WAYS OF EXPRESSING PLURALITY:
CUMULATIVITY, PLURACTIONALITY AND DISTRIBUTIVITY IN KARITIANA

Ana Müller
University of São Paulo
anamuler@usp.br

Kratzer 2005 claims that there are two possible sources for verbal plurality: lexical cumulativity and VP-pluralization. The author takes verbs to come from the lexicon with cumulative denotations, that is, denotations that encompass both singularities and pluralities. VP-pluralization, on the other hand, is syntactically built and has scope over the whole predicate. It is needed to account for truly distributive readings - readings in which the number of events and/or of entities denoted by the predicate is multiplied. An example is the distributive reading of 'Lu and Le ate three snakes', which involves 2 events of eating three snakes each (a total of 6 snakes). In that reading, the 'eating-3-snakes event' has been multiplied.

Based on the discussion of Karitiana, a native Brazilian language, this paper argues that, pluractionality, which seems to be another possible source of verbal plurality, is not a plural operation in the traditional sense (e.g. Link's *-operator, which builds cumulative denotations out of atomic ones). Pluractionality in Karitiana is an operation that excludes singular events from the cumulative denotations of verbs. The paper concludes that there is room for distinct notions of plurality.

Karitiana is a language in which NPs are not marked for (in)definiteness, number, or case. Karitiana Ns and Vs have cumulative (number-neutral) denotations. This is also true of its unmodified NPs and VPs, as illustrated by the many possible interpretations of sentence (1). The language has no Determiners - NPs only have modifiers such as numerals, adjectives or adjunct clauses, including universal predicates. (This paper relies on Storto 1999 and following work for the basic morphological and syntactic description of the language. The data presented in this study are based on original fieldwork.)

(1)   Õwã   Ø-naka-'y-t   boroja
        kid   3- DECL-eat-NFT   snake
        '(The/a/some) kid(s) eat(s)/ate (the/a/some) snake(s)'

According to Kratzer 2005, lexical cumulativity of Vs alone accounts for the fact that sentences like (1) and (2) are true of collective and cumulative eatings. The logical form of (2) in (3) expresses that. The two girls may have eaten the snakes collectively; Lu may have eaten one snake, whereas Le may have eaten the other two; and so on, as long as the total number of snakes eaten is three.

(2)   Lu Le Ø-naka-'y-t   myjym-t   boroja
        Lu Le 3-DECL-eat-NFT   three-OBL   snake
        'Lu and Le ate three snakes'

(3) $\exists E \exists Y$ [**eat**(Y)(E) & **agent**(Lu+Le)(E) & **snakes**(Y) & $\mid Y \mid = 3$];
        where: E=variable over singular and plural events; Y=variable over singular and plural snakes.

Many languages of the world make use of reduplication to express event plurality, intensity, distributivity, and other related notions (Cusic 1981, Gil 1982, Newman 1990, Lasersohn 1995, among others). Karitiana makes use of V-reduplication and of reduplicated adverbials. V-reduplication or pluractionality in Karitiana means event repetition in time. It is effected by the reduplication of the root (compare 2 to 4). Pluractionality is a fully productive process, which may be applied to accomplishments, achievements, processes and states, as

long as a repetition in time interpretation is available (Müller & Sanchez-Mendes 2008). Here we seem to have a puzzle because, as in English and other more familiar languages, sentences like (1-2) can actually be about plural events, since V is basically plural (cumulative) in Karitiana.

(4) Lu Le Ø-naka-'y-'y-t   myjym-t   boroja
     Lu Le 3-DECL-eat-RDPL-NFT three-OBL   snake
     'Lu and Le ate three snakes'

Reduplicated adverbials such as the distributive numeral *myjymp.myjymp* ('three three') (5) are sentential adverbials in the language, and have scope over the whole VP (Müller & Negrão 2012). Adverbial reduplication always yields distributive readings. The two kinds of reduplication may co-occur as in (6).

(5) Myjym-t.myjym-t   Ø-naka-'y-t   boroja   Lu Le
     three-OBL.RDPL   3-DECL-eat-NFT   snake   Lu Le
     'On every occasion, Lu & Le eat/ate three snakes'
(6) Myjym-t.myjym-t   Ø-naka-'y-'y-t   boroja   Lu Le
     three-OBL.RDPL   3-DECL-eat-NFT   snake   Lu Le
     'On every occasion, Lu & Le eat/ate three snakes'

In sentences (4) and (6) pluractionality does not seem to be playing any role. Nevertheless, if one replaces *myjymp* ('three') for *myhint* ('one'), the pluractional sentences become ungrammatical (*Lu Le Ø-naka-'y-'y-t myhin-t boroja/ *Myhyn-t.myhyn-t Ø-naka-'y-'y-t boroja Lu Le*). Pluractionality then just means that the number of events must be plural. This is expressed by the logical form of sentence (4) in (7).

(7) $\exists E \exists Y [E \geq 2$ & **eat**(Y)(E) & **agent**(Lu+Le)(E) & **snakes**(Y) & $|Y|=3]$

Interestingly, neither cumulativity, nor pluractionality are able to generate truly distributive readings since they only have scope over the V-head. Neither sentence (2), nor its pluractional version (4), have interpretations in which the predicate distributes over each atomic part of the subject, e.g., in both sentences the total number of snakes involved is always three. VP-pluralization, is needed to generate distributive readings like the ones of sentences (5,6). VP-pluralization is introduced by reduplicated adverbials, which distribute the pluralized predicate - subevents of eating.3.snakes. The logical form in (8) expresses the existence of VP plurality in such cases, since the number of 'eating 3-snakes' events is multiplied by the universal quantification over atomic subevents.

(8) $\exists E \exists Y$ [**agent**(Lu+Le)(E) &

     $[\forall e \leq E \exists y \leq Y$ [atomic(e) $\rightarrow$ **eat**(y)(e) & **snake** (y) & $|y| = 3]]]$;

     where: e=variable over atomic events; y=variable over singular & plural entities.

If one takes the basic meaning of the term plurality to refer to two or more entities or events, one must acknowledge that plurality may be linguistically expressed by distinct semantic means. The distinct modes of plurality in Karitiana thus include: (i) lexical cumulativity; (ii) pluractionality – excluding singular events from the denotation of a verbal head; (iii) true distributivity, which implies VP-pluralization. Based on the discussion of Karitiana, what is to be expected cross-linguistically besides lexical cumulativity and VP-pluralization, is also plural operations on cumulative V-heads, such as pluractionality.

Abreviations:3=3rd.person;DECL=declarative.mood;NFT=non-future;OBL=oblique;RDPL=reduplication.
References: Kratzer2005.On the Plurality of Verbs; Cusic1981.*Verbal Plurality and Aspec*;Gil1982. *Distributive Numerals*; Lasersohn1995.*Plurality, Conjunction, and Events*;Müller&Sanchez-Mendes2008.

Pluractionality in Karitiana;Müller&Negrão2012.On Distributivity in Karitiana;Newman1990.*Nominal and Verbal Purality in Chadic*;Storto1999. *Aspects of Karitiana Grammar*.