Classifiers for nouns, classifiers for numerals

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GLOW 44

Executive summary

What makes a CL language?

1. Krifka (1995): semantics of numerals
2. Chierchia (1998): semantics of nouns

Bale and Coon (2014)

- intra-language variation in some languages bears out Krifka's predictions

This talk:

- intra-language variation in other languages bears out Chierchia's predictions
- proposal for how a Num or N can block CL
- repercussions for constituency in the DP

Table of contents

CLs for numerals, CLs for nouns

Krifka (1995): CL and non-CL languages differ in the semantics of Num

- Bare nouns are cross-linguistically names of kinds
- Non-CL languages: Nums have a "built-in" classifier

  $\hookrightarrow$ they can directly combine with bare NPs
- CL languages: Num and CLs are not bundled together

  $\hookrightarrow$ a separate overt CL is required to mediate between NP and Num

Intra-language variation

As Bale and Coon (2014) point out, the following is predicted:

(1)

a.	Num_1 CL N, *Num_1 N	Num_1 requires CL
b.	*Num_2 CL N, Num_2 N	Num_2 blocks CL

This is borne out in Mi'gmaq (Eastern Algonquian) and Ch'ol (Mayan).

(2) Ch'ol (adapted from Bale and Coon, 2014)

a. ux-*(p'ej) tyumuty
three-CL egg
'three eggs' — Num of Mayan origin

b. nuebe-(*p'ej) tyumuty
nine-CL egg
'three eggs' — Num of Spanish origin

Intra-language variation

Kosraean (Micronesian): CLs suffixed to N (data from Lee, 1975).

- *-ko/-ko(e)/-koac*: fish, insects and four-legged animals, plants, means of transportation and long or pointed objects
- *-kosr/kohsr*: default CL

	serial counting	counting fish, insects, etc.	counting other Ns
'one'	sra	so-ko	**se**
'two'	lo	lu-koac	**luo**
'three'	tol	tol-ko(e)	**tolu**
'four'	ahng	yo-ko	ah-kosr
'five'	luhm	luhm-ko(e)	lime-kohsr
'six'	on	on-ko(e)	on-kohsr
'seven'	it	it-ko(e)	it-kohsr
'eight'	oal	oal-ko(e)	oal-kosr (oal-kuhsr)
'nine'	yuh	**yuh**	**yuh**

→ also bears out Krifka's predictions

Chierchia (1998): CL and non-CL languages differ in the semantics of N

- Mass nouns are inherently plural, but counting operates on atoms.

  ↪ they must be mapped onto discrete atomic cells by a CL before they can interact with numerals

- In non-CL languages there are both mass and count nouns

  ↪ the latter denote atoms and can combine with numerals directly

- In CL languages all nouns are mass nouns

  ↪ CL is required

Intra-language variation

As Bale and Coon (2014) point out, the following is predicted:

(3)	a.	Num N_1, *Num CL N_1	N_1 blocks CL
	b.	*Num N_2, Num CL N_2	N_2 requires CL

News: this is borne out in some languages

- Bangla, Sinhala (Indo-European)
- Hungarian (Uralic)
- Akatek (Mayan)
- Colloquial Georgian (Kartvelian)
- Colloquial Khmer and Vietnamese (Austroasiatic)
- Nùng and Classical Chinese (Sino-Tibetan)
- Kavalan and Paiwan (Formosan, Austronesian)
- Malay (Malayo-Polynesian, Austronesian)

Bangla, a textbook CL language: a handful of ontologically count nouns idiosyncratically resist CL

(4) tin-ʈe kɔlom
three-CL pen
'three pens'

(5) tin dik
three direction
'three directions'

(6) tin caka
three weel
'three wheels'

(data from Chacón, 2011)

colloquial Khmer: Ns are generally classifiable, but exceptions exist.

(7) ba:rɤy pì:(r) (daəm)
cigarette two CL_{trunk}
'two cigarettes'

(8) ko:n bɤy (nɛ̀ək)
child three CL_{person}
'three children'

(9) siəvphɤ̀u pì:(r)
book two
'two books'

(10) chkae bɤy
dog three
'three dogs'

(data from Jacob, 1968)

Nùng: 3-way division of Ns

(11) slám ku'n bãn
three CL friend
'three friends'

(12) slám (ku'n) lão
three CL grandmother
'three grandmothers'

(13) slám tị
three place
'three places'

(data from Saul, 1965)

Hungarian: most inanimate Ns optionally take CL, but some Ns force and others resist CL

(14) nyolc (szem) alma/gyöngy
eight CL apple/pearl
'eight apples/pearls'

(15) nyolc *(szem) kávé/bors/rizs/búza/homok/mák
eight CL coffee/pepper/rice/wheat/sand/poppy
'eight coffee beans, eight peppercorns, eight grains of rice/wheat/sand, eight poppy seeds'

(16) három (?*darab) város/ország/tenger
three CL city/country/sea
'three cities/countries/seas'

Against a CL analysis of non-classifiable nouns

Words for temporal or monetary units cross-linguistically do not take CLs.

There's agreement that (in the relevant use) these are CLs of a covert N (Greenberg, 1975; Allan, 1977; Simpson, 2005; Kayne, 2005; Her et al., 2015). The word order in (18) supports this conclusion.

(17) ba:rɤy pì:(r) (daəm)
cigarette two CL*trunk*
'two cigarettes'

(18) bɤy thŋay
three day
'three days'

Unclassified Ns are not in the CL position.

(19) siəvphɤ̀u pì:(r)
book two
'two books'

colloquial Khmer

(data from Jacob, 1968)

Against a CL analysis of non-classifiable nouns

Bangla approximative: preposed CL > Num > appr. particle *-ek* > N

(20) pãc-jɔn kormi
five-CL employee
'five employees'

(21) jɔna-pãc-ek kormi
CL-five-appr employee
'five employees or so'

Temporal units: in CL position; nonclassified Ns: N position (+ extra CL)

(22) sɔptahi tin-ek
week three-APPR
'three weeks or so'

(23) goṭa tin-ek caka
CL three-APPR wheel
'three wheels or so'

(data from Chacón, 2011)

Against a CL analysis of non-classifiable nouns

Hungarian CLs precede low adjectives.

(24) három (*spanyol) szem spanyol narancs
three Spanish CL Spanish orange
'three Spanish oranges'

Unclassifiable N are not in the CL position.

(25) három spanyol város (*spanyol)
three Spanish city Spanish
'three Spanish cities'

Interim summary

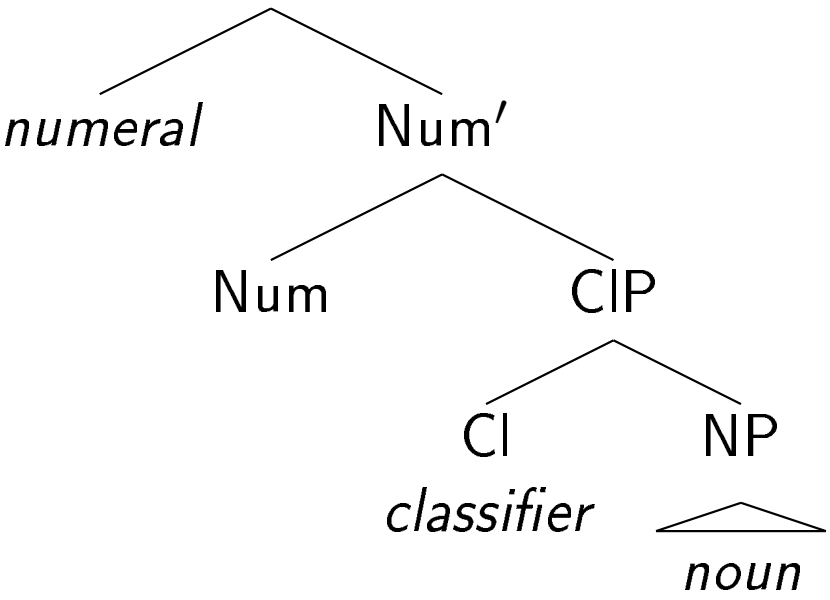
Summary

In addition to CLs for numerals, there are also CLs for nouns

A co-lexicalization approach to CLs for Nums/Ns

Consequences for constituency

(26)



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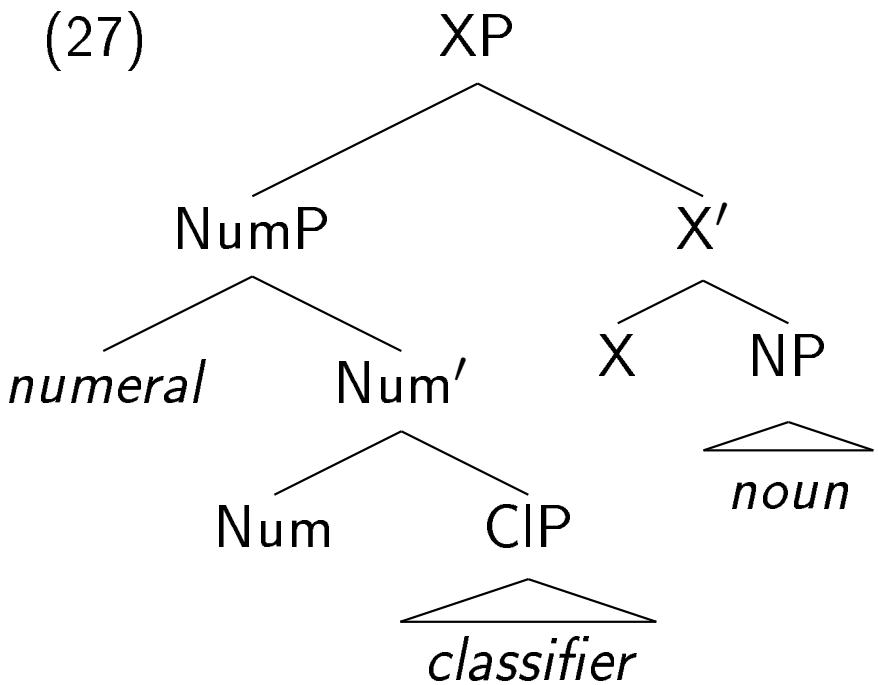


CL: local relationship w. N and Num

✓ CLs for nouns

✓ CLs for numerals

CL: local relationship only with Num

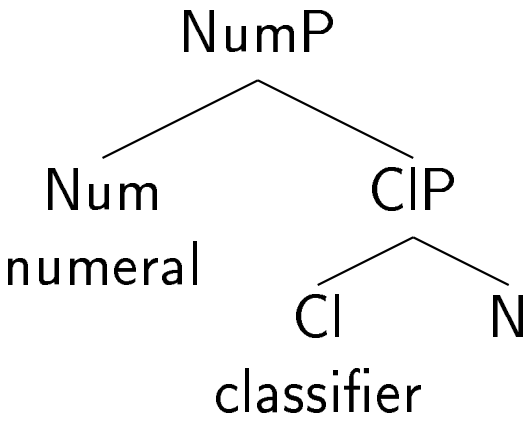
✓ CLs for numerals

💣 CLs for nouns

CL for Num and CL for N: co-lexicalization of nodes

Ch'ol

(28)



Bangla

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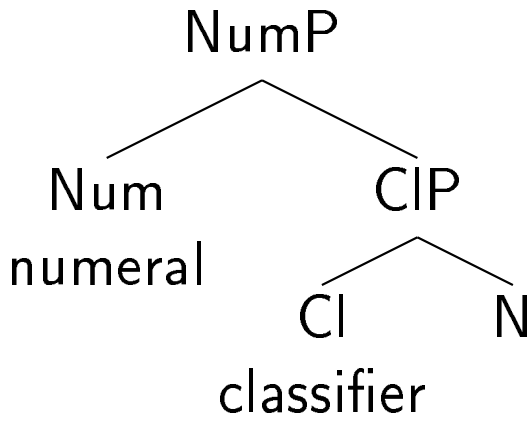

Nums w. "built-in" classifier

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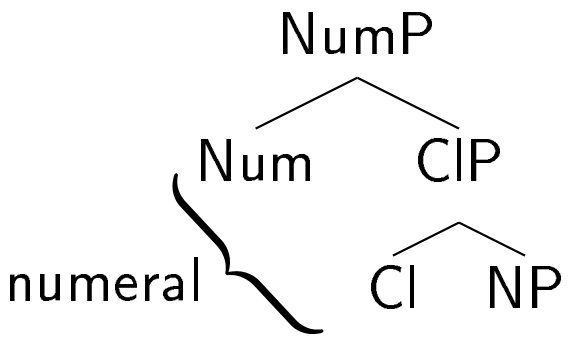

Ns w. "built-in" classifier

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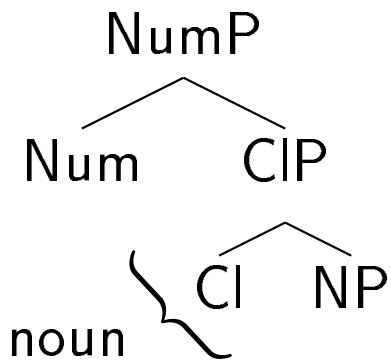


Co-lexicalization of nodes

Co-lexicalization can be implemented in different ways:

- Borer-style multiple range assignment
- Nanosyntax-style spanning
- Nanosyntax-style phrasal spellout
- ?DM-style Fusion
- . . . [your preferred theory of portmanteaus]

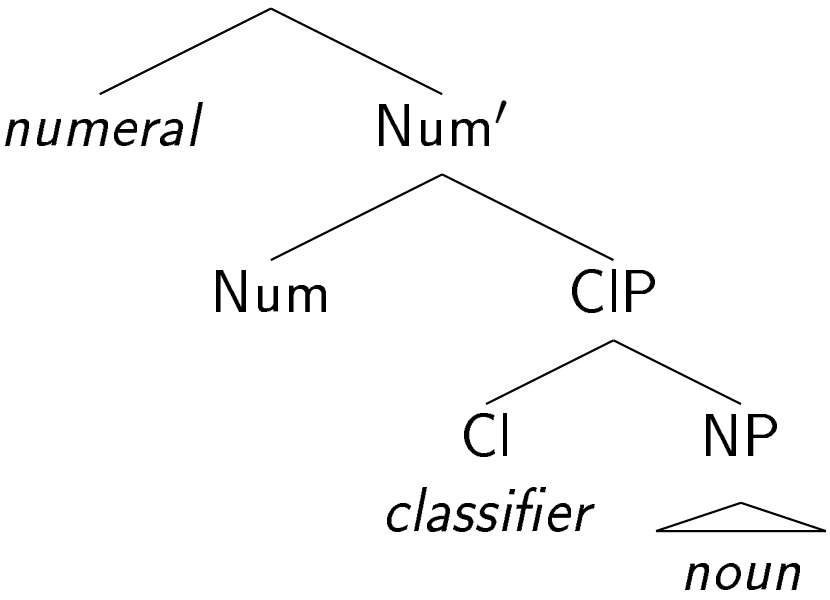
In all of these cases, variation among Ns and Nums is located in the lexicon.

This captures the fact that the variation is listeme-based, idiosyncratic.

Constituency: arguments for [Num [CL N]]

Recap

(32)



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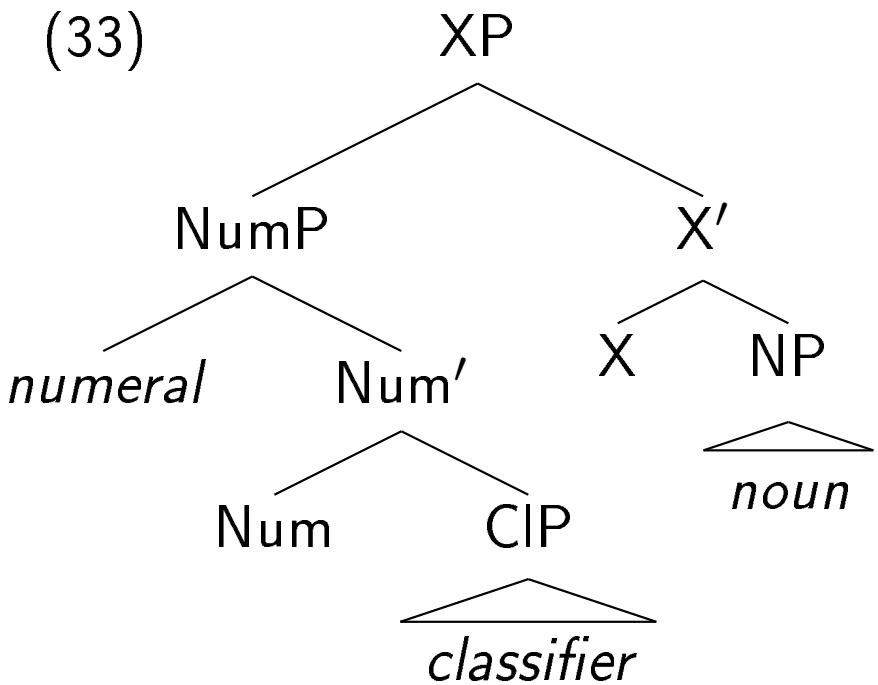


CL: local relationship w. N and Num
✓ CLs for nouns
✓ CLs for numerals

CL: local relationship only with Num
✓ CLs for numerals
💣 CLs for nouns

Semantic selection

[[Num CL] N]: difficulty with handling semantic selection bw. CL and N.

By definition, CLs categorize N:

"A classifier categorizes a class of nouns by picking out some salient perceptual properties, either physically or functionally based, which are permanently associated with entities named by the class of nouns . . ."

(Tai and Wang, 1990, 38)

It's difficult to see how CL and N communicate for semantic selection in [[Num CL] N].

Bare CL phrases

Bare "CL+N" or "Dem+CL+N" NPs exist in many CL languages
→ at least in some cases CL must form a constituent with N (cf. Simpson and Ngo, 2018)

(34) Con chó lớn lắm.
CL dog big very
'The dog is very big.' (Simpson and Ngo, 2018) Vietnamese

(35) Zek gau soeng gwo maalou.
CL dog want cross road
'The dog wants to cross the road.'
(Cheng and Sybesma, 2005) Cantonese

(36) nèi tiáo niú
this CL cow
'this cow' (Li and Thompson, 1981) Mandarin

See Cheng and Sybesma (1999); Li and Bisang (2012); Zhang (2014) for arguments against 'one'-deletion in (36)

Adjectival modification

Relative adjectives: the standard of comparison is compositionally computed from the combination of N and CL (Dékány, 2021)

knowledge of N is necessary

(37) egy nagy szem borsó
one big CL pea
'a big pea'

(38) egy nagy szem alma
one big CL apple
'a big apple'

knowledge of CL is necessary

(39) egy nagy szem kukorica
one big CL sweetcorn
'a big grain of sweetcorn'

(40) egy nagy cső kukorica
one big CL sweetcorn
'a big ear of sweetcorn'

[[Num CL] N]: no relevant constituent

Hungarian

Gender agreement

[[Num CL] N]: difficulty with CLs showing gender-agreement with N.

Nepali: the general CL agrees with N

(41) tin wot-**a** keto
three CL-M boy.M
'three boys'

(42) tin wot-**i** keti
three CL-F girl.F
'three girls'

NB: agreement on CLs and As are segmentally different for masculine nouns

→ CLs are not adjectives in Nepali!

(data from Allassonnière-Tang and Kilarski, 2020)

Repeaters

[[Num CL] N]: difficulty with auto-classifiers/repeaters

(43) kham sì·-**kham**
word four-CL.word
'four words' (Haas, 1942) Thai

(44) ʔɛiN tə **ʔɛiN**
house one CL.house
'one house' (Vittrant, 2002) Burmese

(45) song **song**-gin-i
village CL.village-two
'two villages' (Burling, 2004) Garo

Simpson (2005) argues that this involves N-to-CL

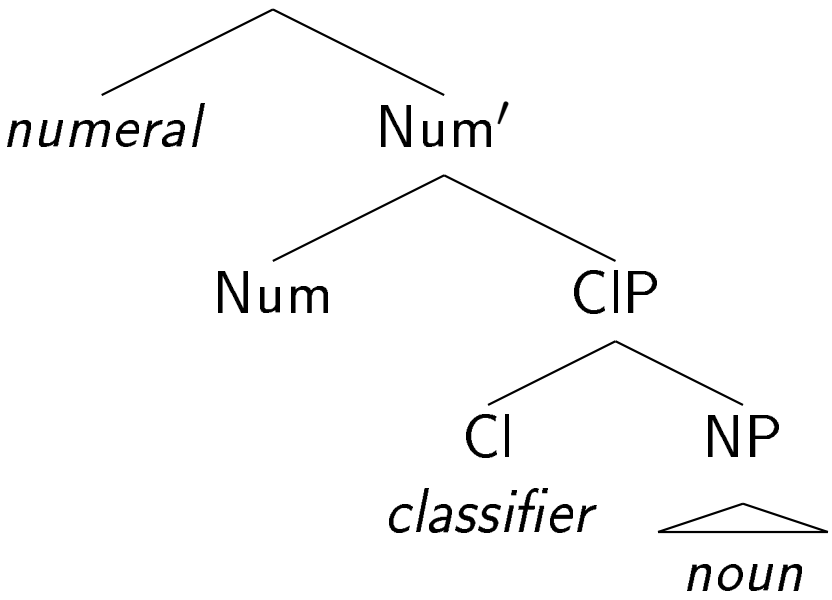
→ If so, it can't be accommodated

Constituency

Logical possibility: cross-linguistic variation correlates with different trees.

languages w. "classifiers for nouns"

(46)



languages w. "classifiers for numerals"

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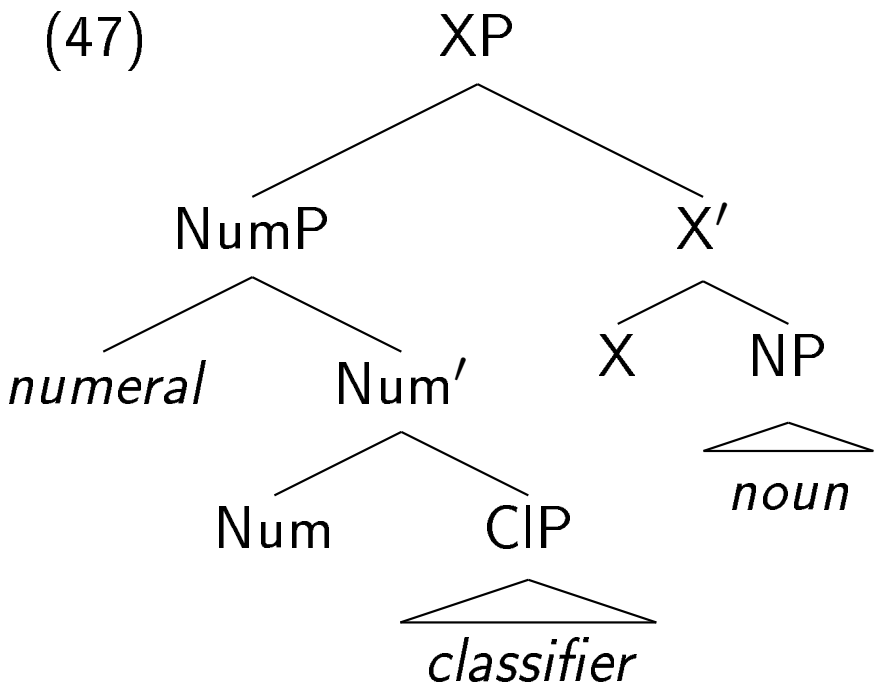


Implausible if we find languages in which both Num and N affect the appearance of CL.

CL for Num and N at the same time?

Are there examples where both Num and N affect the appearance of CL? Some languages come close, but there is no clear case of 'yes'.

Azeri and Armenian: based on corpus data from Stilo (2018), 1 vs. higher and inanimate vs. human both have an effect on Cl preference.

	inanimate	human
1	28.6%	too few tokens
1<	80%	100%

Table: % of CL use in Azeri

	inanimate	human
1	0%	47.1%
1<	25.9%	48.1%

Table: % of CL use in Armenian

N-effect: influencing factor is animacy
Num-effect: visible with inanimate Ns
Caution: the contrast is bw. 1 vs. higher numerals, see Appendix 2

Nivkh: see Appendix 1.

Interim summary

Logical possibility: [[Num CL] N] and [Num [CL N]] both exist

We have seen:

[[Num CL] N] is not suitable as a universal structure

Corollary

Pursuing one underlying structure, only [Num [CL N]] is a player

Constituency: apparent [Num CL] N] languages

[[Num CL] N] languages?

Bale et al. (2019) argue that in Ch'ol the structure is [[Num CL] N]

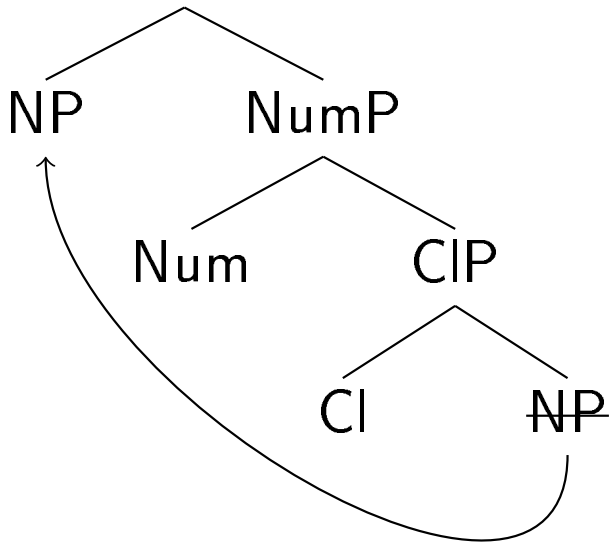
(48) **Ux-tyikil** ta' jul-i-y-ob [_ x'ixik]
three-CL PFV arrive-ITV-EP-PL woman
'Three women arrived.' A-bar fronting

(49) *Ux ta' jul-i-y-ob [_ tyikil x'ixik]
three PFV arrive-ITV-EP-PL CL woman
'Three women arrived.' Ch'ol

Unifying constituency cross-linguistically

[[Num Cl] N] can actually be derived from [Num [CL N]]

(50)



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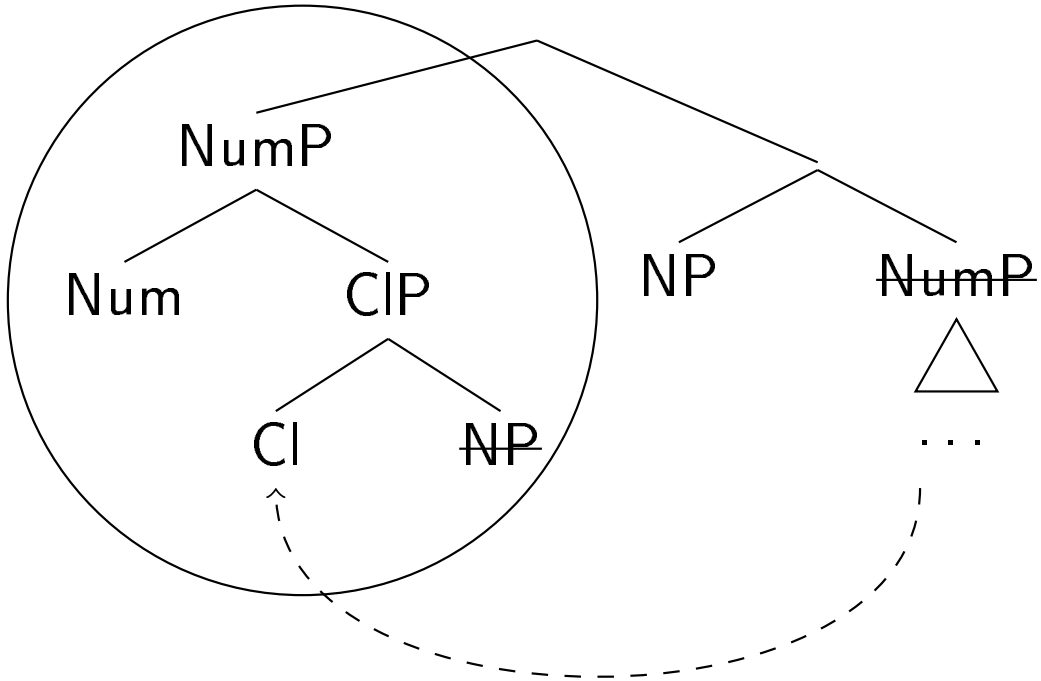
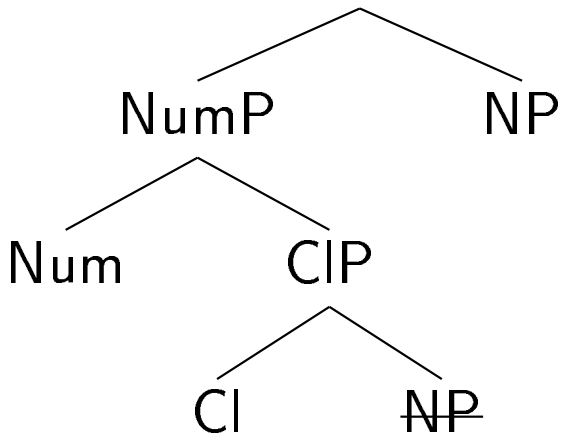


but this flouts the results of Cinque (2005) . . .

Unifying constituency cross-linguistically

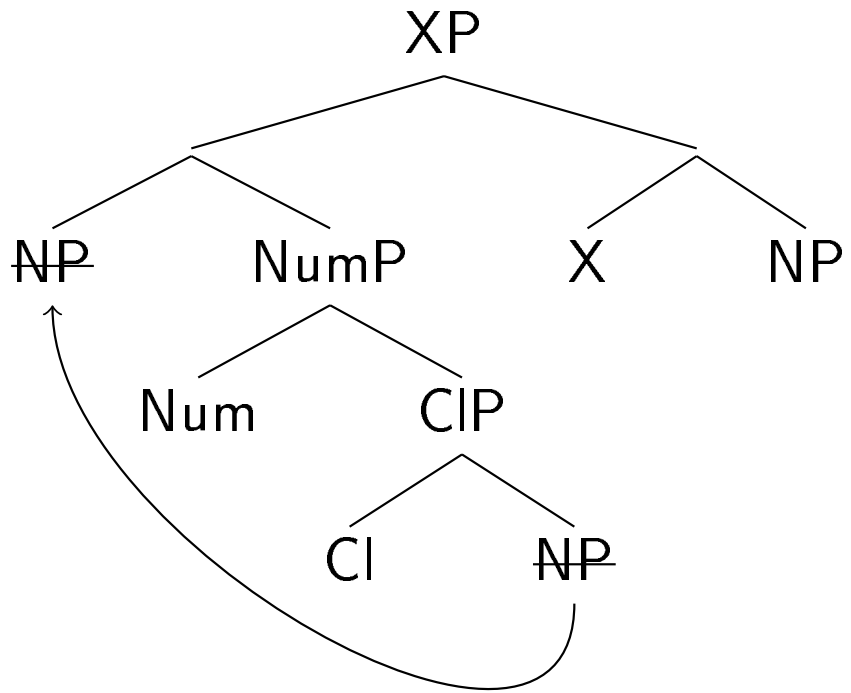
A possible avenue: Num & CL constituency without illegitimate movements is possible in a relative-clause like structure

(52)



regular matching-style

(53)



simplified Cinque (2013, 2015)-style

Unifying constituency cross-linguistically

There is independent evidence that Ch'ol Num+CL can from an RC:

(54) Ta' k-il-ä ux-tyikil x'ixik-ob.
PFV A1-see-TV three-CL woman-PL
'I saw three women.'

relativizer *-bä*:

(55) Ta' k-il-ä **{ux-tyikil-bä}** x'ixik-ob **{ux-tyikil-bä}**.
PFV A1-see-TV three-CL-REL woman-PL three-CL-REL
'I saw three women.' (Bale et al., 2019)

The idea is that without *-bä*, we have a kind of reduced RC.

I tentatively suggest that sth like this is also the structure of Japanese and Korean 'Num Cl-linker N' phrases.

Summary

- in addition to CLs for numerals, there are also CLs for nouns
- CLs for nouns cannot be captured under [[Num CL] N]
- there is further evidence against [[Num CL] N] as the underlying cross-linguistic structure
- it remains a possibility that [[Num CL] N] and [Num [CL N]] both exist
- unification in the direction of [Num [CL N]] is possible if apparent [[Num CL] N] involves a reduced RC-like structure

Thank you for the attention!

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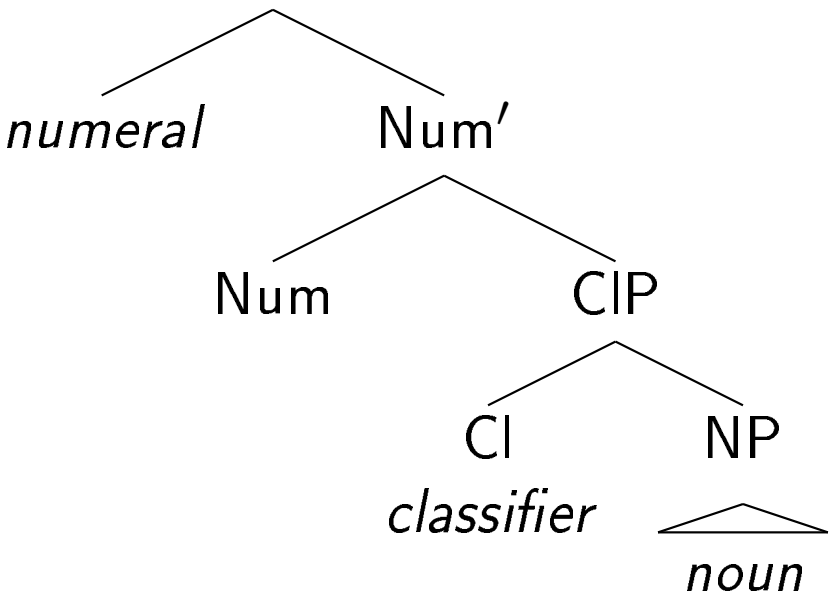
Appendix 1: constituency in Nivkh

Recap

Logical possibility: cross-linguistic variation correlates with different trees.

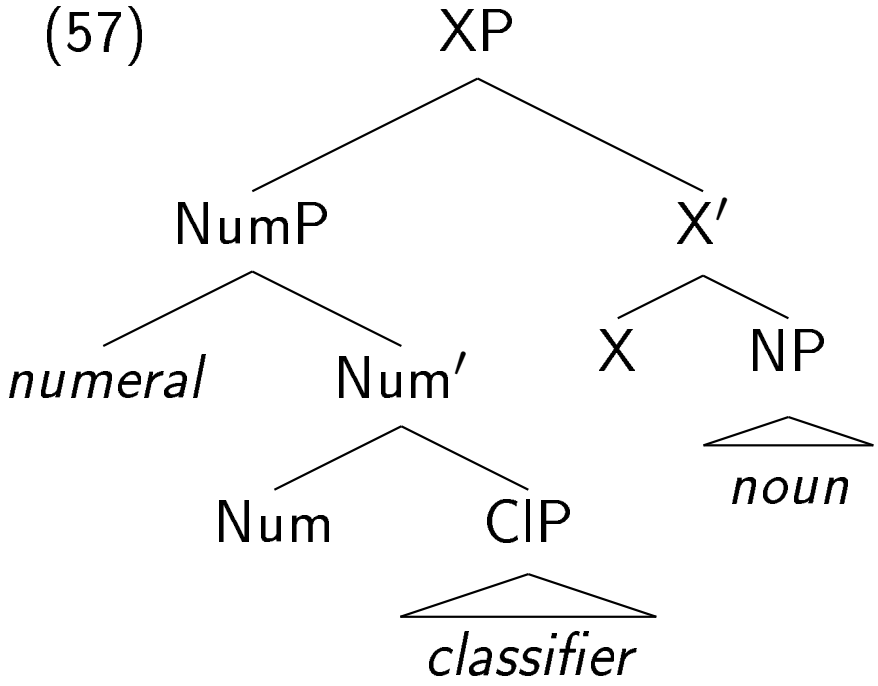
languages w. "classifiers for nouns"

(56)



languages w. "classifiers for numerals"

(57)



Implausible if we find languages in which both Num and N can affect the appearance of CL.

Nivkh

Nivkh (polysynthetic Paleosiberian isolate)

- 1–5: require CL, regardless of what N is
- 5<: CL appearance depends on N; some require it (e.g. fishnet, families, sails), others (incl. sledges, boats, people and gods) prohibit it

añ 'year': forces CL w. higher Nums as well

(58) añ-t'o-qř
year-five-CL
'five years'

(59) mχo-qr-añ-t'əkə
ten-CL-year-destinative
'as long as 10 years' → effect of N

(data from Gruzdeva, 2004; Nedjalkov and Otaina, 2013)

Nivkh

-qř 'two': requires CL

(60) namg-mu-giř
seven-boat-INS
'by seven boats'

(61) mxo-mu
ten-boat
'ten boats'

(62) mu-me-qř-kiř
boat-two-CL-INS
'by two boats'

→ effect of Num

(data from Gruzdeva, 2004)

Nivkh word order

But the position of N depends on whether Num is 1–5 or higher

Thus the data remain compatible w. different structures for "CLs for nouns" and "CLs for numerals"

(63) mχo-qr-añ-t'əkə
ten-CL-year-DESTIN
'as long as 10 years'

(64) mu-me-qř-kiř
boat-two-CL-INS
'by two boats'

Possibility: the 2 sets of numerals are inserted in different configurations

However, (64) can also be derived from [Num [Cl N]] by NP movement

→ Nivkh does not adjudicate the issue of constituency.

Appendix 2: special numerals (if that's what they are)

‘one’

Indonesian: ‘one’ requires CL, higher Nums allow it to be dropped in colloqual speech (Chung, 2000).

Khasi and Tat: CLs don’t appear with ‘one’ (Greenberg, 1972)

. . . but ‘one’ often has special properties not shared by other numerals, also in nonclassifier languages.

Agreement

- does not require (or indeed allow) plural marking on the quantified N in English
- shows robust gender agreement with N in Hebrew (Borer, 2005)

'one'

Occurs in positions not avilable to other Nums

- San Sebastian Basque (Greenberg, 1975), Hebrew (Borer, 2005), Thai languages (Greenberg, 1975) and Sinhala (Hurford, 2003)

Other

- fails to assign case to N in quantificational case languages (Rutkowski, 2001; Brattico, 2008; Pesetsky, 2013; Norris, 2018)
- does not combine with classificatory suffixes (distinct from CLs) in Akatek Mayan (Zavala, 2000)

$\rightarrow$ langauges in which only 'one' is exception wrt CLs should be handled with extreme caution

Powers of 'ten'

In CL languages it's "particularly common" that unlike other Nums, multiples of 'ten' do not take CL (Greenberg, 1972).

C.f. Nung (Saul and Wilson, 1980), Japanese (Sudo, to appear) and Burmese (Soe, 1999).

Powers of 'ten' are frequently idiosyncratic regardless of CLs.

- English: can co-occur with the indefinite article and allow pluralization (Ionin and Matushansky, 2006; Kayne, 2006)
- Czech: exceptional case-assignment & affix-taking properties (Caha, 2015)
- Greek and Maltese: inherent gender (Hurford, 2003)
- Thai: possible to elide both CL and N iff Num is a multiple of 'ten' (Jenks, 2011)

Powers of 'ten'

Consensus among typologists and theoretical linguists: powers of 'ten'belong to a different word class than other Nums.

Approaches:

- different lexical or semi-lexical class than Nums (Giusti and Leko, 2005; Ionin and Matushansky, 2006; Caha, 2015)
- they are a subtype of CLs (Greenberg, 1972; Allan, 1977)

$\rightarrow$ not every listeme used for counting is a numeral

Appendix 3: further languages with CLs for nouns

CLs for Ns

We have seen CLs for Ns in Bangla, Nùng, Khmer and Hungarian.
Below is a list of further relevant languages.

- Vietnamese: some Ns resist CLs but they don't form a semantically coherent group (Goral, 1979; Emeneau, 1951; Thompson, 1967; Simpson and Ngo, 2018)
- Malay: animates must be classified, inanimates are either classified, optionally classified or nonclassifiable, without correlation to semantics (Omar, 1972)
- Classical Chinese: only a few Ns are classifiable, those that denote culturally valued items (Erbaugh, 1986; Bisang, 1999)
- Colloquial Georgian: CL *c*^{h}*ali*, only with inanimates, even many of these don't allow it (Stilo, 2018)

CLs for Ns continued

- Akatek: only Ns "denoting concrete entities with a specific dimension and shape" combine with CL (Zavala, 2000; Toledo, 2017)
- Sinhala: CLs only with animates (Hurford, 2003; Dileep, 2010)
- Kavalan: [+human] Ns require the CL, [-human] Ns allow it (Tang, 2004)
- Paiwan: [+human] Ns require CL, [-human] notionally count Ns are non-classifiable (Tang, 2004)
- Iban: some abstract Ns take CLs, others don't; some body parts take CLs, others don't (Omar, 1972)

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