On Distributive Numerals in Karitiana

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This paper investigates the semantics of distributive numerals in Karitiana - a language of Tupi stock, spoken by about 350 people in the northwest of Brazil (Storto & Velden 2005). Examples are given in (1)-(2). Many languages from distinct language families express distribution by means of distributive numerals (see Gil 1995). Karitiana is one of them.

Kratzer 2005 claims that there are two possible sources for verbal plurality: lexical cumulativity and verb phrase (VP) pluralization. Lexical cumulativity accounts for the fact that, in Karitiana, sentences without any number marking on noun phrases or verbs are true of both collective and cumulative readings, as illustrated in (3). These sentences, however, cannot be interpreted distributively, in the sense that (3) cannot have an interpretation in which each of the girls built two canoes. According to the author, VP pluralization in English and possibly other languages is induced by plural morphemes on determiners. In Karitiana noun phrases are never marked for number. Distributivity then must be generated by some other operator(s). Karitiana has pluractional affixes that operate on verb cumulative denotations (Müller & Sanchez-Mendes 2008). They are not able to pluralize the VP though, and, therefore, cannot generate truly distributive readings. The pluractional version of sentence (3), in (4), does not allow for distributivity.

We claim that reduplicated distributive numerals are adverbial plural operators over the VP. Their syntax is like that of other adverbs in the language. In matrix clauses, the only position adverbs cannot occur is between the subject and the verb when the order is SVO (Storto 1999), and that is exactly the distribution one finds for distributive numerals (see 1 & (5a-c)). Note that all versions of this sentence have the same array of possible interpretations. Semantically, distributive numerals pluralize the event argument and impose a restriction on the cardinality of its subevents. The subevents may be individuated temporally or based on participants (Lasersohn 1995). For concreteness, we state our analysis within an event semantics as proposed by Kratzer 2003. This framework posits a neo-Davidsonian association of external arguments, but not of internal arguments. All basic predicates are assumed to be cumulative. The truth conditions stated in (5), and formalized in (6), capture the situations in which (1) would be considered true.

No matter how the subevents are individuated, the semantics we attribute to distributive numerals accounts for the plurality of events requirement through explicit pluralisation of the event argument, whereas homogeneous distributivity is warranted by the requirement that the subevents have the same cardinality. This analysis of distributive numerals in Karitiana also accounts for the fact that they are vague insofar as what their distributive key is, since the set of homogeneous subevents may be individuated as having either entities (subject/object), or time as their distributive key (Choe 1987). This explains why the same sentences with the reduplicated adverbials are appropriate in various distributive contexts as illustrated by (1-2). The analysis provides support for Kratzer's claim that there are (at least) two sources of verbal plurality in natural languages.

(1) Contexts: Each child built one canoe./ Children built one canoe a day/a week/a month.

Myhint	myhint	nakam'at	gooj	õwã
myhim-t	myhim-t	Ø-naka-m-'a-t	gooj	õwã
one-OBL	one-OBL	3-DECL-CAUS-build-NFT	canoe	child

'Children built canoes distributively (in ones)'

(2) Contexts: Each child built two canoes./ Children built two canoes a day/a week/a month.

sypomp	sypomp	nakam'at	gooj	õwã
sypom-t	sypom-t	Ø-naka-m-'a-t	gooj	õwã
two-OBL	two-OBL	3-DECL-CAUS-build-NFT	canoe	child

'Children built canoes distributively (in twos)'

(3)

Lu	Le	nakam'at	sypomp	gooj
Lu	Le	Ø-naka-m-'a-t	sypom-t	gooj
Lu	Le	3-DECL-CAUS-build-NFT	two-OBL	canoe

'Lu and Le built two canoes.'/ 'Lu and Le built canoes twice.'

✓ cummulative reading (for ex., one canoe built individually, the other collectively)
✓ collective reading
× distributive reading (each girl builds two canoes)

(4)

Lu	Le	nakam'ab'adn	sypomp	gooj
Lu	Le	Ø-naka-m-'a-'a-t	sypom-t	gooj
Lu	Le	3-DECL-CAUS-build-RDP-NFT	two-OBL	canoe

'Lu and Le built two canoes'/ 'Lu and Le built canoes twice'

✓ cummulative reading (two or more events)
✓ distributive reading
× collective reading (each child builds two canoes -one event only)

(5)

a.

Õwã	nakam'at	**myhint**	**myhint**	gooj
child	3-DECL-CAUS-build-NFT	one-OBL	one-OBL	canoe

b.

*Õwã	**myhint**	**myhint**	nakam'at	gooj
child	one-OBL	one-OBL	3-DECL-CAUS-build-NFT	canoe

c.

Õwã	nakam'at	gooj	**myhint**	**myhint**
child	3-DECL-CAUS-build-NFT	canoe	one-OBL	one-OBL

(5) Children built canoes, and the building of canoes can be divided into subevents that contain only atomic events.

(6) $\exists E\ \exists X\ \exists Y$ [*children (X) & *agent (X) (E) & *building (Y) (E) & *canoe (Y) & $\exists e_1 \ldots e_n$ [$e_1 \ldots e_n < E$ & $|e_n| = |1|$ & building (Y) (e_n)]

(7) [[myhint myhint]] = $\lambda P{<}s,t{>}\ \lambda E$ [P(E) & $\exists e_1 \ldots e_n$ [$e_1 \ldots e_n < E$ & $|e_n| = |1|$ & P(e_n)]

*Symbols used: NFT= non future, RDP = reduplication, DECL = declarative, CAUS = causative, 3 = 3rd person, AN = anaphor, OBL = oblique suffix. E, e: variables over sing & pl events; X, x, Y, y: variables over sing & pl entities, s: event type, t: sentence type. The * indicates that the predicate is cumulative, that is, includes both singularities and pluralities in its denotation.

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