A unique operator for verbal pluractionality and numeral distributivity

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Claim 1: pluractionality combines with numerals

Claim 2: pluractional numerals are distributive

Conclusion

Analysis and predictions

Seri numerals are verbs

• Seri has nouns, verbs, determiners, adverbs, and a few adjectives (about 10)
• All numerals and quantifiers are intr. verbs, except fazo ‘one’
  • They infect (cf. 3a and 3b) and have the same distribution as verbs

(3) a. Gadiel quih X xacax c-apxa iyoonit.

  Gadiel DEF dog.PL DEF SBJ.NMLZ.SBJ.be_three 3;3.NLVO.kick

  Gadiel kicked three dogs.

  (EDSEI1CT2918DRPM.COM)

b. Gadiel quih xacax X xacax c-apxoj iyoonit.

  Gadiel DEF dog.PL DEF SBJ.NMLZ.SBJ.be_three.3 3;3.NLVO.kick

  Gadiel kicked three dogs.

  (EDSEI1CT2918DRPM.COM)

• What is the difference between capxa and capxoj?
  ANSWER:
  • capxoj is the pluralational counterpart of capxa
  • capxoj has the interpretation of a distributive numeral

(2) Distributive numerals are indefinites that impose a restriction that their reference co-vary with another plurality (Farkas, 1997)

Serious numerals

• Seri numerals are verbs
• Seri has pluractionality
  • Pluractional forms contrast with an underspecified neutral form (Cabredo Hofherr, Pasquereau & O’Meara 2018, Pasquereau 2019, SULA 2020 talk)

(5) Juan quilt hehe z iyahiilic.

  Juan DEF TREE INCDET.PRO 3;3.NLVO.CAUS.DE_beb_tubular.PLUR

  Juan made a tree tubular.

  (QueenslandITI)

Context A: Juan carved several tubes out of a tree. TRUE

Context B: Juan carved one tube out of a tree. FALSE

Numerals have pluractional forms

- Numerals in Seri have two forms, e.g., -apxa/-apxoj 'three' (except the word for 'eight' which is already derived from 'four')

(7) Numerals

1  tazl (adj)  tazc (adj)
2  coocj  coocalcam
3  capxoj  capxoj
4  czooxoc  czooxoj
5  coitolm  cooilm
6  isnaap cazc  isnaap cazlc
7  tomoj cóquiih  tomoj cóquih
8  czooxojc
9  csooi chanal  csoso chanaloj
10  chanal  chanaloj
11  ihanl tazlc  ihanl tazi cóquihi

What does it mean for a numeral to be pluractional?

- Hypothesis: Pluractionality on numerals produces distributive numerals (Farkas, 1997)

(8) Distributive numeral (Cable, 2014)
A morphosyntactic construction containing a numeral, whereby
1. the sentence as a whole receives a distributive reading, and
2. under the allowable readings, the numeral contained within the construction must be interpreted as if it is within the scope of a distributive operator.

No collective reading

(9) Collective scenario
Context: I have three dogs. Two girls came to wash them at 2pm. María and Alina together bathed Zombi, Lalo, and Mía at the same time.
Xicaquiziil cmajic quh haxaca quih
child.PL woman.PL DEF dog.PL DEF
\text{-apxa}/\text{apxoj} hax
sbj.NMLZ be-three/sbj.NMLZ be-three.PLUR water
an iyahaalam.
\text{[Bross] in [3;3].nro.wash.PL}
The children washed three dogs.
Speaker Comment on capxoj: if they are in the same basin, capxoj cannot be used, capxoj is for a pair of three

No cumulative reading

(10) Cumulative scenario
Context: I have three dogs. Two girls came to wash them at 2pm. Alina washed one and María washed the other two.
Xicaquiziil cmajic quh haxaca quih
child.PL woman.PL DEF dog.PL DEF
\text{-apxa}/\text{apxoj} hax
sbj.NMLZ be-three/sbj.NMLZ be-three.PLUR water
an iyahaalam.
\text{[Bross] in [3;3].nro.wash.PL}
The girls washed three dogs.
Speaker Comment on capxoj: because one girl washes one dog and the other washes two, but the sentence says that each one washes three dogs

Distributive reading

(11) Distributive scenario
Context: I have six dogs. Two girls came to wash them at 2pm. While Alina washed 3, María washed the other 3.
Xicaquiziil cmajic quh haxaca quih
child.PL woman.PL DEF dog.PL DEF
\text{-apxa}/\text{apxoj} hax
sbj.NMLZ be-three/sbj.NMLZ be-three.PLUR water
an iyahaalam.
\text{[Bross] in [3;3].nro.wash.PL}
The children washed three dogs.
Speaker Comment on capxoj: because the sentence says that there are three dogs not more, but there are actually six dogs

(12) Distributive numeral (Cable, 2014)
A morphosyntactic construction containing a numeral, whereby
1. the sentence as a whole receives a distributive reading,
2. under the allowable readings, the numeral contained within the construction must be interpreted as if it is within the scope of a distributive operator.
Claim 1: pluractionality combines with numerals

Introduction

Seri pluractional numerals are distributive numerals

(15) Distributive numeral (Cable, 2014)
A morphosyntactic construction containing a numeral, whereby
1. the sentence as a whole receives a distributive reading, ✓
2. under the allowable readings, the numeral contained within the construction must be interpreted as if it is within the scope of a distributive operator, i.e. num-PLUR denotes the distributed share ✓

• Pluractional numerals in Seri are distributive numerals, but what kind? (14)

Num-PLUR marks the distributed share

(13) Context: We have three dogs. Six girls came over to bathe them. Each dog was bathed by a team of two girls.

Xicacaziil cmajic quih
girl.PL woman.PL DEF
c-oocalcam
SBJ.NMLZ be THREE.PLUR
haxaca quih c-apxka
dog.PL DEF SBJ.NMLZ be three
hax an iyahaalam.
water [3ROSS]n 3,3.nuro.wash.PL

TWO.PLUR girls washed three dogs.

Representation of the context:
∃z. three.dogs(z) & ∀x. x/y z & atom(x) → ∃y. two.girls(y) & y bathed x in e
• [two.PLUR girls] is interpreted as if within the scope of ∀, the sentence is true

• [three.PLUR dogs] is not interpreted as if within the scope of ∀, the sentence is false

• what can the sortal key be for Seri PLUR -numerals?

Background on distributive dependencies

• Choe (1987) analyzes distribution as a (quantificational) relationship between the atoms of the SORTAL KEY and the DISTRIBUTED SHARE
• the DP containing the distributive numeral is the distributive share which is distributed over a sortal key.

(16) a. ‘The girls washed three-PLUR dogs’ (15)

SORTAL KEY: DIST. SHARE:

b. Alina ———— 3 dogs
María ———— 3 dogs

Temporal sortal key

(17) Distribution over times
Context: Today, every hour, my son Juan caught 3 fish.

Juan quih ziccam quih c-apxoj
Juan DEF fish DEF NMLZ be THREE.PLUR
iyoooc.
3/3.nulo.kill
Juan caught three fish (repeatedly).

Spatial sortal key

(18) Distribution over locations
Today there was a race between several groups of three girls.

Xicacaziil cmajic quih c-apxoj
cikila PL woman.PL DEF SBJ.NMLZ be THREE.PLUR
yopancoj.
PL/RY.PL, PL
Women ran in threes. (19)

Conclusion

Analysis and predictions
Other sortal keys

- The num-PLUR DP can be distributed to times, participants, locations.
  - traditional parameters/sortal keys for eventuality individuation (Lasersohn 1995)
- But there are other sortal keys that are highly contextual, e.g. fish species (19) or book topic (20)

(19) *ihyaaz quih xizcam quih c-apxoj iyooocë.
  - *theme of e = a.tree, *agent of e = Juan, . . .
  - making_tubular (20)

(20) Juan quih hapasaj hanoocaj quih
  - Juan DEF SBJ.NMLZ;PASS;W2a SBJ.NMLZ;PASS-carry_under_arm DEF c-oocalcam sacaaitom caha.
  - SBJ.NMLZ-be_two.PLUR IMM.IND.nad SBJ.NMLZ.AUX
  - Juan is going to read two books on a variety of themes. SC: 2 on a similar theme, 2 more on another theme, . . .

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A homogeneous meaning/syntax for PLUR in Seri

- numerals + PLUR + other verbs
  - ‘distributive numerals’
- ‘verbal pluractionality’

Composing PLUR with verbs - Syntax

- A sentence like (21a) from (3), PLUR combines with the V iyahoiil ‘make tubular’ to create a set of plural eventualities e, such that each one of these plural eventualities is composed of at least two sub-eventualities e’ of ‘making tubular’

(21) a. ‘Juan made_tubular.PLUR a tree’, (4)
  - t1 — e’ — making_tubular
  - t2 — e’ — making_tubular
  - t3 — e” — ‘theme of e = a.tree’, agent of e = Juan, . . .

- Crucially, because PLUR applies to V, arguments are predicated of these plural eventualities (not of their parts)

\[ [\text{PLUR}]_e = \lambda V, c, d_1, d_2 \in e_1, e_2, \ldots \lambda e_2 e \in \{e_1, e_2, \ldots\} (V(e') \land e' < e \land e' \in \text{Part}(e) \land \neg \text{atom}(\text{theme}(e))) \]

Composing PLUR with numerals - Syntax

- Num-PLUR require that there be more than one group of cardinality Num
  - Group individuation is highly context-sensitive; it is achieved by variation in one or more parameters
    - eventuality parameters: spatial or temporal location, co-participant in the event that the groups also participate in
    - lexical parameters: fish species, book topic, cloth color . . .

  // diversity condition on pluractionality (Cabredo Hofherr and Laca, 2012; Donazzan and Müller, 2015), especially in Seri (Pasquereau and Cabredo Hofherr, 2020)
Composing PLUR with numerals - Semantics

- Like other verbs, numerals are analyzed as predicates of eventualities — specifically states — whose holder is of cardinality num, e.g., 3 dogs denotes an individual that
  1. satisfies the predicate dogs, and
  2. is in a state of being of cardinality 3
- Num-PLUR = a set of plural states e that are each composed of sub-states e’ whose respective holder is of cardinality N

(22) a. The girls bathed three.PLUR dogs’, (8)
    b. Simplified graph

        e

        - [theme]=3
        e’

        - [theme]=3

        e

        - [theme of e-dogs, ...]

- Context supports individuation of states of being 3 dogs via distribution over another plurality

Summary and perspectives

- Seri clearly shows that pluractionality is the source of distributivity with numerals
- In my analysis, pluractional numerals are only distributive inasmuch as distribution is a way to individuate eventualities // pluractional distributivity
- This explains a number of properties that pluractional/distributive numerals have in Seri
- Could it be the case in other languages as well?
  - To what extent do pluractional verbs and distributive numerals have the same properties?
  - If there are asymmetries, can they be derived?
  - To what extent is pluractionality a cross-categorical category?
- Comments welcomed! (jepasquer@gmail.com)

References

- Pasquereau, J. and P. Cabredo Hofherr (2020). Eventuality individuation through the prism of
  - PLUR
  - k = λV<s,t> λes. e = ∪{e’ | V(e’) & e’ ∈Part(e)} & ¬atom(*theme(e))

References I


List of abbreviations

- ABS absolute
- ART article
- CAUS causative
- DEF definite
- DEM demonstrative
- FLX flexible
- FOC focus
- INDEF indefinite
- INTR intransitive
- IO indirect object
- ABS absolute
- ART article
- CAUS causative
- DEF definite
- DEM demonstrative
- FLX flexible
- FOC focus
- INDEF indefinite
- INTR intransitive
- IO indirect object
- MULT multiple
- NMLZ nominalizer
- OBJ object
- OBL oblique
- PASS passive
- PL plural
- POS possessive
- REALS reals
- SG singular
- SUJ subject
- TRNS transitive
- UNSPEC unspecified