Pluractional numerals in Seri are distributive

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11th September 2019

1 Introduction

- Seri (*cmiique iitom*) is a language isolate
- Seri is spoken in two villages: ***Haxöl Iihom*/El Desemboque** and *Socaaix*/Punta Chueca
- Approximately 900 people (Ethnoloque 2007)
- Published materials: grammatical description (Marlett, 2016), dictionary (Moser and Marlett, 2010) + many papers and texts
- Data come from the published material and field-work notes

Figure 1.1: Seri in Mexico

- In Seri, if Gadiel kicked three dogs I could say (1a) or (1b).

(1) a. Gadiel quih **haxaca quih c-apxa** iyoonifz.
Gadiel DEF dog.PL DEF SBJ.NMLZ.SBJ-be_three 3;3.RLYO.kick
Gadiel kicked three dogs. [EDSEI17OCT2018DRPM, CON]

b. Gadiel quih **haxaca quih c-apxoj** iyoonifz.
Gadiel DEF dog.PL DEF SBJ.NMLZ.SBJ-be_three.? 3;3.RLYO.kick
Gadiel kicked three dogs. [EDSEI17OCT2018DRPM, CON]

- What is the difference between *capxa* and *capxoj*?
ANSWER: *capxoj* is a distributive numeral
  - Distributive numerals are a subset of dependent indefinites introduced by a lexically marked numeral
  - Dependent indefinites are defined as indefinites that impose a condition that their reference be non-rigid (Farkaš, 1997)

*Thanks to my consultants in El Desemboque for their collaboration and support. Thanks to Matthew Baerman, Patricia Cabredo Hofherr, and Carolyn O'Meara for their feedback on this project. This work has been funded by the Arts & Humanities Research Council (UK) under grant AH/P002471/1 ('Seri verbs') awarded to Matthew Baerman. Their support is gratefully acknowledged.

– Distributive numerals have been studied in a number of languages, e.g: Georgian (Gil, 1988), Hungarian (Farkaš, 1997), Basque (Cabredo Hofherr and Etxeberria, 2017)

- OUTLINE:
  - Background on Seri numerals
  - *capxoj* is a distributive numeral
  - Analysis
  - Conclusion

2 Background on Seri numerals

2.1 Seri numerals are verbs

- all numerals in Seri (and quantifiers) are verbs, except *tazo* 'one'[1]
  - like other verbs, they inflect (*cf.* 2a and 2b) and have the same distribution as verbs,

(2) a. Ham-oocj.
1PL.RLMI-be_two
There are two of us. [EDSEI28ABR2019DRPM.ATHF.GH.GHF]

b. Ham-iizcam.
1PL.RLMI-arrive.PL
We have arrived. [EDSEIFLD3POST]

  - like other verbs, they modify a noun phrase via nominalization (*cf.* 4a and 4b)

(3) a. Sahmees quih c-oocj hyoohit.
orange DEF SBJ.NMLZ-be_two 1SG.RLYO.eat
I ate 2 oranges (lit. oranges that are 2). [EDSEIFLD3POST]

b. Xiica quistox c-aazcam coi hyooho.
thing.PL SBJ.NMLZ.have_spirit.PL SBJ.NMLZ-arrive.PL DEF.PL 1SG.RLYO.see
I saw the people who arrived. [EDSEIFLD3POST]

  - like other verbs, they can be causativized

(4)

non-causative	causative
-oocj 'be two'	-ahoocj 'give birth to twins'
-aafzx 'be quick'	-ahaafzx 'make quick'

[1] *tazo*'one' is one of the 3 adjectives in the language (note that in numerals that are derived from *one*, e.g. *eleven*, *one* behaves as a verb). Also *tazo* is related to the verb *-azoj* 'be alone'.

Numerals belong to different syntactic categories within and across languages (Dixon, 2010)

	adjectives	verbs	nouns	specific num. class
Turkish	✓			
Choctaw, Jarawara		✓		
Tamambo, Somali (Saeed, 1999)			✓	
Finnish				✓
Koasati		ev. else	100, 1000	
Baniwa of Içana	1-3	4	5-10	

2.2 Verbs express pluractionality

- Verbs in Seri have distinct pluractional forms (glossed MULT), contrasting with an underspecified neutral form (Cabredo Hofherr, Pasquereau, and O'Meara, 2018), e.g. in (5), the pluractional *conthayatim* is false in context A where the event of my going to Puerto Libertad happened just once, whereas the neutral *conthaya* is true in both contexts.

(5) Moxima, Xpanohax conthaya / conthayatim.
yesterday Puerto_Libertad 3IO.AW.1SG.RLYO.go / 3IO.AW.1SG.RLYO.go.MULT

Yesterday, I went to Puerto Libertad (several times). [EDSEI21OCT2018DRPM, elicitation]
Context A: Yesterday, I went to Puerto Libertad and came back once.
Context B: Yesterday, I went to Puerto Libertad several times.

- In addition, verbs agree in number with their subject

(6)

'run'		Pluractionality	
			MULT
Subject number	sg subject	*contiya*	*contiyatim*
	pl subject	*contiyat*	*contiyatolca*

- Morphology
  Many-to-many mapping: meaning X ↮ exponent Y
  Inflectional classes are not predictable. (Baerman, 2016)
  Despite this unpredictability, the same categories are encoded across verbs (e.g. subject number)

2.3 Pluractional forms of numerals

- numerals in Seri have two forms, e.g. *-apxa/-apxoj* 'three' (except the word for 'eight' which is already derived from 'four')
- *-apxoj* does not mark plural subject number agreement

(7) Context: A group of three children just entered.

a. Xicacaziil quih c-apxa / *c-apxoj iha.
child.PL DEF NMLZ.SBJ-be_3 NMLZ.SBJ-be_3.? COP

The children are three in number. [EDSEIFLD4POST]

b. Xicacaziil quih *c-acösxaj / c-acöla iha.
child.PL DEF NMLZ.SBJ-be_tall.SG NMLZ.SBJ-be_tall.PL COP

The children are tall. [EDSEIFLD4POST]

- My working hypothesis is that *-apxoj* 'three' is a pluractional/MULT-form on a par with MULT-forms of other verbs (I don't justify it here further though)

(8) Numerals

		MULT
1	tazo (adj)	tazlc (adj)
2	coocj	coocalcam
3	capxa	capxoj
4	czooxöc	czooxojoj
5	cooitom	coiitmoj
6	isnaap cazoj	isnaap cazlc
7	tomcoj cöquiih	tomcoj cöquiihtoj
8	czooxolcam	
9	csooi chanl	csooi chanaloj
10	chanl	chanaloj
11	thanl cazo cöquiih	thanl cazlc cöquiih

Seri counting system

- Seri speakers use the citation form/subject nominalized form when counting (e.g. tazo, coocj, capxa, ...)
- Seri has a decimal numeral system[2]

- Question: What do MULT-numerals mean?
(I.e. If the working hypothesis is correct, what does it mean for a numeral to be pluractional?)

2.4 On the syntax of numerals in Seri

- They can be used with a finite (dependent) form (9a) or with a subject nominalized form (9b; with possible semantic correlates, e.g. restrictiveness)

(9) a. Hoyacalcam quih t-oocj, yihiimtoj. [EDSEI8MAY2019DRPM, ELAB]
1SG.brother.PL DEF DPT.RLT-be_two RLYO.marry.PL

My two brothers got married. SC: you don't have more than 2 brothers.

b. Hoyacalcam quih c-oocj yihiimtoj. [EDSEI8MAY2019DRPM, CON]
1SG.brother.PL DEF SBJ.NMLZ-be_two RLYO.marry.PL

Two brothers of mine got married. SC: maybe you have more than 2 brothers but only 2 got married.

- I restrict my examination to nominalized forms (9b)

[2]Numbers from 6 to 9 are analyzable as complex expressions, see Marlett 2016.

- MULT-numeral DPs can be subject, object, indirect object, complement of prepositions in various types of PPs

(10) subject
Xicaquiziil cmajiic quih c-apxoj yopancojc
child.PL woman.PL def SBJ.NMLZ.three.MULT RLYO.run.PL
The girls ran in groups of three. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

(11) complement of a P (PP complement of V)
Xicacaziil quih **cocsar quih c-apxoj** quiicot yaza.
child.PL DEF non-Seri DEF SBJ.NMLZ-be_three.MULT [3.POSS]with.PL RLYO.speak.PL
Each child spoke with three non-Seri people. [EDSEI26OCT2018DRPM.GH.ATHF.LKPH]

- as constituents, MULT-numeral DPs can be given in elliptical answers

(12) I have 6 dogs. Two girls came to wash them (each washed three dogs). Juan asks A and I reply B.

A. ¿Xicaquiziil cmajiic quih áz ya hax an itahaalam?
child.PL woman.PL DEF what Q water [3POSS].in 3;3.RLT.wash.PL
What did the girls wash?

B. Haxaca quih c-apxoj.
dog.PL DEF SBJ.NMLZ-three.MULT
Three dogs each. [EDSEI25OCT2018DRPM.GH.ATHF.LKPH,ACC.CON]

3 Semantic description

3.1 MULT-numerals are distributive numerals

(13) Distributive numeral (Cable, 2014)
A morphosyntatic construction containing a numeral, whereby
(i) the sentence as a whole receives a distributive reading, and
(ii) under the allowable readings, the numeral contained within the construction must be interpreted *as if* it is within the scope of a distributive operator.

- sentences containing distributive numerals enforce distributivity and rule out both collective and cumulative readings (Gil, 1982; Choe, 1987; Oh, 2006); the same holds for Seri MULT-forms
  - Seri MULT-numerals are not compatible with a collective scenario

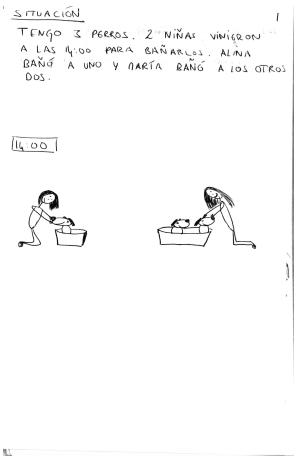
(14) Collective scenario
Context F: I have three dogs. Two girls came to wash them at 2pm. María and Alina together bathed Zombi, Lalo, and Mía at the same time. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

a. Xicaquiziil cmajiic quih **haxaca quih c-apxa** hax an
child.PL woman.PL DEF dog.PL DEF SBJ.NMLZ.be_three water [3POSS].in
iyahaalam.
3;3.RLYO.wash.PL
The children washed three dogs. Judgment: TRUE

b.# Xicaquiziil cmajiic quih **haxaca quih c-apxoj** hax
child.PL woman.PL DEF dog.PL DEF SBJ.NMLZ.be_three.MULT water
an iyahaalam.
[3POSS].in 3;3.RLYO.wash.PL
The children washed three dogs. Judgment: LIE, SC: if they are in the same basin, capxoj cannot be used, capxoj is for a pair of three

– Seri MULT-numerals are not compatible with a cumulative scenario

(15) Cumulative scenario
Context: I have three dogs. Two girls came to wash them at 2pm. Alina washed one and María washed the other two. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

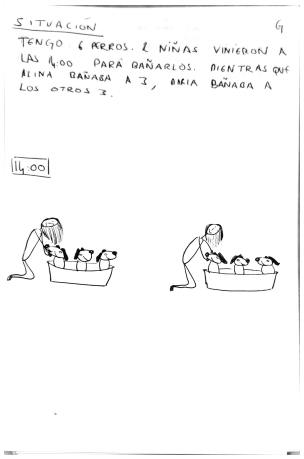


a. Xicaquiziil cmajiic quih **haxaca quih c-apxa** hax an
girl.PL woman.PL DEF dog.PL DEF SBJ.NMLZ-be_three water [3POSS]in
iyahaalam.
3;3.RLYO.wash.PL
The girls washed three dogs. Judgment: TRUE

b.# Xicaquiziil cmajiic quih **haxaca quih c-apxoj** hax
girl.PL woman.PL DEF dog.PL DEF SBJ.NMLZ-be_three.MULT water
an iyahaalam.
[3POSS]in 3;3.RLYO.wash.PL
The girls washed three dogs. Judgment: LIE, SC: because one girl washes one dog and the other washes two, but the sentence says that each one washes three dogs.

• Seri MULT-numerals allow distributive readings

(16) Distributive scenario
Context: I have six dogs. Two girls came to wash them at 2pm. While Alina washed 3, María washed the other 3. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

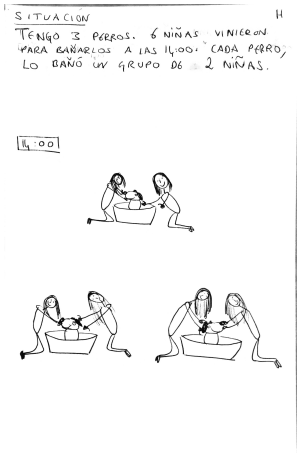


a.# Xicaquiziil cmajiic quih **haxaca quih c-apx**a hax an
girl.PL woman.PL DEF dog.PL DEF SBJ.NMLZ-be_three water [3POSS]in
iyahaalam.
3;3.RLYO.wash.PL
The children washed three dogs. Judgment: LIE, SC: because the sentence says that there are three dogs not more, but there are actually six dogs.

b. Xicaquiziil cmajiic quih **haxaca quih c-apxoj** hax
girl.PL woman.PL DEF dog.PL DEF SBJ.NMLZ-be_three-MULT water
an iyahaalam.
[3POSS]in 3;3.RLYO.wash.PL
The children washed three dogs. Judgment: TRUE

- The following example shows the second property: the numeral bearing MULT-marking must be the one that is multiplied *as if* it were in the scope of a distributive operator.

(17) Num-MULT is distributed
Context: We have three dogs. Six girls came over to bathe them. Each dog was bathed by a team of two girls. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]



a.# Xicacaziil cmajiic quih c-oocj **haxaca quih**
girl.PL woman.PL DEF SBJ.NMLZ-be_two dog.PL DEF
c-apxoj hax an iyahaalam.
SBJ.NMLZ-be_three.MULT water [3POSS]in 3;3.RLYO.wash.PL
Two girls washed three dogs. [Questionnaire2FT3, CON] *Judgment: LIE, SC: because in the situation, there are three groups of two girls, but in the sentence it is understood that there are only two girls washing three dogs.*

b. **Xicacaziil cmajiic quih c-oocalcam** haxaca quih
girl.PL woman.PL DEF SBJ.NMLZ-be_two.MULT dog.PL DEF
c-apxa hax an iyahaalam.
SBJ.NMLZ-be_three water [3POSS]in 3;3.RLYO.wash.PL
Two girls washed three dogs. [Questionnaire2FT3, CON] *Judgment: TRUE*

SUMMARY
(i) sentences containing a MULT numeral must receive a distributive readings, and
(ii) the MULT numeral must be multiplied/interpreted *as if* in the scope of a distributive operator
→ MULT numerals are distributive numerals according to the definition of Cable 2014

- What kind of distributive dependencies can MULT-num license?

3.2 Licensing conditions of numeral-MULT

- MULT-numerals depend on a (c)overt plurality that they can distribute over

Distributive dependencies (Choe, 1987)

- 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.

  Sortal key=participants in (17) 'The girls washed three-MULT dogs.'

SORTAL KEY: the girls		DISTRIBUTED SHARE: 3-MULT dogs
Alina	———————	3 dogs
María	———————	3 dogs

- what can the sortal key be for Seri MULT-numerals?

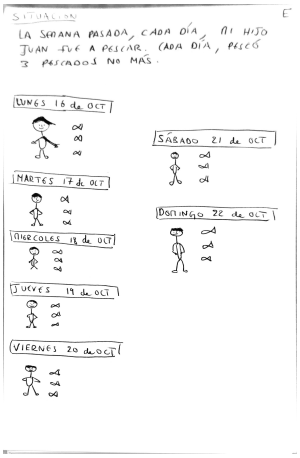
- the sortal key can be:
  - temporal (plural licensor is covert)

(18) Distribution over times
Context: Last week, every day my son caught exactly 3 fish. [SEI24OCT2018DRPM.GH.ATHF.LKPH]

Hihyaazi quih **zixcam quih/cah c-apxoj** iyoocö.

1SG.son DEF fish DEF/DEF.FOC NMLZ-be_three.MULT 3;3.RLYO.kill

My son caught three fish (repeatedly).



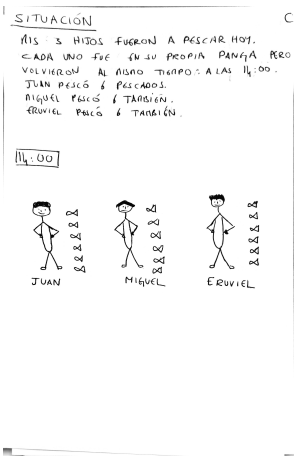
- participants (though if there is no plural argument in the construction – because it is intransitive or because all the arguments are singular –, distribution over participants is not available)

(19) Distribution over participants
Context: My three sons went fishing today. Each one went in his own boat but they all came back at the same time: at 2pm. Juan caught 6 fish, Miguel 6, and Eruviel 6 as well. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

Hoeen quih **zixcam quih isnaap c-azlc** iyoocöt.

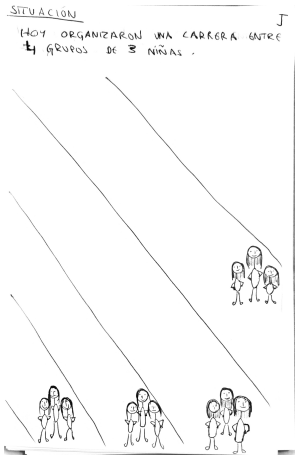
1SG.son.PL DEF fish DEF SBJ.NMLZ-be_six.MULT 3;3.RLYO.kill.PL

My sons caught six fish (each).



– 'spatial' (plural licensor is covert)

(20) Distribution over spaces
Today there was a race between several groups of three girls. [ED-SEI24OCT2018DRPM.GH.ATHF.LKPH]



Xicaquiziil cmajiic quih c-apxoj yopancojc
child.PL woman.PL DEF SBJ.NMLZ.be_three.MULT RLYO.run.PL
Women ran in threes. [EDSEI24OCT2018DRPM.GH.ATHF.LKPH]

Taking stock

- The num-MULT DP can be distributed to
  - times
  - participants
  - spaces
- This conforms to the traditional parameters that have been recognized (and formalized in e.g. Lasersohn 1995) as anchoring events

- The distributive share encoded by the num-MULT can be distributed over a parameter that cannot be obviously reduced to any of the previous three, eg. fish species (21) or book topic (22)

(21) Hihyaazi quih **zixcam quih c-apxoj** iyoocö.
1SG.son DEF fish DEF NMLZ-be_three.MULT 3;3.RLYO.kill
My son caught three fish of different species. SC: if in one outing, he catches 3 fish of many species
[EDSEI24OCT2018DRPM.GH.ATHF.LKPH, ELAB]

(22) Juan quih **hapaspoj hanoocaj quih c-oocalcam** sacaaitom ca.
Juan DEF SBJ.NMLZ:PASS:write SBJ.NMLZ:PASS-carry_under_arm DEF SBJ.NMLZ-be_two.MULT IRR.IND.read 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, ...) [EDSEI26OCT2018DRPM.GH.ATHF.LKPH, CON, ELAB]

- In general, what seems to matter for the licensing of num-MULT is that there be more than one group whose cardinality is N

3.3 Descriptive generalization

- num-MULT require that there be more than one group whose cardinality is N
- these groups need to be individuated/differentiated in order for them not to be conflated into one group (and therefore satisfy the num-MULT requirement)
- these groups must differ in one or more parameters:
  - spatial location
  - temporal location
  - co-participant in the event that the groups also participate in
    - different groups denoted by a MULT-num patient can be individuated by the agent that act upon them
    - different groups denoted by a MULT-num agent can be individuated by the patient they act on
  - species, theme, ...
- in other words, all that the num-MULT of Seri seem to require is for there to be more than one group whose cardinality is N
- the group individuation parameters listed above describe ways in which a context can make the individuation of groups salient

4 Towards an analysis

In this section, I explore a way to analyze:

- the meaning of sentences containing num-MULT in Seri
- the way this meaning is compositionally derived

Giving a compositional treatment of MULT-marking on numerals requires:

1. an analysis of numerals as verbs/predicates of events
2. an analysis of nominalization
3. an analysis of MULT

4.1 Numerals as predicates of events in Seri

- I assume numeral verbs in Seri to be predicates of events (like other verbs) with a denotation as in (23) (see Kuhn 2019 for a similar proposal)

(23) $[\![\text{-oocj}]\!] = \lambda e_s .\ |\text{Holder}(e)| = 2$

- I will assume that integers are atomic degrees—points on an ordered scale (Cable 2014 i.a.)
- I use the theta role *Holder* (similarly to Cable 2014's use of *participant* or Henderson 2012's use of *theme(e)* or Kuhn 2019's *stuff(e)*)

(24) *holder(e)* is a function of type <s,e>, from eventualities to individuals, such that they bear the theta relation 'holder' to the state e (Henderson, 2012)

– I assume that variables of type <s> range over events and states.

– Stative predicates are thus partial functions that are only defined for states (Kratzer, 1996)

- I assume that external arguments are introduced by a functional head $-v_{AG}$ for eventive predicates and v_{HD} for statives – which combines with a predicate via event identification.

(25) a. $[\![v_{AG}]\!] = \lambda x_e.\lambda e_s$. *Agent(e)=x

b. $[\![v_{HD}]\!] = \lambda x_e.\lambda e_s$. *Holder(e)=x

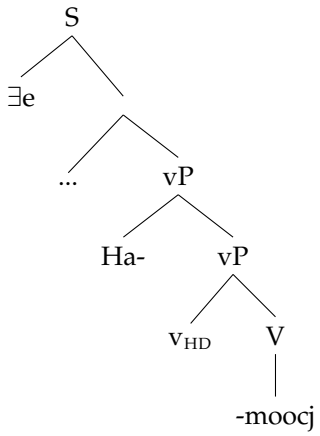
c. Event identification:

f	g	→	h
<e,<s,t»	<s,t>		<e,<s,t»
			$\lambda x_e \lambda e_s$ [f(x)(e) & g(e)]

(26) a. Ham-oocj.
1PL.RLMI-be_two

There are/were two of us.

b. LF



c. Predicted truth-conditions
$[\![S]\!]$= ∃e. |Holder(e)|=2 & *Holder(e)=we

- Given the unique role requirement (27), *Holder* maps the event *e* to the same individual

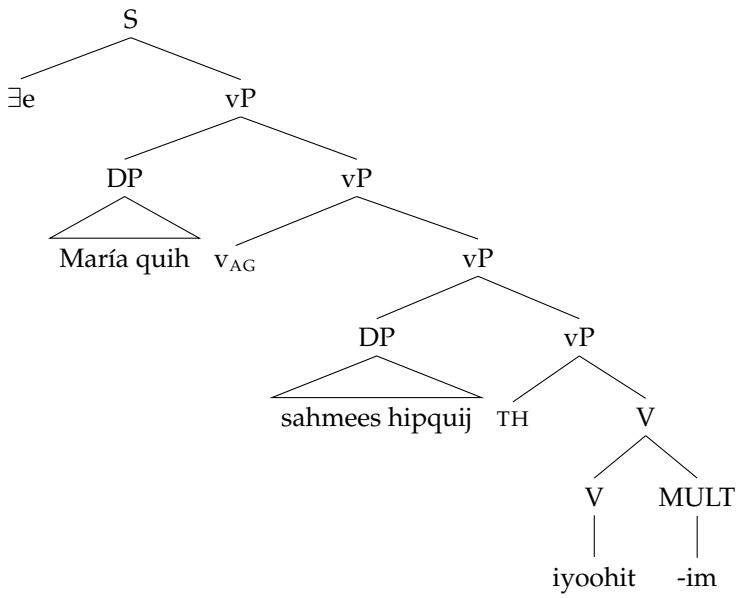
(27) Unique role requirement (Champollion, 2010)
If a thematic role is specified for an event, it is uniquely specified.

4.2 A semantics for pluractionality/MULT

(28) Context: Yesterday María ate the orange you gave her slowly, segment by segment.

a. Maria quih sahmees hipquij ihyoohitim.
Maria DEF orange this 1SG.RLYO.eat.MULT
María ate this orange.

b. LF



c. Predicted truth-conditions
⟦S⟧= ∃e. e=$\sigma(e')$ & e′<e & eat(e′) & *Theme(e)=this apple & *Agent(e)=Maria

- The semantic of MULT is as in (29)

(29) ⟦MULT⟧= $\lambda V_{<s,t>}$ λe_s. e=σ(e′). e′<e & V(e′)

- there is a correspondence between the parts of an event and the parts of a participant of that event

(30) Cumulativity of theta relations Θ: (Krikfa, 1992)
Θ(e′+e″)=Θ(e′)+Θ(e″)

- E.g. the theme – the whole apple – of the sum e of subevents e′ is the sum of the themes of every subevent e′ – parts of the apple.

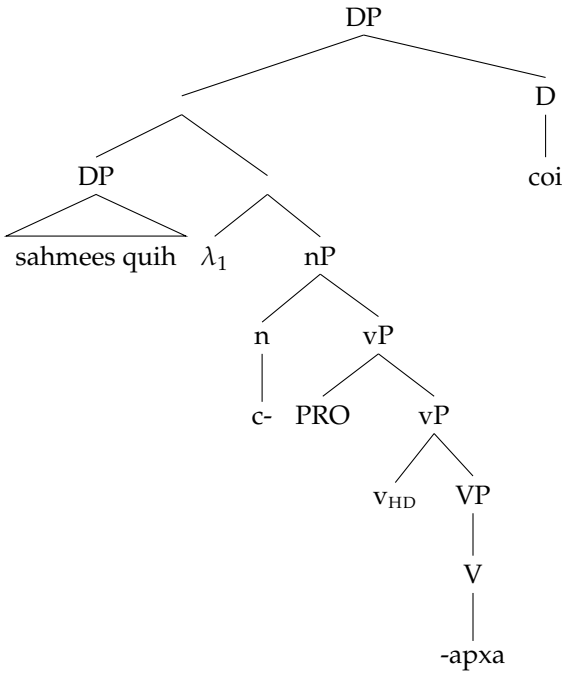
4.3 Nominalization

- I assume that nominalization structure in (31) (Toosarvandani 2014)

(31) a. Sahmees quih capxa (coi)
oranges DEF SBJ.NMLZ-be_three DEF.PL

Three oranges

b. LF



– I assume that definite determiners have the semantics in (32).

(32) a. $[\![\text{the/this}]\!] = \lambda P_{<e,t>}: \sigma(x).\ P(x)$

b. Definition of $\sigma(x)$
(i) Definition of cumulative closure:
If S is a set, then *S is the smallest set such that (i) S⊆*S, and (ii) if α and $\beta \in$ *S, then $\alpha+\beta\in$*S
(ii) $\Sigma(x)$. Q(x) = the entity α such that $\alpha\in$ *{x: Q(x)} and if $\gamma\in$*{x: Q(x)}, then $\gamma\leq\alpha$

- Thus the DP *sahmees quih capxa (coi)* '3 oranges' denotes the largest group of oranges which is in a state of being of cardinality 3.

(33) $[\![\text{DP}]\!]=\sigma(x).\exists e.\ |\text{Holder}(e)|=3 \ \&\ *\text{Holder}(e)=x \ \&\ *\text{Oranges}(x)$

- Remember Champollion 2010's unique role requirement: if a thematic role is specified for an event, it is uniquely specified.
- Such an analysis finds support in examples like (34), found in Moser and Marlett 2010, where the numeral DP, which denotes a non-atomic entity, is further quantified

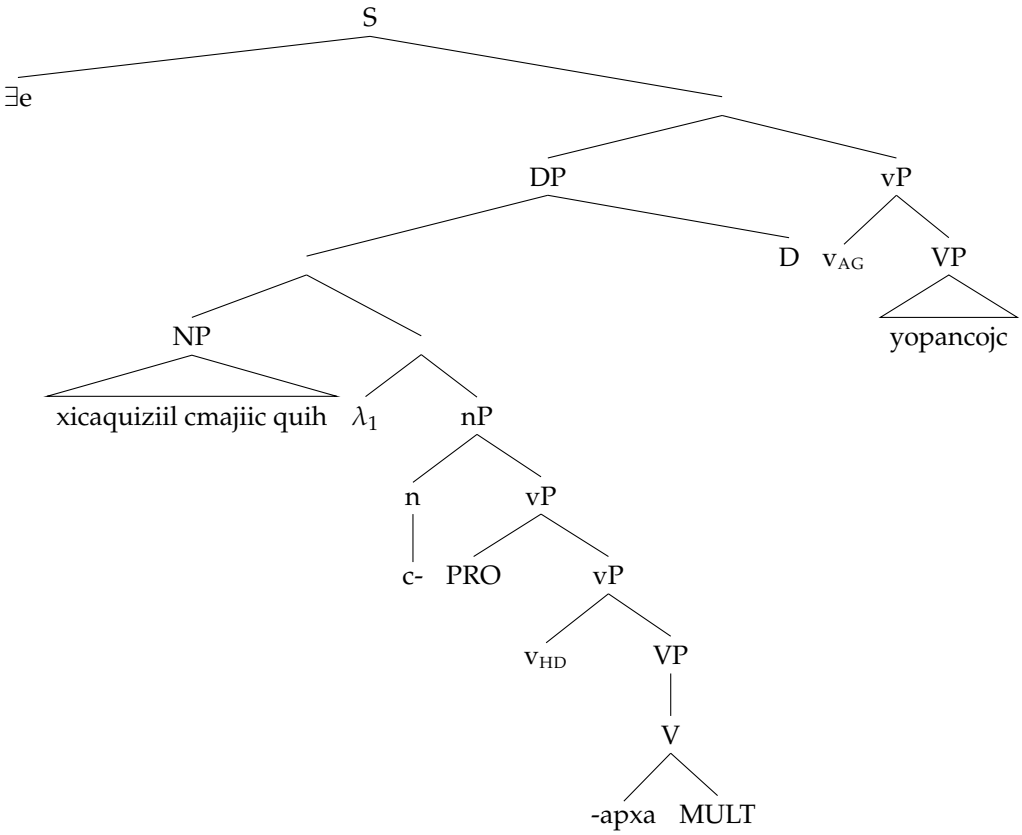
(34) Icaaspolca quih c-zooxolcam c-oocj ih ihnyaa.
pen.PL DEF SBJ.NMLZ-be_eight SBJ.NMLZ-be_two FOC 1SG.RLMI.own

'I had two sets of eight pens.'

4.4 Composing MULT and numerals

(35) a. Xicaquiziil cmajiic quih c-apxoj yopancojc.
child.PL woman.PL DEF SBJ.NMLZ-be_three.MULT RLYO.run.PL
The girls ran in groups of three.

b. LF



c. Predicted truth-conditions
⟦S⟧=∃e. *run(e) & *Agent(e)=σ(x). ∃e′. e′=σ(e″). e″<e′ |Holder(e″)|=3 & *Holder(e′)=x & *girls(x)

- The structure of the event of running is underspecified: it could be composed of subevents or not
- The agent of the event of running is the largest plurality of girls that is the holder of a state e′ of being composed of least two sub-states e″ whose holders are each of cardinality 3
  Another way of saying this:

  The agent of the event of running is the largest plurality of girls, such that each group of 3 girls is a proper part of the plurality of girls that is the agent of running, by cumulativity of theta role

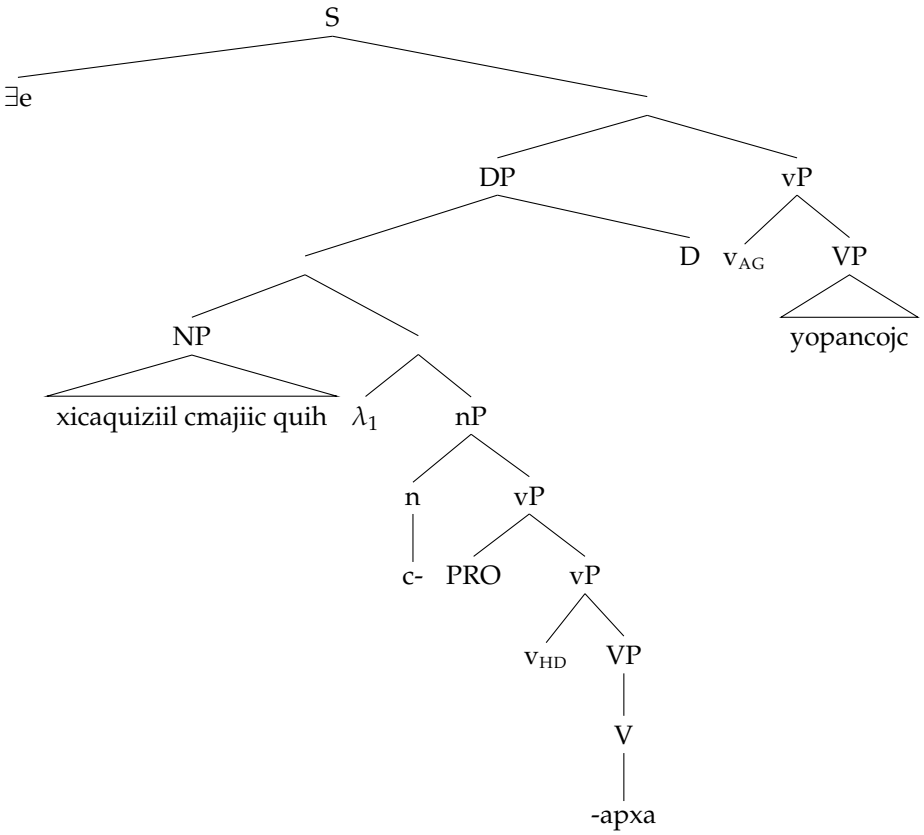
(36) Nine girls running together
A group of nine girls ran together yesterday.

- Example (35) is false in context (36). Why? (After all, one could conceive of it as an event of 3 groups of 3 girls running)
- Because the truth-conditions require (at least two) sub-states e″ such that their holders are of cardinality 3 but the context does not support the individuation of two such states

- Compare with the minimally different example (37) where the numeral is not MULT

(37) a. Xicaquiziil cmajiic quih c-apxa yopancojc.
child.PL woman.PL DEF SBJ.NMLZ-be_three RLYO.run.PL
Three girls ran / The girls ran in a group of three.

b. LF



c. Predicted truth-conditions
⟦S⟧=∃e. *run(e) & *Agent(e)=σ(x). ∃e′. |Holder(e′)|=3 & *Holder(e′)=x & *girls(x)

4.5 Predictions of the analysis

1. Group saliency can be manipulated by context

   - sentence (35) should be true in context (38) as sub-states e″ whose holders are each of cardinality 3 are made more salient (by their differently colored tee-shirts)

(38) Nine girls running together with different tee-shirts
A group of nine girls ran together yesterday. Three wore a green tee-shirt, three wore a red tee-shirt, and the other three wore a yellow tee-shirt in support of different charities.

2. Distribution to atom is not obligatory

3. Exhaustivity of distribution is not obligatory

5 Conclusion

- Seri MULT-numerals are distributive numerals (according to the definition in Cable 2014)
  - sentence containing MULT-numerals must receive a distributive reading (no cumulative or collective reading possible)
  - the MULT-numerals is the one that is multiplied/distributed over a plurality
- The plurality that the MULT-numeral can be multiplied by/distributed over an overt or covert plurality of:
  - co-participants
  - times
  - spaces
  - species (in the case of groups of fish)
  - topics (in the case of groups of books)
- The syntax of MULT-numerals in Seri has led me to explore an analysis with fairly weak truth-conditions: all that MULT-numerals do is require a context with at least two different groups of cardinality N
- Whether a plurality counts as one or more than one group depends on whether context support their individuation
  - numerals are predicates of eventualities (e.g. *-oocj* 'be two' denotes the set of states whose holders have cardinality 2)
  - MULT has the same denotation whether it combines with numerals or other verbs (i.e. it takes a predicate of eventualities V as argument and returns a function from eventualities to truth-values which holds of an eventuality *e* iff (i) e is a sum of sub-eventualities e' and (ii) V holds of e')
- Much to do:
  - check whether predictions of analysis are correct
  - compare with other account of distributive numerals
  - interaction of MULT-numerals with quantifiers
  - connection with derivation of other distributive numerals
  - connection with other distributive numerals and binomial *each*

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Appendices

A Quantifiers and innocent redundancy

- Notice that the quantifier *DP iij càap tazo cah* multiplies singular indefinites whereas *tcooo* does not.

(39) Context: I have three children. Gadiel read Lord of the Rings, Alina Harry Potter, and Eden read the stories of Narnia.

a. # Xicacaziil coi tcooo hapaspoj hanoocaj z iyahooza.
chid.PL DEF.PL all book INDF.SG 3;3.RLYO.read.PL

All the children read a book. [EDSEI13MAY2019DRPM.ATHF.LKPH.GH2, CON] *LIE because one understands that they read just one book, the same book*

b. Xicacaziil coi iij càap tazo cah hapaspoj hanoocaj z iyacaaitom.
chid.PL DEF.PL apart SBJ.NMLZ.stand one DEF.FOC book INDF.SG 3;3.RLYO.read

Each read a book. TRUE, SC: each one reads a different book [EDSEI13MAY2019DRPM.ATHF.LKPH.GH2]

- Given that the quantifier *DP iij càap tazo cah* multiplies indefinites in its scope and that MULT-numerals themselves contribute distributivity, we might expect that in (40b) for each child, there is a multiplicity of groups of 2 books that s/he has read. However, the distributivity requirements do not cumulate, they are redundant.

(40) Context: I have three children. Gadiel read two books, Alina 2 as well, and Eden 2 as well.

a. Xicacaziil coi tcooo hapaspoj hanoocaj quih coocalcam iyahooza.
chid.PL DEF.PL all book DEF SBJ.NMLZ-be_two.MULT 3;3.RLYO.read.PL

Each one of the children has read two books. [EDSEI13MAY2019DRPM.ATHF.LKPH.GH2] *TRUE*

b. Xicacaziil coi iij càap tazo cah hapaspoj hanoocaj quih coocalcam
chid.PL DEF.PL apart SBJ.NMLZ.stand one DEF.FOC book DEF SBJ.NMLZ-be_two.MULT
iyahooza[4].
3;3.RLYO.read.PL

Each one of the children read two books. TRUE [EDSEI13MAY2019DRPM.ATHF.LKPH.GH2]

[4]Why the plural form *iyahooza* is licensed here is a mystery for me at this stage. This data point needs to be double-checked.