



No *iota* type-shift in Kazym Khanty

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Introduction

The classic neo-Carlsonian approach to nominal meaning (Chierchia 1998; Dayal 2004)

- predicts the distribution of bare nouns in languages with and without articles
- with three type-shifts: *nom* (' λ '), *iota* (' ι ') or *ex* (' \exists ').

In languages without a grammaticalized definite article,

- **Non-plural bare nouns are predicted to behave like definites** (via *iota*).

Introduction

(Chierchia 1998; Dayal 2004):

- **Non-plural bare nouns are predicted to behave like definites.**

We test this prediction on field data from the Kazym dialect of Northern Khanty

- a Uralic language without articles
- with three numbers (singular, dual, and plural).

Introduction

(Chierchia 1998; Dayal 2004):

- **Non-plural bare nouns are predicted to behave like definites.**

We discuss evidence from **bare singulars** and **bare duals**

- and show that they behave like indefinites
- as if they are interpreted via *ex* (‘ \exists ’) across the board.

This contradicts the neo-Carlsonian predictions suggesting that:

- There is **no *iota* type-shift in Kazym Khanty.**

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Neo-Carlsonian approach

Bare nouns are properties (type $\langle e, t \rangle / \langle s, et \rangle$). To arrive at an argumental type, they must undergo type-shifting.

Shifts	Definitions	From	To
<i>iota</i> (' ι ')	$\lambda P.\iota x.P(x)$, defined iff there is a unique/maximal x	$\langle e, t \rangle$	e
<i>ex</i> (' \exists ')	$\lambda P_{et}.\lambda Q_{et}.\exists x_e [P(x) \wedge Q(x)]$	$\langle e, t \rangle$	$\langle et, t \rangle$ (GQ)
<i>nom</i> (' n ')	For any property P , (where s is a world/situation) $\iota P = \lambda s.\iota x [P(x)(s)]$ defined iff $\lambda s.\iota x [P(x)(s)]$ is in the set of kinds K	$\langle s, et \rangle$	$\langle s, e \rangle$

Table 1. Neo-Carlsonian type-shifts for bare nouns (Chierchia 1998)

Neo-Carlsonian approach

Constraints on the application of type-shifts

(1) **Blocking Principle** (Chierchia 1998)

For any type shifting operation τ and any X : $*\tau(X)$, if there is a determiner D such that for any set X in its domain, $D(X) = \tau(X)$

(2) *Dayal's (2004) revised* **Meaning Preservation**

$\{^n, \iota\} > \exists$

Neo-Carlsonian approach

Interpretation	Bare plurals	Bare singulars
a) kind-level	<i>nom</i> , freely available	<i>iota</i> + taxonomic reading, limited to kind-level contexts
b) definite	<i>iota</i> , freely available	<i>iota</i>, freely available
c) narrow-scope existential	<i>nom</i> + DKP, freely available	unavailable (modulo PNI)
d) wide-scope existential	unavailable: <i>ex</i> outranked by <i>iota</i> and <i>nom</i>	unavailable : <i>ex</i> outranked by <i>iota</i>

Table 2. Neo-Carlsonian predictions for articleless languages (cf. Deal & Nee 2018)

Neo-Carlsonian predictions for non-plurals

Type of arguments	Test	Bare nouns (sg and du)
Definite	Uniqueness	ok
	Anaphoricity	ok
Indefinite	Novel referents	*
	Non-uniqueness	*
	Partitive specificity	*
	Differentiated scope	*

Table 3. Neo-Carlsonian predictions for non-plurals with tests from Dayal's questionnaire

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Background on Kazym Khanty

- Russian census 2010:
Northern Khanty spoken by **8865 speakers (37% of ethnic Khanty)**.
- cf. 1989 census, 61% of ethnic Khanty speak the language.
- Approx. **1700 speakers of the Kazym dialect** left.
- In Kazym, only speakers born before 1980s speak the language.

(Koshkareva 2016, Kaksin 2010, Aristova 2023)



Figure 1. Map of Russia with the Kazym village in KhMAO-Yugra (highlighted)

Data

- The data were collected in field trips to Kazym with speakers of the Kazym dialect via elicitation in 2022-2024 and online in video-calls with the same speakers.
- We worked with some ten speakers. All examples cited were approved by at least three consultants.
- We used examples based on Veneeta Dayal's questionnaire (manuscript, p.c.) for diagnosing the (in)definiteness of bare nouns,
- as well as our own examples.

Background on Kazym Khanty: number system

- Kazym Khanty features three numbers: **singular**, **dual**, and **plural**

- (3) a. kam-ən **ńawrɛm** jun-λ
street-loc child play-npst[3sg]
'A child is playing outside.'
- b. kam-ən **ńawrɛm-ŋən** jun-λ-əŋən
street-loc child-du play-npst-3du
'Children (two) are playing outside.'
- c. kam-ən **ńawrɛm-t** jun-λ-ət
street-loc child-pl play-npst-3pl
'Children (three or more) are playing outside.'

Background on Kazym Khanty: possessives

Mikhailov (2023, 2024):

- Determiners grammaticalized from possessive agreement markers: a **definite possessive** and a **salient article**.
- Crucially, they are all semantically restricted.
- They have a much narrower distribution than European definites.

- They do not block bare nouns across the board.
- We will look at cases where possessives are not used.

Background on Kazym Khanty: pseudo-incorporation (PNI)

- Bare nouns exhibit the semantic effects of PNI.
- PNI is restricted to direct objects.

(4) a. pet'aj-en tǎλ mǎr **šowr** weλ-əs
P.-Poss.2Sg winter time hare catch-Pst[3Sg]
'Petya was catching hares all winter.'

adv > ∃

b. #tǎλ mǎr **pǎsti_woj** urtət'λ'ə-s
winter time wolf howl-pst[3Sg]
'A wolf was howling all winter.'

Expected: #Wolves were howling all winter.

only ∃ > adv

- Bare duals and bare plurals are not subject to PNI.

Background on Kazym Khanty: kind-denoting NPs

Bare nouns (except for the duals) can refer to kinds, as expected:

- (5) a. **wɯli** χυλα-λ
deer run.out-npst[3sg]
- b. **wɯle-t** χυλα-λ-t
deer-pl run.out-npst-pl
'Deer are becoming extinct.' (a = b)

Background on Kazym Khanty: kind-denoting NPs

Bare duals cannot refer to a kind:

- (6) a. meditsinski **pertśatka** jǎrxəsmiṭ wek-ən wɛr-s-a
 medical glove 19th century-Loc make-Pst-Pass[3Sg]
 ‘Medical gloves were invented in the nineteenth century.’
- b. #meditsinski **pertśatkaj-ŋən** jǎrxəsmiṭ wek-ən
 medical glove-Du 19th century-Loc
 wɛr-s-aj-ŋən
 make-Pst-Pass[3Sg]
 ‘Medical gloves were invented in the nineteenth century.’

Setting the stage

- We avoid examples in which PNI is expected.
- We set aside kind-denoting bare NPs and concentrate on object-denoting NPs.
- We also set aside bare plurals and bare mass nouns and concentrate on **bare singulars** and **bare duals**.
- These bare NPs show the most striking contrast with the neo-Carlsonian predictions.
- We will explain this by **eliminating the *iota* type-shift**.

Distribution of bare nouns in Kazym Khanty

Type of arguments	Test	Bare nouns (sg and du)
Definite	Uniqueness	?
	Anaphoricity	?
Indefinite	Novel referents	?
	Non-uniqueness	?
	Partitive specificity	?
	Differentiated scope	?

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Definite contexts: uniqueness

Bare nouns can **denote unique individuals**:

- (7) a. *tǎmχǎtλ* *tiliwisar* *χɥwat* *wan-s-əm* ***sərxanλ rajon*** ***kəśa***
 today television on see-Pst-1Sg S. region head
 ‘Today I saw the head of the Surgut region on TV’.
- b. *tǎmχǎtλ* ***χǎtλ*** *εt-s*
 today sun appear-Pst[3Sg]
 ‘The sun came out today’.

Definite contexts: anaphora

Bare nouns can **refer to previously introduced referents**:

- (8) ewi pa aj_iki xot jit-a λuŋ-s-əŋən.
 girl Add boy house room-Dat enter-Pst-Du
ewi aj_ikij-a pāsān-a oməs-ti lup-əs
 girl boy-Dat table-Dat sit-Nfin.Npst say-Pst[3Sg]
 ‘A girl and a boy entered a room. **The girl** told **the boy** to sit at
 the table.’

Definite contexts: so far so good

Bare nouns are freely used in several definite contexts

- as expected under the neo-Carlsonian approach
- via *iota*

Caveat: in some contexts grammaticalized definite possessives are obligatory (Mikhailov 2023, 2024; see above).

Distribution of bare nouns in Kazym Khanty

Type of arguments	Test	Bare nouns (sg and du)
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Indefinite contexts: novel referents

Kazym Khanty bare nouns can be used to **introduce novel referents** (9).

(9) [The speaker gives tourists a tour of his city.]

χənti	tām	χot-ən	wel-ti	χə	wə-s
once	dem	house-loc	hunt-nfin.npst	man	be-pst[3sg]

‘Once upon a time a hunter lived in this house.’

Unlike bare nouns in Hindi (Dayal 2004: 409):

(10) *bahut saal pahle, yehaaN ***(ek)** aurat rahtii thii*
many years ago here one woman lived

‘Once upon a time, a woman used to live here.’

Indefinite contexts: novel referents

Kazym Khanty bare duals can also be used to **introduce novel referents**:

(11) [The speaker and their friend are walking. The speaker sees two unknown children playing on the street, and tells their friend:]

kam-ən **ńawrɛm-ŋən** junt-λ-əŋən
 street-LOC child-DU play-NPST-3DU

‘A couple of children are playing on the street.’

Indefinite contexts: non-uniqueness

Bare nouns can **refer non-uniquely**:

(12) [There were several participants from different countries in a race.]

amerikanets	mɛt	siri	juxt-əs	pa
american	most	front	come-pst[3sg]	add
mɛt	juλta	χaśəs	i_śi	amerikanets
most	behind	stay-pst[3sg]	add	american

'An American came first and an(other) American came last'.

Indefinite contexts: non-uniqueness

This is also unlike bare nouns in Hindi (Dayal 2018: 5):

- (13) #**kuttā** so-rahā-he or **kuttā** bhōk-rahā-he
dog sleep-PROG-PRS and dog bark-PROG-PRS
'The dog is sleeping and the dog is barking.'

Indefinite contexts: non-uniqueness

Bare duals can also **refer non-uniquely**:

(14) [There was an international race, and each car had exactly two racers.
Some countries had more than one car participating.]

mɛt siri **amerikants-ŋən** juχət-s-əŋən,
most front American-du come-pst-3du

mɛt juλta iśi **amerikants-ŋən** juχət-s-əŋən
most last also American-du come-pst-3du

‘Two Americans came first and two (other) Americans came last.’

Indefinite contexts: partitive specificity

Bare nouns admit a **partitive** reading:

(15) [There were a lot of children in the room.]

aj_iki pa **ewi** kisərn jun-s-əŋən
boy add girl cards play-pst-du

'A boy and a girl were playing cards.

[Other boys and girls were dancing.]'

Indefinite contexts: partitive specificity

Again, unlike bare nouns in Hindi (Dayal 2018:6).

(16) kamre-mē kaī bačče the.

room-in several kids were

#**laṛkā** or **laṛkī** tāś khel-rahe-the

boy and girl cards play-PROG-PAST

‘There were several children in the room. #The boy and the girl were playing cards.’

Indefinite contexts: partitive specificity

Bare duals also admit a **partitive** reading:

(17) [Context. The speaker is in the room with ten children, two of which are sleeping. The speaker's friend enters the room and starts to speak loudly. The speaker interrupts him and says:]

χῆσλα	wəλ-a,	ńawrɛm-ŋən	υλ-λ-əŋən
quietly	be-IMP[SG]	child-DU	sleep-NPST-3DU

'Be quiet, (two) children are sleeping.'

Indefinite contexts: problems appear

Bare nouns are freely used in **indefinite** contexts as well!!

- This contradicts the neo-Carlsonian predictions:
 - *iota* should block *ex* (by Meaning Preservation),
 - hence, bare singulars and bare duals ought to be definite,
 - but they are not.
- Kazym Khanty data stand in stark contrast to Dayal's (2004) Hindi data.
- Is ex freely available in Kazym Khanty?

Distribution of bare nouns in Kazym Khanty

Type of arguments	Test	Bare nouns (sg and du)
Definite	Uniqueness	ok
	Anaphoricity	ok
Indefinite	Novel referents	ok
	Non-uniqueness	ok
	Partitive specificity	ok
	Differentiated scope	?

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Differentiated scope

Nouns shifted via *ex* (' \exists ') are expected to **behave as generalized quantifiers** (GQs) do.

$$(18) \exists(\llbracket w \text{ is } \lambda i \rrbracket) = \lambda Q_{et} \exists x_e. \text{deer}'(x) \wedge Q(x) \quad - \quad \text{type } \langle\langle e, t \rangle, t \rangle$$

GQs can take different scope with respect to other quantifiers and operators via Quantifier Raising (QR; e.g., Heim & Kratzer 1998).

On the other hand, nouns shifted via *iota* are expected **to denote unique individuals** and, therefore, only take **the widest scope**.

Narrow scope of bare singulars

(19) kər_xǎrij-ən kăt pʰš **amp** χurt-əs.
courtyard-loc two time dog bark-pst[3sg]
'In the courtyard, a dog barked twice [today].'

Possible context:

a. It comes to us every day, barks and asks for food.

∃ > adv

b. **First time it was a black dog, second time it was a white dog.**

adv > ∃

Narrow scope of bare singulars

(20) bibliotekar kăt p̄š **aj_ikij-a** kinška ma-s
librarian twotime boy-dat book give-pst[3sg]
'The librarian gave a book to a boy twice'.

Possible context:

a. The boy came to the library in the morning and then again in the evening.

∃ > adv

b. **The first boy was Petya, the second boy was Vasya.**

adv > ∃

Narrow scope of duals

(21) tǎmχǎtλ pa_śi kam-ən **ńawrɛm-ŋən** jun-λ-əŋən
today again street-loc child-du play-npst-3du

‘Two children are playing on the street again.

[Yesterday, Anna and Masha played; today, Petya and Kolya are playing.]’

adv >

ɛ

(22) tǎta kašəŋ χǎtλ **amp-ŋən** χuraś-λ-əŋən
here every day dog-du bark-npst-3du

‘A couple of dogs barks here every day.

[Yesterday, one couple barked, today, another couple is barking.]’

adv >

ɛ

Intermediate scope

(23) kašəŋ χujat lǎŋχa-λ **uchonij** piλa wəjtantijəλ-ti
every person want-npst[3sg] scientist with meet-nfin.npst

‘Every person wants to meet a scientist.

[Petja wants to meet Solovar,
Masha wants to meet Kaksin.]’

∀ > ∃ >
want

- For each person, there is a particular scientist they want to meet.

Negation: wide-scope indefinites

(24) [The speaker enters the building with many windows and feels that it is cold there.]

tăta	χutti	išni	ănt	təχər-man
here	somewhere	window	neg	close-cvb

‘There is a window somewhere that is not closed.’

∃ > ¬

Negation: wide-scope indefinites

(25) [The speaker returns home from the bookshop sad. Mom asks him: “What happened?”]

ma **kinška** ǎn λət-s-əm,

I book neg buy-pst-1sg

wajna i mir kinška ǎntəm wə-s

war and peace book neg.ex be-pst[3sg]

‘I didn’t buy a book: there was no “War and Peace”.

[I only bought “Eugene Onegin” and “Doctor Zhivago”.]’

Differentiated scope: summary

- In Kazym Khanty, narrow and intermediate scope readings are available for bare singulars and bare duals.
- Moreover, in Kazym Khanty indefinites can take wide scope.
- The only possible source of these scopal properties is ex.

Distribution of bare nouns in Kazym Khanty

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Indefinite	Novel referents	ok
	Non-uniqueness	ok
	Partitive specificity	ok
	Differentiated scope	ok

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Analysis

The data above suggest that bare nouns are interpreted via ex across the board in Kazym Khanty.

This means that **there is no *iota* type-shift in Kazym Khanty.**

If it were available,

- it would **block ex** (by Meaning Preservation),
- resulting in **only wide-scope definite readings** being available
- which is **not** the case in our data.

Iota leads to false predictions

Ranking $iota > ex$ predicts that (26) ought to be pragmatically odd, contrary to fact:

(26) *Amerikanets met siri juxtās pa met jul̥ta χaśās iśi amerikanets*

‘An American came first and an(other) American came last’ = (12)

a. ι [[American]] leads to a contradiction:

$\text{came.first}'(\iota x.\text{american}'(x)) \wedge \text{came.last}'(\iota y.\text{american}'(y))$

b. \exists [[American]] does not lead to a contradiction:

$\exists x[\text{american}'(x) \wedge \text{came.first}'(x)] \wedge \exists y[\text{american}'(y) \wedge \text{came.last}'(y)]$

Truth conditions for a “definite reading”

(27) $\chi\check{a}t\lambda\ \epsilon ts$ ‘The sun came out’ = (7b)

$\llbracket \chi\check{a}t\lambda\ \epsilon ts \rrbracket = 1$ iff $\exists x \llbracket \text{sun}'(x) \wedge \text{appear}'(x) \rrbracket$

Matthewson 1998, Gillon 2013, Heim 2019:

- In the absence of competing definites, indefinite NPs can pick up unique and familiar referents.
- The indefinite semantics in (27) is compatible with this.

Truth conditions for a wide-scope indefinite reading

Wide-scope (28) and intermediate-scope readings are derived in the usual way via Quantifier Raising.

(28) *Ma kinška ān lətsəm* 'I didn't buy a book' = (25)

a. LF before QR: [[I] NEG [\exists [book]_{et,t} [buy]_{e,et}]] \Rightarrow_{QR}

LF after QR: \exists [book]_{et,t} [λ_g [[I] NEG [t_g [buy]]]]_{et}

b. $[[ma\ kinška\ ān\ lətsəm]] = 1$ iff $\exists x[\text{book}'(x) \wedge \neg \text{bought}'(\text{Speaker}, x)]$

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Conclusions

- We showed that existential interpretations are freely available to bare singulars and bare duals in Kazym Khanty.
- We contend that there is no *iota* in Kazym Khanty.
 - Only *ex* applies to bare singulars and bare duals,
 - covering both definite and indefinite uses.
- This contradicts the classic neo-Carlsonian approach (Chierchia 1998; Dayal 2004).

Conclusions

- We suggest that the type-shifting inventory of a language is subject to cross-linguistic variation.
- A type-shift, *iota*, might be wholly absent from a language.

Acknowledgments

Thank you to our friends and consultants from Kazym for their help and never-ending enthusiasm in working together! Thank you to Alexey Kozlov and Svetlana Toldova for the Kazym Khanty field trips!

For useful suggestions and criticisms thank you to Omar Agha, Rajesh Bhatt, Veneeta Dayal, Aron Hirsch, Maria Polinsky, Yael Sharvit, Sadhwi Srinivas, Alexander Williams, and to audiences at CreteLing 2024 and MACSIM 2024.

Thank you to two anonymous reviewers for SuB 29, to the SuB 29 organizers and to you for your attention!

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Appendix 1: informational structure

- Although bare NPs **can** refer to **non-unique individuals**, they **can not do it freely** – there are certain pragmatic restrictions.
- The first one is **QUD** (Roberts 1996 etcq): in some cases, non-uniquely referring bare NPs cannot be used to address the relevant implicit Question under Discussion.
- The second one is the **focus prominence**: in certain cases, non-uniquely referring bare NPs violate the constraints on the focus (de)accenting.
- Crucially, this has **nothing to do with the theory of nominal meaning**: all the constraints follow from independently established general principles.

Appendix 1: informational structure

- The **duality** implication of the dual number is **not-at-issue** (Golosov 2023).
- Hence, bare dual NPs can not be used to address the quantity-oriented QUD:

(29) [There is a camp with 5 boys and 5 girls. At night, Masha found out that 2 girls are not sleeping. The boss asked her if everyone sleeps.]

#antə, **ewɛ-ŋən** änt uλ-λ-əŋən
no girl-du neg sleep-npst-3du

Intended: ‘No, two girls are not sleeping.’

Appendix 1: informational structure

- In (30), a bare NP can be used because the QUD addresses the nominal predicate:

(30) [There are five girls and five boys in the camp. Two girls were not sleeping, but Vasya thought that two boys are not sleeping, and went to the boy's room. Masha corrects him:]

was'a, **ewɛ-ŋən** ǎnt uλ-λ-əŋən, akań wuj-a
V. girl-DU NEG sleep-NPST-3DU doll bring-IMP
'Vasya, GIRLS are not sleeping, bring the dolls (instead).'

Appendix 1: informational structure

- In (31), two subjects contrast in their reference but share the same predicate => two bare NPs need to be accented and deaccented at the same time (Schwarzschild 1999 etc.), which is impossible.

(31) [Granny asks her grandson what is going on on the street.
The grandson reports:]

#kam-ən **amp-ηən** χurt-λ-əηən pa **amp-ηən** uλ-λ-əηən
street-LOC dog-DU bark-NPST-3DU ADD dog-DU sleep-NPST-3DU
Int.: 'On the street, two dogs are barking and two dogs are sleeping.'
SPEAKERS' COMMENT: 'The sentence sounds as if these are the same two dogs.'

Appendix 1: informational structure

- If the contrast between the two pairs of dogs is less salient, the usage of the bare NPs is felicitous:

(32) kam-ən **amp-ηən** χurt-λ-əηən, mis-ηən
street-LOC dog-DU bark-NPST-3DU COW-DU
muk-λ-əηəη, oš sat'-λ, kǎte-ηəη
moo-npst-3du sheep be.heard-npst[3sg] cat-du
χuraśλəηən, **amp-ηən** urij-λ-əηən pa ḥawrem-ət
fight-npst-3d dog-du roar-npst-3du add child-pl
χoλλ-əλ-ət
cry-npst-3pl

'On the street, **two dogs** are barking, a cow is mooing, a sheep is baaing, two cats are fighting, **two** (other) **dogs** are roaring, and children are crying.'

Appendix 1: informational structure

- Bare NPs are also felicitous if the contrast between the referred individuals is contextually neutralized:

(33) [There was an international race, and each car had exactly two racers. Some countries had more than one car participating.]

mɛt siri **amerikants-ŋən** juχət-s-əŋən,
most front American-du come-pst-3du

mɛt juλta (iʃi) **amerikants-ŋən** juχət-s-əŋən
most last also American-du come-pst-3du

‘Two Americans came first and two (other) Americans came last.’

Appendix 1: informational structure

- Bare NPs are **restricted** in their ability to refer to **non-unique** individuals.
- But these restrictions follow from **the general pragmatic principles** and have **nothing to do with the theory of nominal meaning**.
- The “**definiteness effect**” sometimes appearing in such cases is a **side effect** of the informational structure constraints.
- This can potentially explain why **bare singulars in Hindi** were diagnosed as **definites** (Dayal 2004): the same **informational structure** parameters must be checked.
- If this pattern is cross-linguistically valid, we **do not need the *iota* type shift** in the theory of nominal meaning whatsoever.

Appendix 2: where is *nom*?

- If *iota* is absent, then we are left with *nom* > *ex*.
- For this to hold true, bare plurals should either denote kinds or obtain existential interpretations via **Derived Kind Predication**, resulting in obligatory narrow scope (DKP; Chierchia 1998):

(34) If P applies to objects and k denotes a kind, then

$$P(k) = \exists x[\cup k(x) \wedge P(x)]$$

- However, there are some suspicious examples:

(35) waśaj-en kăt pʘš **kăt´ij-et** λapt-əs
B.-poss.2sg two time cat-pl feed-pst[3sg]

‘Vasya fed cats two times.

∃ > adv

[And they are still sitting by his windows and meowing.]’

Appendix 2: where is *nom*?

- **Bare plurals might be ambiguous** between kinds and existentials, therefore, {*nom*, *ex*} (no ranking).
- Nevertheless, in some examples intermediate or wide scope is not available for bare plurals:

(36)[#]kašəŋ weλpəs xo tāmχätλ woj-t weλ-ti
every hunt man today animal-pl catch-nfin.npst

λaŋχa-λ

want-npst[3sg]

Expected reading: [#]‘Every hunter wants to catch animals today.

[Petya wants to catch hares, Wasya wants to catch foxes.]’

(Preliminary data)

- Stay tuned for further developments.