collective and {-i} is plural.

- (7) Senahĩ -i anĩ kota ixu
 Man-pl that snake to eat
 “The men ate that snake”

In other words, the plural morpheme eliminates singular readings from the denotation of the noun. Nevertheless, the inverse process, that is, singularization, was not attested. Apart from the occurrence of singular demonstratives (as *anĩ* – that (example 6 and 7)), there is no morpheme in Juruna that singularizes cumulative nouns in the same way as the morpheme {-i} pluralizes them.

Summarizing some important characteristics of number in Noun Phrases in Juruna, we have observed that they can present plural morphology, but there are semantic restrictions to the occurrence of such morphology. Besides that, we have observed that the absence of this plural morpheme in Noun Phrases does not imply that the noun is singular, but, instead, that the noun is cumulative, lacking a specification as to whether it denotes one or more entities. Once we have presented how cumulativity operates in nouns, we will go on to discuss the process of cumulativity in verbs.

4. Juruna and Verb Phrases

Verbs in Juruna seem to be cumulative, since they have in their denotation both singular and plural events:

- (8) João anĩ ba’ĩ apĩ
 João that paca to shoot
 “João shot at that paca once”
 “João shot at that paca many times”
- (9) Karin itxĩbĩ Maria-be kamema kua
 Karin many Maria-dat necklace to give
 “Karin gave many necklaces to Maria once”
 “Karin gave many necklaces to Maria many times”
- (10) João yauda perumã zaku
 João two monkey to see
 “João saw two monkeys once”
 “João saw two monkeys many times”

On one hand, in examples (8), (9) and (10), verbs can express both singular and plural events. On the other hand, verbs can be pluralized by three processes (Lima 2006b, 2007): verbal reduplication² (as we can see in 11 in contrast with 8), verbal suppletion (as

² Fargetti (2001) presents an analysis of the reduplication process, specifying the phonological constraints involved. The author associated the process of reduplication to the plurality of arguments (when they are reduplicated by affixation, for instance *djidaku* / *djidaidaku* (to hit)) or to event reiteration (when the verb reduplicates completely: *unka/ unkaunka* (to decorate)). We discussed her analysis in other papers (Lima 2006a, Lima 2007).

we can see in example 12 in contrast with 9) or nominalized number (as we can see in example 13 in contrast with 10):

- (11) João anĩ ba'ĩ apĩpi
 João that paca to shoot.reduplicate
 “João shot at that paca many times”
 * “João shot at that paca once”
- (12) Karin itxĩbĩ Maria-be kamema upiku
 Karin many Maria-dat necklace to give
 “Karin gave many necklaces to Maria many times”
 * “Karin gave many necklaces to Maria once”
- (13) João yauda-ha perumã zaku
 João two-nominalizer monkey to see
 “João saw monkey twice”
 * “João saw two monkeys (once/ many times)”

The examples above show that verbs can reduplicate as in (11), present a suppletive form as in (12) or be quantified by a nominalized numeral as in (13) to denote multiple events. In other words, these are processes of verbal pluralization which act on cumulative verbs and eliminate a singular event reading from the denotation of the verb. We can hypothesize that these pluralization morphemes are pluractional markers that do not reflect the plurality of the verb's arguments but the plurality of the verb itself, because it is the verb that represents the occurrence of multiple events (Lasersohn 1995; 241).

As it happens in nouns, pluralization processes in verbs are not obligatory, even in plural contexts; in these cases, when no pluralization process acts on the verb, this does not imply that it denotes a singular event, but only that verbs remain cumulative (as it happens in other languages such as Xipaya (C. Rodrigues 1995) and Halkomelem [Wiltschko 2005], for instance). Taking into consideration exclusively the process of reduplication, we can observe that when this pluralization process happens, we have both the specification of the number of events denoted (in case, plural) and the type of event realized, as we will see below.

5. Reduplication and Semantic Specifics of The Event

The extensive literature about reduplication (Lasersohn (1995), Cusic (1981), Stegnij (1997), among others) shows cross-linguistically that reduplication is associated to semantic specificities of the event. Cusic, for instance, presents a whole range of plural meanings associated with verbal reduplication: repetitiveness, habitual agency, intensity, duration, celerativity/ retardativity, among others (Cusic (1981; 74-75)).

Although these plural meanings appear to be associated to the reduplication process in Juruna, it is not the case that reduplication alone carries the specific meanings

in question. In fact, the type of verb in which reduplication happens will determine what kind of plural meaning results. In this sense, the semantics of pluractional markers (in this case, reduplication) will depend on the aspectual class of the verb on which they operate (activity, accomplishment, achievement, or state³).

To understand the variation of plural meanings in Juruna, the most important fact is not the morphosyntactic process of pluralization involved – reduplication, or suppletion, for instance – but the aspectual class of verb. To exemplify what kind of plural meanings are possible in Juruna, we can show cases where the pluralization of the verb is associated to a distributive reading (see 15 in opposition to a cumulative verb in 14):

- (14) Wi^hubia etu
 Tracajá egg to fell
 “The egg(s) fell down” (single or multiple event)

- (15) Wi^hubia etutu
 Tracajá egg to fell.reduplicate
 “The eggs fell down” (one at a time; multiple event)

Besides the plural meaning, example (15) also shows another important characteristic of the process of verbal reduplication: in some cases, the pluralization of the event implies the existence of multiple objects, as we can observe in (15), where we have “eggs”. In fact, the pluralization of the verb does not necessarily imply pluralization of the arguments involved in the action, but in some cases, because of pragmatic requirements, a plural event requires plural subjects or objects. Another example is given in (16):

- (16) Senahi kota ixixi
 man snake to eat.reduplicate
 “The man eats snake always”

In (16), we observe that there is no quantifier directly delimiting the number of snakes involved in the event. However, in this context, because of the reduplication, there is necessarily more than one snake, since a man can not eat the same snake always. In cases like that, the quantification acts on the whole VP, not only on the verb. Conversely, there are cases in which the verb can present a distributive reading with verbal reduplication, where no plural object is implied:

- (17) João anī ba^hi apīpī
 João that paca to shot.reduplicate
 “João shot at that paca many times”

³ We are based on Vendler (1967) verbal classes distinction.

Reduplication processes can be associated to distributive events, as seen before in (15) and again in (20); reduplication also excludes a collective reading (as in (19)):

- (18) João Pedro djuda piza inãu
 João Pedro and boat to lift
 João and Pedro together lifted the boat
- (19) * João Pedro djuda piza inãuinãu
 João Pedro and boat to lift.reduplicate
 João and Pedro together lifted the boat
- (20) João Pedro djuda piza inãuinãu
 João Pedro and boat to lift.reduplicate
 João and Pedro each lifted the boat

Another type of reading associated to pluralization processes is the habitual reading, exemplified in (21) and also in (23)/(25) in opposition to (22)/ (24):

- (21) João ka'a-be txatxa⁴ duha upiide hidji kuhuhu
 João forest-dat to go.reduplicate more.comparative to fish.reduplicate
 "João hunts more than he fishes"
- (22) João Maria du
 João Maria to meet
 "João met Maria" (single or multiple events)
- (23) João ukahãu Maria dudu
 João always Maria to meet. Reduplicate
 "João always meets Maria" (multiple events)
- (24) João Maria yaekua
 João Maria to remember
 "João remembered Maria" (single or multiple events)
- (25) João Maria yaekuakua
 João Maria to remember.reduplicate
 "João always remembers Maria (multiple events)"

Taking all these facts into consideration, we can summarize some assumptions discussed until now: 1) verbs have cumulative denotations in Juruna; 2) the absence of pluractional markers does not imply that the event denoted by the verb is singular, but instead of that, the verb remains cumulative without the specification of number of events; 3) both for nouns and for verbs pluralization strategies ({-i} morpheme for nouns and reduplication/ suppletion, nominalized number for verbs) exclude from their

⁴ In Juruna, "to hunt" is expressed by "to go to the forest".

denotation singular readings; 4) both verbs and nouns present constrains in the process of quantification of entities and events, respectively. For nouns, we have observed that the [+human] feature constrains pluralization. Some hypothesis will be discussed below to explain why some verbs do not reduplicate.

6. Reduplication and Delimited Events

In Juruna, an important characteristic that can be observed is the fact that not all verbs reduplicate in multiple event contexts. As presented above, there is a correspondence between the type of verb and the plural meanings associated with it in plural contexts. To understand what constrains the reduplication process, we must also discuss verb classes, based on the feature telicity. The literature shows that there are differences between verbs that are delimited (telic) and not delimited (atelic) (Tenny 1987, 1994; Arad 1995; Smith 1997). The following table summarizes that fact:

(26)

Type	Features			Characteristics of the event
	Static	Durative	Telic ⁵	
Stative		+	-	It is not an event (know the answer, love Mary).
Activity		+	-	Cumulative events (laugh, stroll in the park)
Accomplishment		+	+	Finite, intrinsically bounded (build a house, learn Greek)
Semelfactive		-	-	Single-stage events with no result or outcome (tap, knock).
Achievement		-	+	Instantaneous events that result in a change of state (win a race, reach the top).

(based on Smith 1997)

Observing Juruna verbs in their contexts, we argue that the central feature that differentiates a verb that reduplicates from one that does not is telicity: [+telic] verbs (accomplishment e achievement) reduplicate (27) and [-telic] ones (stative and activity) do not (28):

⁵ Telic events are defined here as events that “have a change of state which constitutes the outcome, or goal of the event” (Tenny 1994; 19). A similar definition can be considered from Krifka (1998) and Arad (2001): a telic predicate presents a set terminal point. Considering the classical definition given by Comrie (1976, 45), a telic situation presents a well-defined terminal point, beyond which the process can not continue.

(27)

	<i>Features</i>			<i>Aspect</i>	<i>Examples</i>
	<i>[static]</i>	<i>[durative]</i>	<i>[telic]</i>		
To fall (bīdītu)	-	-	+	<i>achievement</i>	<p>Una bīdītu <i>Is to fall</i> “I fell” (single or multiple events) (Fargetti 2001; 176)</p> <p>Ulu’udi bīdīdītu <i>Ipl to fall .reduplicate</i> “We fell” (multiple events) (Fargetti 2001; 177)</p>
To peel (asaku)	-	+	+	<i>accomplishment</i>	<p>Asaku na mayaka-be <i>To peel Is manioc-dat</i> “I peeled the manioc(s)” (single or multiple events)</p> <p>Asasaku na <i>To peel.reduplicate Is</i> mayaka-be <i>manioc- dat</i> “I peeled the manioc(s)” (multiple events)</p>

(28)

	<i>Features</i>			<i>Aspect</i>	<i>Examples</i>
	<i>[static]</i>	<i>[durative]</i>	<i>[telic]</i>		
To row (uruku)	-	+	-	<i>activity</i>	<p>Uruku na <i>To row Is</i> “I rowed” (single or multiple event)</p> <p>Uruku udi <i>To row Ipl</i> “We rowed” (multiple event)</p>
To love (a)	+	+	-	<i>state</i>	<p>João Maria a <i>João Maria to love</i> “João loves Maria”</p>

					Abĩdai du-hura a 3pl 3pl.poss.parents to love “They love their parents”
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However, [-telic] predicates can be delimited using linguistic resources. As Krifka (1998; 207) and Van Geenhoven (2005) propose⁶, in Krifka’s terms:

“(…) the crucial property that distinguishes telic from atelic actions or verbs is that the former require some time till they are completed. They have to reach a “set terminal point” (…). For example, one and the same event of running can be described by running (i.e., atelic predicate), or by running a mile (i.e., a telic, or delimited, predicate). Hence the distinction between telicity and atelicity should not be one in nature of the object described, but the description applied to the object (…). It is obvious that quantized predicates are telic (run a mile) (…) but not every telic predicate is quantized (….) cumulative predicates, on the other hand, are typically atelic (run, running)”(my emphasis)

Taking this into consideration, in Juruna, an initially atelic verb can be reduplicated when it is delimited by quantification⁷:

(27) Ali wariu ururuku
child lot to row-reduplicate
“The child/ children rowed a lot”

(28) João txabĩu ururuku
João three to row.reduplicate
“João rowed three times”

However, there are predicates that cannot be delimited, mainly when they denote states ([Arad 1996]). As a consequence, it will be not available to reduplicate:

(29) João kuha Maria a
João many times Maria to love.reduplicate
“João has loved Maria for a long time”

(30) * João kuha Maria aa
João many times Maria to love.reduplicate
“João has loved Maria for a long time”

⁶ Van Geenhoven (2005) discusses also the process of a telic event denoting an atelic reading, but we will not discuss this fact in Juruna in this presentation.

⁷ From this point of view, as happens to mass nouns which require a measure phrase (for instance, *‘J’ai acheté or’ [I bought gold] in opposite to ‘J’ai acheté deux barres d’or’ [I bought two bars of gold] (Müller & Oliveira 2004; 6-7) the undelimited atelic verbs (which denote activity mainly) can be delimited using linguistic resources. In Brazilian Portuguese, for instance, an atelic verb such as laugh “Maria ri” (Maria laughs) can be delimited with the insertion of a cognate object as “Maria riu uma risada alegre” (Maria laugh an happy laugh) (Gomes 2006).

A further question is to find out whether there are subclasses inside the verbal classes presented here and the syntactic consequences of this, as observe Levin (1993) for English and Cañado (1995) for Brazilian Portuguese. Cañado (1995) shows that the verbal class of psych-verbs presents subgroups when we observe their syntactic behavior:

(31)

<i>Class</i>	<i>Syntactic passive</i>	<i>Adjectival passive</i>	<i>The class accept:</i>
<i>I</i>	O cachorro é temido por José ⁸ (The dog is feared by José)	* O cachorro ficava temido com José. (The dog got feared with José)	Syntatic passive
<i>II</i>	* A mãe foi preocupada por Rosa (The mother was worried by Rosa)	A mãe ficava preocupada com a arrogância de Rosa. (The mother became worried about Rosa's arrogance)	Adjectival passive
<i>III</i>	A multidão foi acalmada pela polícia. (The crowd was calmed by the police)	* A multidão ficou acalmada com os cacetes da polícia. (The crowd got calm with the police's beating)	Syntatic passive
<i>IV</i>	José foi animado por Maria. (José was animated by Maria)	José ficou animado com a beleza de Maria (José got excited about Maria's beauty)	Adjectival passive Syntatic passive

In the same way, it is possible to hypothesize that Juruna verbs have subclasses and this will probably shows that activity verbs, for instance, are not a homogeneous class when concerning reduplication in multiple events context.

7. Final Remarks

In this paper we aimed to show that nouns and verbs in Juruna are cumulative; this is in agreement with the assumption that cumulativity is a universal (Kratzer 2001, 2005) and also shows the parallelism between nominal and verbal domains.

We have discussed the process of pluralization in nouns and verbs with the objective to show the parallelism between them: in both cases, in Juruna the singular is never morphologically marked and the plural is, but only with respect to semantic restrictions. We saw that the process of noun pluralization is marked with the morpheme {-i} and of verbs is marked with verbal reduplication, suppletion or nominalized number.

Taking into consideration the processes of verbal pluralization, we have mainly analyzed the case of reduplication. We observed that this process does not only mean that

⁸ We present in (31) a literal translation of the sentences from Brazilian Portuguese to English. It is important to emphasize that we are not discussing the adjectival and syntactic passive in English or if the sentences are grammatical or agrammatical in English.

the event is a plural one, but also that the event was performed in a specific manner, as an example we show data where the reduplication is associated to a habitual or distributive reading.

In Juruna, the absence of a process of pluralization leaves the verb unmarked for the number and type of event realized; in other words, it remains with both singular and plural readings, because it is cumulative. As we have seen, the same happens to nouns.

Finally, we have observed that as nouns present plural morphology restricted by the [+human] feature, verbs also present restrictions to be pluralized (and this also reinforces the parallelism between these domains: both present constrains to pluralization). In the case of verbs, they can reduplicate in delimited events in contrast with undelimited ones, in which verbs do not reduplicate. However, it is important to emphasize that, as Krifka proposes, an undelimited event can be delimited and then can be reduplicated.

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