# Delimit Event <br> International Workshop on Identification and Delimitation of Events 

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## Event Plurality and

## Event Identification in Karitiana




## Focus:

- The relation between event plurality and event identification.


## Data:

$>$ Event plurality in Karitiana, a native Brazilian language.

## Questions in the background (Donazzan \& Müller 2013):

1. The linguistic ontology of plural events. Are there different individuals of the type event and which are the functional items used to identify them?
2. Semantic variation. What are the semantic or cognitive universals of the event domain?

## More specific questions:

- How does Karitiana express plural events?
- What types of events are they?


## The traditional account of nominal number (Corbett 2000):

- Singular morphology refers to singular (atomic) entities.
- Plural morphology refers to more than one singular entity.
$\Rightarrow$ There is more to plurality than the traditional account claims.


## In Kartiana

Verbal plurality comes in different modes:

- Unmodified verbal denotations.
- Pluractional verbal denotations.
- Distributed VP-denotations.


## Claim:

$>$ Distinct modes of verbal plurality may result in distinct modes of event identification.

## More specific claims about Karitiana:

- Unmodified verbal denotations are indeterminate as to the mode their events are identified.
- Pluractional verbs individuate events through their running times.
- VPs pluralized by distributive numerals are indeterminate as to the mode their events are indentified.


## Structure of the presentation:

Section 2: Theoretical background
Section 3: The Karitiana language
Section 4:Unmodified verbal denotations

Section 5: Pluractionality.
Section 6: Distributive Numerals
Section 7: Conclusions


## A neo-davidsonian event semantics:

$>$ VPs have an event argument (cf. Davidson 1967, Parsons 1990, Schein 1993, Lasersohn 1995, among others).
$>$ The subject argument is not a lexical argument of the verb (Kratzer 1996).
$>$ The object argument is an argument of the verb (Kratzer 2003).
> VP denotations are minimal.

- A predicate like lift (Nadia)(E) means that $E$ is an event in which nothing apart from lifting Nadia takes place. However, E might have proper subevents in which a lifting of Nadia takes place.


## The Cumulativity Universal

- Denotations of all simple predicates in natural languages are cumulative (Krifka 1992, Landmann 1996, Kratzer 2003).
$>$ Cumulativity: whenever a predicate applies to two individuals it also applies to their sum.

Cumulative denotations:
(1) $[[$ Vbox $]]=\left\{\right.$ box $_{1}$, box $_{2}$, box $_{3}, \ldots$, box $_{1}+$ box $_{2}$, box $_{1}+$ box $_{3}, \ldots$, box $_{1}+$ box $_{2}+$ box $\left._{3}, \ldots\right\}$
(2) $[[$ Vlift $]]=\left\{<\right.$ box $_{1}$, lifting $\left._{1}\right\rangle,<$ box $_{2}$, lifting $\left._{2}\right\rangle,<$ piano $_{1}$, lifting $_{3}, \ldots,<$ box $_{1}+$ box $_{3}$, lifting $_{4}>\ldots,<$ box $_{1}+$ box $_{2}$, lifting $_{1}+$ lifting $_{2}>, \ldots,<$ box $_{1}+$ box $_{2}+$ box $_{3}+$ piano $_{1}$, lifting $_{1}+$ lifting $_{2}+$ lifting $_{3}+$ lifting $\left._{4}>, \ldots\right\}$


## Karitiana

- A native Brazilian language.
- The only surviving language of the Arikén family, Tupi stock.
- Spoken by approximately 400 people.
- Reservation located in western Amazonia.

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# Karitiana is verb second in main declarative clauses. 

(3) taso $\emptyset$-naka-'y-t boroja
man 3-DCL-eat-NFT snake
'Men ate snake(s)'
$\begin{array}{lcll}\text { (4) myhim-t } & \text { Ø-naka-'y-t } & \text { boroja } & \text { taso } \\ \text { one-ADJC } \quad \text { 3-DCL-eat- NFT } & \text { snake } & \text { man } \\ \text { 'Men ate snakes once' } & & \\ & \text { 'One man ate snakes' } & & \\ & \text { 'Men ate one snake' } & & \end{array}$

## Karitiana is an ergative-absolutive language:

- Intransitive verbs agree with their subjects;
- Transitive verbs agree with their direct objects.
(Storto 1999)


## Intransitive verbs

(5) A-tar-a

2s-leave-IMP
'(you) go away!'

## Transitive verbs

(6) an $y$-ta-oky-t
yn
2s 1s-DCL-hurt-NFT 1s
'You hurt me'

## Nouns and unmodified NPs are number-neutral (cumulative) in Karitiana.

(7) õwã Ø-naka-m-'a-t gooj child 3-DCL-CAUs-build-NFT canoe 'Children built canoes (an indeterminate number of times)'
$\checkmark$ The/A child built the/a canoe.
$\checkmark$ (The) children built (the/a) canoe(s).
$\checkmark$ The/A child built canoes.
$\checkmark$ Children built the/a canoe.

VPs are marked for person, mood and tense in Karitiana
(8)

| sypom-t.sypom-t | $\emptyset$-naka-m-'a-t | gooj | õwã |
| :--- | :--- | :--- | :--- |
| two-ADJC-two-ADJC | 3-DECL-CAUs-build-NFT | canoe | child |

'Every child built two canoes'/'Children built two canoes at a time'


## >The Cumulative Universal:

Denotations of all simple predicates in natural languages are cumulative (Krifka 1992, Landmann 1996, Kratzer 2003).
$>$ Unmodified Verbs are numberneutral and cumulative in Karitiana.

- Number-neutral verbal denotations are
indeterminate as to their mode of event individuation.


# $>$ Number-neutral verbal denotations 

 generate an array of plural event readings:$\checkmark$ Cumulative readings.
$\checkmark$ Collective readings.
(9) õwã $\varnothing$-naka-m-'a-t gooj

## child 3-DCL-caus-build-NFT canoe

'Children built canoes'

## The interpretation (Müller \& Negrão 2012):

(10) $\exists \mathrm{E} \exists \mathrm{X} \exists \mathrm{Y}$ [build (Y) (E) \& agent(X)(E) \& child (X) \& canoe(Y)]
$>$ 'There is a possibly plural event in which an indeterminate number of children built an indeterminate number of canoes.'

True of: one child building one canoe, one child building canoes, children building one canoe, children building canoes individually or collectively.
$\Rightarrow$ Õwã nakam'at gooj ('Children built canoes') is true in collective and cumulative situations
$[$ [agent $]]=\{\ldots,<A+B+C+\ldots, e 1+e 2+e 3+. . .>\}$
[[build.canoe]]=\{..., <c1+c2+c3+...,e1+e2+e3+...>\}
$>$ Unmodified Vs are indeterminate as for the number of events and the ways they are identified.
(11) Jonso
woman
$\emptyset$-naka-ot-t
3-DECL-bring-NFT
'Women carried water'
ese.
water
(12) Joao i-pykyn-<a>-t pita-t. Joao PART-run-ABS a.lot-ADJC 'Joao ran a lot'
'João run many times/ fast/ for a long time/ a long distance.'
> Indeterminate as for the number of events and their mode of individuation.

- Contextual possible modes of
event identification:


## Identification by participants...

(13)

| Mauro Cláudio | $\varnothing$-naka-'y-t myjym-t | sanduiche |
| :--- | :--- | :--- |
| M C | 3-DECL-eat-NFT three-ADJC | sandwich |

'Mauro and Claudio ate three sandwiches'

## Identification by occasions ...

(14)

Boroja taso oky tykiri snake man kill when
$\emptyset$-naka-hyryp- $\varnothing \quad$ owã
3-DECL-cry-NFT child
'When the man killed snakes, the child cried'

## Indentification by space

(15)

Sypomp caminhão pip
$\emptyset$-na-otam-t
two-ADJC truck POS 3-DECL-arrive=NFT karitiana
'The Karitinas arrived in two trucks'

## $>$ Number-neutral verbal denotations are

 indeterminate as to the way the events are identified.

## Pluractional languages...

... are languages that mark their Verbs for number.

- They morphologically mark that the events denoted by their verbs are plural.


## Karitiana is a pluractional language.

(16) taso $\varnothing$-naka-'y-t boroja man 3-DCL-eat-NFT snake 'Men ate snakes'
(17) taso $\varnothing$-naka-'y-'y-t boroja man 3-DCL-eat-RDPL-NFT snake 'Men ate snakes repeatedly'

## In Karitiana

$>$ Pluractionality $=$ number-neutral V denotations - atoms (Müller \& Sanchez-Mendes 2008).
>The pluractional events are identified by their running times.

## Properties usually attributed to pluracional morphemes:

1. They are verbal sufixes, mostly reduplicative (Lasersohn 1995, Xrakoskij 1997).
2. They are derivational (Cusic 1981, Lasersohn 1995, Yu 2013):

- They do not combine with all kinds of Verbs;
- Their semantic contribution is not always transparent. The resulting meanings tend to depend on the aktionsart of the verb.

3. They are not compatible with exact cardinals (Hofherr \& Laca 2012).
4. They contribute the notion that the sentence describes a "large" number of events (Cable 2012).

## Property 1:

$>$ They are verbal sufixes, mostly reduplicative (Lasersohn 1995, Xrakoskij 1997).

## In Karitiana...

$\checkmark$ Pluractionality is marked by the reduplication of the verbal root, except for few suppletive cases.

## Table 1: regular pluractionals

| Root | Pluractional Form | Translation | Aktionsart |
| :---: | :---: | :---: | :---: |
| pon | pon.pon | Shoot | Achievement |
| pykyn | pykyn.pykyn | Run | Process |
| eje | еје.еје | Paint | Accomplishment |
| typ | typ.typ | Discover | Achievement |
| sikiy | sikiy.sikiy | want | State |
| pimbik | pimbik.pimbik | push | Process |
| 'oom | 'oom'oom | draw | Process |
| paradywy | paradywy.paradywy | loose | Achievement |
| 'ot | 'ot. 'ot | fall | Achievement |
| kaj | kaj.kaj | Dream | Process |

## Property 2:

> They are derivational (Cusic 1981, Lasersohn 1995, Yu 2013):

- They do not combine with all kinds of Verbs.
- Their semantics is not always transparent. The resulting meanings tend to depend on the aktionsart of the verb.


## In Karitiana:

- Pluractionality is derivational:
$\checkmark$ It is possible for all types of verbs.
$\checkmark$ Its semantics is always that of event iteration in time.


## Achievements

(18)

João $\quad$-na-aka-t i-otam- $\varnothing$
João 3-DCL-COP-NFT PART-reach-ABS
ese.pihorop sok
river.bottom pOS
'João reached the bottom of the river'
(19)

João $\varnothing$-na-aka-t i-otam-otam- $\varnothing$ ese.pihorop sok.
João 3-DCL-COP-NFT PART-reach-RDPL-ABS river.bottom POS 'João reached the bottom of the river repeatedly'

## Accomplishments:

(20) João $\emptyset$-naka-eje- $\varnothing$ escola. João 3-DCL-paint-NFT school
'João painted the school'
(21) João $\emptyset$-naka-eje-eje- $\varnothing$ escola. João 3-DCL-paint-RDPL-NFT school
'João painted the school repeatedly' *'João painted the school once'
*'João painted the school for a long time'

## Activities

(22)

| João | $\varnothing$-na-aka-t | i-pykyn-t. |
| :--- | :--- | :--- |
| João | 3-dCL-COP-NFT | PART-run-ABS |
| 'João ran' |  |  |

(23) João $\varnothing$-na-aka-t i-pykyn-pykyn-t. João 3-DCL-COP-NFUT PART-run-RDPL-ABS
$\checkmark$ 'João ran repeatedly'

* 'João ran for a long time'
* 'João ran intensely'


## States

(24) Inacio $\varnothing$-na-aka-t Inacio 3-DCL-COP-NFT 'Inacio was happy'
i-osedn- $\emptyset$.
PART-happy-ABS
i-osedn-osedn- $\varnothing$.
PART-happy-RDPL-ABS
$\checkmark$ 'Inácio was happy repeatedly'

* 'Inácio was happy for a long time'
* 'Inácio was very happy'


## Property 3:

$>$ Pluractionals are not compatible with exact cardinals (Hofherr \& Laca 2012).

## In Karitiana...

- Pluractionals are compatible with exact cardinality adverbials.
(26)
õwã child
myjym-t
opok.ako.sypi
three-ADJC egg
'Children broke three eggs'
* 'Children broke three eggs at the same time.'
'Children broke three eggs separately.'


## Property 4

$>$ Pluractionals contribute the notion that the sentence describes a "large" number of events.

## In Karitiana...

- Pluractionality may refer to two or more events, not only to a "large" number of events.
(27)
sypom-t
two-ADJC

Ø-na-pon-pon- $\varnothing$ João sojxa kyyn<br>3-DCL-shoot-RDPL-NFT João boar POS

'João shot at boars twice'

- Pluractionality is an operation over the Vhead, not over the VP.
- It parallels Number or Classifiers on the NP.

| *Myhin-tcaminhão | pip | $\varnothing$--na-otam-otam-t karitiana |  |  |
| :--- | :--- | :--- | :--- | :--- |
| one-ADJC truck |  | pos | 3-DECL-arrive-RDPL | karitiana |

*'The Karitianas arrived-PLC in one truck(all at the same time)'
*'The Karitianas arrived in one truck at at time’

* Collective reading.
* Distributive reading.
$\begin{array}{lll}\text { (29) } \begin{array}{ll}\text { Taso } & \emptyset \text {-naka- }{ }^{\prime} \text { - } \text { - } y \text {-t }\end{array} \quad \text { boroja } \\ \text { man } & \text { 3-DCL-eat-RDPL-NFT } & \text { snake }\end{array}$
'Men ate snakes repeatedly'
(30) $\quad \exists \mathrm{E} \exists \mathrm{Y}\left[{ }^{*}\right.$ eat( Y$)(\mathrm{E})$ \& agent(man)(E) \& snake(Y) \&
(i) $E \geq 2$ \&
(ii) $\forall e^{\prime}, e^{\prime \prime}\left[e^{\prime}, e^{\prime \prime} \leq E \rightarrow \sim\left[\tau\left(e^{\prime}\right) \circ \tau(e)\right]\right]$
- where: $\mathrm{E}, \mathrm{Y}$ as in (3); $\mathrm{e}^{\prime}, \mathrm{e}^{\prime \prime}=$ variables over singular events; $\tau=$ time; o=overlap.
>Pluractionality in Karitiana identifies events through their running times.
$>$ It is a functional operation on the $V$-head.



## In Karitiana...

> Distributive numerals are adverbial distributivity operators.

- They generate plural readings in which the number of events and/or of entities denoted by the predicate is multiplied.
$>$ Distributive numerals are indeterminate as to type of the events they identify.


## No distributive numeral:

(31) Lu Le $\varnothing$-naka-m-'a-t

Lu Le DCL-CAUS-build-NFT
'Luciana and Letícia built three canoes.'
$\checkmark$ Collective/cumulative readings - only three canoes.

* Distributive readings - three canoes for each of the girls, three canoes at a time.


## The same sentence with a distributive numeral...

(32)

| Lu Le | $\varnothing$-naka-m-'a-t | myjym-t.myjym-t | gooj |
| :--- | :--- | :--- | :--- |
| Lu Le | 3-DCL-CAUS-make-NFT | two-OBL.RDPL | canoe |

'For each girl (Luciana or Leticia), she built three canoes'
'For each occasion, Lu and Le built three canoes'

* Collective/cumulative readings - only 3 canoes.
$\checkmark$ Distributive readings -1 building.3.canoes event per girl or 1 building.3.canoes event per occasion.


## $\Rightarrow$ The VP has been pluralized (Kratzer 2003).

- The building.3.canoes event has been multiplied by the cardinality of the subject or by the cardinality of the contextually given occasions.


## Analysis (Müller \& Negrão 2012):

(33) Lu Le naka-m-'a-t myjym-t.myjym-t gooj.
'For each $\mathrm{x}<\mathrm{Lu}+\mathrm{Le}$, there is an event of x building three boats.'
'For each occasion, there is an event of Lu+Le building three boats.'
(34) Myjymp.myjymp [ヨX ヨY [Lu+Le (X) \& agent (X) (E) \& boat (Y) \& build(Y)(E)]
(35) $\exists \mathrm{E} \exists \mathrm{X} \exists \mathrm{Y}[\mathrm{Lu}+\mathrm{Le}(\mathrm{X})$ \& agent $(\mathrm{X})(\mathrm{E}) \&$ boat $(\mathrm{Y})$ \& build( Y$)(\mathrm{E})]$ \& ...
i. $\exists e_{1} \ldots \exists e_{n}\left[E=e_{1}+\ldots+e_{n} \& n \geq 2\right.$ \&
ii. $\forall e_{n}\left[e_{n}<E \rightarrow \exists y\left[y<Y \& \&\right.\right.$ build $\left.\left.(y)\left(e_{n}\right)\right]\right]$ \& $\left.|y|=3\right]$

- Are there any restrictions as to the way distributive numerals identify events?


## By space...

Situation: The kids at school sit two by two (in pairs).
(36)

Sypom-t.sypom-t Ø-naka-bik- $\varnothing$ õwã
two-ADJC.RDPL 3-DECL-sit-NFT children
'The children sat two by two'
$>$ For every place, there are two kids.

## By times ...

(37) Myhin-t.myhin-t $\varnothing$-na-otam- $\varnothing$ taso.

One-ADJU.RDPL 3-DECL-enter-NFT man
'The men arrived one by one.'

## By participants...

(38)

Ina Ciz Ø-na-aka-t i-amy-t myhin-t.myhin-t carro-ty

Ina Ciz 3-DCL-COP-NFUT PART-buy-NFT one-ADJC.RDPL car-OBL
'Inácio and Cizino bought a car each.'
$>$ Distributive numerals are indeterminate as to the way they identify events.


- The Karitiana language has (at least) three morphosyntactic means of generating plural event readings:

1) Lexical meaning: the lexical denotation of verbs encompasses both singular and plural events.
2) Pluractionality: pluralization of the verbal head singular events are removed from verbal head denotations.
3) Distributive Numerals: pluralization of the predicate (the VP) - the events denoted by the predicate are multiplied by the number of occasions or participants.
> Distinct kinds of plurals may express distinct kinds of plural events.

## In Karitiana

- Verbal number-neutrality: indeterminate event types.
- Pluractionality: events identified through their running times.
- Distributivite numerals: indeterminate event types.


## Cross-linguistically...

Good candidates for universals as types of event identification are:
(i) Indeterminate lexical verb denotations.
(ii) Running times identification.

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## Abbreviations

ABS=absolutive;
ADJ=adjunct
CAUS=causative; COP=copula;
DCL=declarative;
IMP=imperative;
IMPF=imperfective;
NFT=non-future;
OBL=oblique;
PART=participle;
POS=postposition;;
RDPL=reduplication; ;
$\mathrm{s}=$ singular;
2=2person;
$3=3$ rd person.


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