No *iota* type-shifter in Kazym Khanty[1]

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Abstract. In this paper, we present new challenging data from Kazym Khanty (a Uralic language spoken in Western Siberia, Russia): in this articleless language, bare singular and bare dual NPs in argument positions can receive indefinite readings on par with definite ones, contradicting the predictions of the classic neo-Carlsonian approach (Chierchia 1998; Dayal 2004). We argue that the presence of indefinite uses can be accounted for within the neo-Carlsonian approach if we assume that the inventory of type-shifters accessible in the grammar is subject to cross-linguistic variation, and Kazym Khanty differs from the "canonicial" articleless languages in that it lacks the "definite" type-shifter *iota*. In the absence of *iota*, bare singular and bare dual NPs are predicted to be interpreted via the "indefinite" type-shifter *ex*. We show that this prediction is borne out: not only do bare singulars and bare duals feature indefinite uses, but they also can take variable scope, as expected from the generalized existential quantifiers. We also argue that *ex*, despite being associated with indefinite readings, can cover definite uses when *iota* is absent.

Keywords: bare nouns, (in)definiteness, neo-Carlsonian approach, type-shifters, scope, dual number, Northern Khanty, Uralic languages.

1. Introduction

In Kazym Khanty, there are no articles, and bare (determinerless) NPs can occur in argument positions. The question of how bare nouns in argument positions are interpreted was already addressed by Chierchia (1998) and Dayal (2004): they presented the neo-Carlsonian approach, according to which bare NPs in articleless languages can freely get kind and definite interpretations, but indefinite interpretations are limited. In particular, this theory predicts that bare non-plural count NPs in articleless languages can only be interpreted as definites. However, in Kazym Khanty, bare singular and bare dual NPs feature existential uses. For instance, in example (1) there is a bare NP which refers to a novel entity — a context that is typical for indefinites.

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

χɵnti	tăm	χot-ən	weλ-ti	χɵ	wɵ-s
once	this	house-LOC	hunt-NFIN.NPST	man	be-PST[3SG]

'Once upon a time a hunter lived in this house.

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This paper is about the interpretation of bare singular and bare dual NPs in Kazym Khanty. Are they used as definites or indefinites? Can we predict their distribution within the neo-Carlsonian approach? What sort of modification of this theory is needed to account for our data?

We will answer these questions in the remainder of this paper. In Section 2, we introduce the neo-Carlsonian approach in more detail. In Section 3, we provide some basic information about Kazym Khanty grammar and formulate the predictions of the neo-Carlsonian approach for bare singulars and bare duals. In Sections 4 and 5 we discuss definite and indefinite uses of bare NPs in this language respectively, showing that the neo-Carlsonian predictions are only partially borne out. In Section 6 we show that bare singulars and bare duals in Kazym Khanty have the scopal properties of existential quantifiers. In Section 7, we present our analysis, and Section 8 is a brief conclusion.

2. Neo-Carlsonian approach

In this section we introduce the neo-Carlsonian approach to nominal semantics (Chierchia 1998; Dayal 2004). This framework predicts the distribution of bare nouns in languages with and without articles. The central prediction important for our study is that in articleless languages, bare NPs are interpreted as definites, while their possible existential readings are restricted. While this prediction is borne out in some languages (Dayal 2004; Deal and Nee 2018), there are case studies that provide counterexamples to it (Borik 2016; Srinivas 2021).

In her work, Dayal considers Hindi, Russian and Chinese data. Her empirical data shows that bare nouns in these languages may receive kind and generic interpretations, which is similar to bare NPs in languages with overt determiners, according to Carlson (1977). At the same time, Dayal notices that bare nouns in these languages have definite readings.

Let us take a look at example (2). An NP *kutte* ‘dogs’ is ambiguous—it has both a generic interpretation (in this case, (2) is a sentence characterising dogs in general) and a definite interpretation (if so, (2) is a sentence about some specific dogs which tend to bark a lot).

(2) **kutte** bahut bhau Nkte haiN *Hindi*
dogs lot bark
‘The dogs/Dogs bark a lot.’ (Dayal 2004, 402)

Dayal also illustrates definite readings of bare singulars using Löbner’s (2011) homogeneity diagnostic. (We will call it the contradiction test.) Sentence (3) is ungrammatical in English, because it is controversial. Each definite NP refers to a unique child, and the same child cannot be loud and not loud simultaneously.

(3) #**The child** is loud and **the child** is not loud. (Löbner 2011)

In Hindi, bare nouns are also infelicitous in such contexts (4). This leads to the conclusion that they have a definite interpretation.

(4) #**kuttā** so-rahā-hɛ ɔr **kuttā** bhɔ̃k-rahā-hɛ. *Hindi*
dog sleep-PROG-PRS and dog bark-PROG-PRS
'The dog is sleeping and the dog is barking.' (Dayal 2018, 5)

But do bare nouns in articleless languages have indefinite readings? Dayal argues that this is not the case, since they are not used in typically indefinite contexts, to which we now turn.

First, bare nouns are infelicitous in the context of partitive specificity. According to Enç (1991), a partitive specific NP refers to an entity that belongs to some previously introduced set. Consider example (5). The dancing girl and boy are not unique, because there are other people, in particular, another girl in the described situation. Note that in Hindi, the numeral *ek* 'one' is obligatory in this sentence, and bare nouns are ungrammatical. This speaks in favor of the suggestion that bare singulars are definite in Hindi (and in other articleless languages investigated by the neo-Carlsonians).

(5) vahaaN kaii log the. *Hindi*
there several people were.
***(ek)** **laRkii** ***(ek)** **laRke** ke-saath naach rahii thii.
one girl one boy with was dancing
ek aur laRkii do aurotoN ke-saath baat kar rahii thii
one more girl two women with was talking
'There were several people there. A girl was dancing with a boy, another girl was talking to two women.' (Dayal 2004, 409)

Second, bare nouns cannot introduce new referents—a context typical for indefinite DPs, because definiteness entails familiarity, the opposite of novelty (Roberts 2003). In Hindi, these contexts are also impossible without the numeral (6).

(6) bahut saal pahle, yehaaN ***(ek)** **aurat** rahtii thii. *Hindi*
many years ago here one woman lived
aurat bahut bhadur thii . . .
woman very brave was
'Once upon a time, a woman used to live here. The woman was very brave.' (ibid.)

At this point we have seen that bare nouns in articleless languages can have either kind or definite interpretation, but not an indefinite one. Why is it so?

According to the theory proposed in (Chierchia 1998), bare NPs denote predicates (type $\langle e, t \rangle$) but may undergo one of three type-shifters, namely *nom* ('$^{\cap}$'), *iota* ('ι', (7)) or *ex* ('∃', (8)), to arrive at an argumental type.[2] *Nom* derives kind-level denotations from plural properties and is undefined for singular properties because they do not have a corresponding kind (Chierchia 1998, 351). We will not discuss plurals in this paper, so *nom* is irrelevant for us here. For the purposes of our study, we will focus on the contribution of the other two type shifters, *iota* and *ex*, that derive definite and existential readings, respectively.

[2] Defined after (Partee 1986) in (7)-(8).

(7) $iota =_{def} \lambda P_{\langle e,t\rangle} \iota x.P(x)$
(8) $ex =_{def} \lambda P_{\langle e,t\rangle} \lambda Q_{\langle e,t\rangle}.\exists x.P(x) \wedge Q(x)$

As shown in (7)-(8), *iota* and *ex* are semantically equivalent to the English articles *the* and *a*, respectively. However, these type shifters cannot be used in languages which lexicalize the corresponding articles because of the Blocking Principle (9). The grammar prefers using overt determiners where possible. In articleless languages, there are no determiners and type-shifting operations are not blocked.

(9) Blocking Principle (Chierchia 1998: 360)
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,
$D(X) = \tau(X)$.

Judging from the Hindi data above, it seems that *ex* is the one type-shifter that is not available for bare nouns (remember the tests on contradiction, partitive specificity, and introducing referents). The classic neo-Carlsonian theory explains this by the Meaning Preservation principle. Example (10) presents Chierchia's initial suggestion based on the data from languages with articles and later revised in (Dayal 2004; (11)).

(10) Chierchia's (1998) Meaning Preservation
$^{\cap} > \{\iota, \exists\}$

(11) Dayal's Revised Meaning Preservation (Dayal 2004, (39c))
$\{^{\cap}, \iota\} > \exists$

You can see that in Chierchia's version, *nom* overrides other type-shifters. In contrast, Dayal states that both *nom* and *iota* override *ex*, and the behavior of bare nouns in articleless languages presents the evidence for this. This means that *nom* and *iota* are equally available for bare NPs, but *ex* can only work if these two are undefined or unapplicable. In particular, (11) implies that bare singulars and bare duals cannot be shifted via *ex*, i.e. **they are never interpreted as indefinites and they do not have properties of generalised quantifiers**.

3. Background on Kazym Khanty

3.1. Genealogical and sociolinguistic information

Kazym Khanty is a dialect of Northern Khanty (Uralic, Khantyic branch (Aikio 2022)) spoken in the village Kazym in Khanty-Mansi Autonomous Okrug, West Siberia, Russia. With Northern Khanty itself being an endangered language with less than 9000 speakers (Russian Census of 2010), its Kazym dialect has no more than 2000 speakers (Kaksin 2010), and most of the speakers are over 50 years old (Aristova 2023).

3.2. Methodology: the source of the used data

The data used in this paper were collected during elicitation sessions with native speakers of Kazym Khanty in 2023-2024, using Matthewson's (2004) methodology and adapting Dayal's questionnaire (p.c.). We worked with some ten speakers, and all examples provided in the paper were approved (as acceptable or unacceptable) with at least three consultants.

3.3. Setting the stage: relevant information about the grammar

In this section, we will establish some relevant properties of Kazym Khanty grammar in order to set the stage for testing the predictions of the classic neo-Carlsonian approach.

3.3.1. Number system

Kazym Khanty features three numbers: singular, plural, and dual. The uses of singular number may be either strictly singular (12a) or number-neutral (12b). The number-neutral readings of singular NPs arise only in cases of PNI, which will be discussed in the corresponding section.[3]

(12) a. kam-ən ńawrɛm jun-λ
street-LOC child play-NPST.3SG
'A child is playing outside.'
b. ma ńawrɛm tăj-λ
I child have-NPST.3SG
'I have children (one or more).'

3.3.2. Definite determiners: extended possessives

Kazym Khanty features possessive agreement markers, or possessives. In addition to the proper possessive function, these markers grammaticalized into definite determiners (Mikhailov 2024; 2025). In particular, there are two markers, the so-called associative possessive and salient article, that encode definiteness presuppositions of the referent denoted by the host NP. This makes them candidates for the role of the definite determiner and hence a lexicalization of the *iota* type-shifter, a potential trigger of the Blocking Principle.

However, neither of the markers is semantically equivalent to *iota*: they have a more specific meaning than just definiteness. Namely, the associative possessive requires that there is a context-dependent associative relation between the possessor and the marked NP, and the salient article can appear only on the NPs that refer to the most salient referent from the NP extension (Mikhailov 2025).

[3] In the examples below, semantically or pragmatically odd sentences or sentences that lack the interpretation in question are marked with #. We provide contexts in brackets, brackets within the translation line and contexts given in quotes ("") were translated into Khanty. The glosses used in this paper follow the Leipzig Glossing Rules (unless otherwise noted), with the following additions: NEG.EX — existential negation, NFIN — general non-finite form, OOC — out of control.

Thus, neither of the two determiners have the semantic distribution of the canonical definite article like English *the*, and there are definite contexts where neither of them can occur (see Section 4). This means that the Blocking Principle does not block *iota* in Kazym Khanty.

3.3.3. Pseudo noun incorporation (PNI)

In the neo-Carlsonian approach, PNIed arguments, bare singulars in particular, are a special type of arguments that are not subject to the two type shifters under discussion, *iota* and *ex* (for the formal analysis of PNI see (Dayal 2011)). This means that if we want to test whether the ranking of the two type shifters in Kazym Khanty follows the predictions of the neo-Carslonian approach, we can only look at non-PNIed bare NPs, and hence should be able to identify the contexts where PNI happens in order to avoid them. In this section, we show that bare NPs in Kazym Khanty can only be PNIed in the direct object position.

Bare singular objects of at least some transitive verbs in Kazym Khanty feature the key semantic properties of pseudo-noun-incorporated (PNIed) arguments.[4] First, they are interpreted as **number-neutral** (13). The sentence in (13) is true even if the speaker has more than one child: according to the consultants' intuition, (13a) essentially means that the speaker is a parent. The same effect is observed in (13b): what is inferred from (13b) is that the speaker bought some mittens, but it is not specified how many.

(13) a. ma ńawrɛm tăj-λ-əm
I child have-NPST.3SG
'I have children (one or more).'
b. ma pos λɵt-s-əm
I mitten buy-PST-1SG
'I bought mittens (one or more).'

Second, the bare NPs in question can get the **narrowest scope** interpretation (Tiutiunnikova 2024). This is evident in cases like (14), where the bare NP is interpreted within the scope of the vP-level adverbial *tăλ măr* 'the whole winter'. Since existential quantifiers cannot get the narrowest scope in this case due to a type mismatch, the only way to account for the narrowest scope of the bare singular in (14) is to assume that it is PNIed.

(14) pet´a-jen tăλ măr šowr weλ-əs
P.-POSS.2SG winter time hare hunt-PST[3SG]
'Petya hunted hares (lit. hare-hunted) the whole winter.'

Pseudoincorporation is restricted to direct objects: bare NPs occuring in other syntactic positions do not feature number-neutrality or narrowest scope. For instance, in (14), the bare singular *păsti woj* 'wolf' in the subject position is not interpreted as number-neutral and takes wide scope with respect to the durational adverbial *tăλ măr* 'for the whole winter'. Thus, (14) only has an odd reading according to which the same wolf kept howling for the whole winter.

[4] Due to the space limits, we only provide some of the tests for PNI that we applied to Kazym Khanty data. For more details, see (Golosov 2024) and (Tiutiunnikova 2024).

(15) #tăλ măr păsti_woj urtət′λ′-əs
winter time wolf howl-PST[3SG]
'A wolf was howling all winter.'
Expected: 'Wolves were howling all winter.'

In this paper, we will only consider examples with bare singulars and bare duals in the subject position: this type of arguments cannot undergo PNI and thus are subject to type-shifting via *ex* and *iota.*

3.3.4. Summary and predictions of the neo-Carlsonian approach

As shown in this section, Kazym Khanty is an articleless language that features three numbers (singular, plural, and dual) and pseudo noun incorporation, which is restricted to bare singulars in object positions. In the absence of articles, the Blocking Principle (9) does not block any of the type shifters, and *iota* outranks *ex* by Meaning Preservation (11). Since shifting via *nom* is not an option for non-plural count bare NPs, the only type-shifting operation available for non-PNIed bare singulars and bare duals is *iota*. Thus, according to the neo-Carlsonian approach, non-PNIed bare singulars and bare duals must be definite expressions.

In the next two sections, we will show that this prediction is not borne out. While (non-PNIed) bare singulars and bare duals *do* feature definite uses, they feature **indefinite** uses *as well*, contra the neo-Carlsonian predictions.

4. Definite uses

In this section, we show that non-plural count NPs in Kazym Khanty can be used as definites, matching in this case the predictions of the neo-Carlsonian approach.

First, bare NPs can denote unique individuals, as shown in (16). In (16a), the bare singular *sərχanλ rajon kʉsa* 'head of Surgut district' denotes a contextually unique individual (in Russia, each district has a unique head). In (16b), the bare singular *χatλ* 'sun' refers to the unique solar object, the sun.

(16) a. tămχătλ tiliwisar xʉwat wan-s-əm sərχanλ rajon kʉśa
today television on see-PST-1SG S. district head
'I saw the head of the Surgut district on TV today.'
b. tămχătλ χătλ ɛt-s
today sun appear-PST[3SG]
'The sun came out today.'

Second, bare NPs can be used anaphorically, as illustrated in (17). The two bare NPs in the second clause, *ewi* 'girl' and *aj iki* 'boy', refer to the same boy and girl that were introduced in the first clause.

(17) ewi pa aj_iki χot jit-a λuŋ-s-əŋən
girl ADD boy house room-DAT enter-PST-DU

ewi **aj_ikij-a** păsan-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.'

Thus, bare NPs in Kazym Khanty have definite uses. Such cases are exactly what the neo-Carlsonian approach predicts: since Kazym Khanty is an articleless language, nothing can block the *iota* type-shifter, hence the definite interpretation should always be available.

However, the predictions of the neo-Carlsonian approach are stronger: for non-PNIed bare singulars and bare duals, the definite interpretation must be **the only one available**. This prediction is not borne out, as we will show in the next section.

5. Indefinite uses

In this section, we will argue that bare singulars and bare duals in Kazym Khanty can be used as indefinites, contradicting the predictions of the neo-Carlsonian approach.

First, bare NPs in Kazym Khanty can be used to introduce novel referents, as shown in (18). In (18a), the bare singular *weλti χɵ* 'hunter' is used to introduce a new character in the story. Analogously, in (18b), the bare dual *ńawrɛmŋən* 'children (two)' is used to refer to a pair of individuals that are novel for both the speaker and the hearer.

(18) a. [The speaker gives tourists a tour of his city.]
χənti tăm χot-ən weλ-ti χɵ wɵ-s
once this house-LOC hunt-NFIN.NPST man be-PST[3SG]
'Once upon a time a hunter lived in this house.

b. [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.'

Second, bare NPs in Kazym Khanty can refer to non-unique individuals in the contradiction test (Sect. 2), as shown in (19). In (19a), the two NPs *amerikanets* 'American' are clearly referring to two different individuals, otherwise (19a) would have an odd reading according to which the same person took the first and the last places. Thus, none of the NPs denotes a unique American. Ditto for (19b), where the bare duals are used.

(19) a. [There were several participants from different countries in a race.]
amerikanets mɛt siri juχt-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'.

b. [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.'

Third, bare singulars and bare duals admit a partitive reading: that is, not only can they refer to non-unique individuals, but they also can be used to refer to a member of the previously introduced or contextually salient set of individuals. For instance, in (20a), the bare NPs *aj iki* 'boy' and *ewi* 'girl' are used to refer to two members of the previously introduced (larger) sets of boys and girls correspondingly, and then the speaker talks about other boys and girls, as shown by the right context. In (20b), the speaker uses the bare dual *ńawrɛmŋən* 'children (two)' to refer to the subset of the salient group of children in the room.

(20) a. ["There were a lot of children in the room."]
aj_iki pa ewi kisərn jun-s-əŋən
boy ADD girl cards play-PST-3DU
'A boy and a girl were playing cards. [Other boys and girls were dancing.]'

b. [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 says:]
χөsλa wөλ-a, ńawrɛm-ŋən uλ-λ-əŋən
quietly be-IMP[SG] child-DU sleep-NPST-3DU
'Be quiet, (two) children are sleeping.'

Thus, as was shown above, bare NPs in Kazym Khanty have indefinite uses. This violates the predictions of the neo-Carlsonian approach: since Kazym Khanty is an articleless language, *iota* is not blocked and should outrank *ex* via Meaning Preservation, leading to obligatorily definite interpretation of bare singulars and bare duals.

While it is clear that the classic neo-Carlsonian approach cannot account for the indefinite uses of bare singulars and bare duals in Kazym Khanty, the question is how we can modify the neo-Carlsonian approach to make it compatible with these data. In the next section, we will show that bare singulars and bare duals show the scopal properties of existential quantifiers, and hence should be analyzed as shifted via *ex*.

6. Scopal properties

In this section, we argue that bare singulars and bare duals in Kazym Khanty are existential generalized quantifiers (GQ), showing that they can take different scope with respect to other clause-mate quantifiers and operators.

Bare NPs shifted via *ex* get the standard existential GQ denotation of type $\langle\langle e,t\rangle,t\rangle$, consider the denotation of *wʉλi* 'deer' after it undergoes *ex* in (21).

(21) $ex(\llbracket \text{wʉλi} \rrbracket) = \lambda Q_{\langle e,t\rangle}.\exists x_e.deer'(x) \wedge Q(x)$

GQs can take different scope with respect to other clause-mate quantifiers and operators via Quantifier Raising (QR; e.g., (Heim and Kratzer 1998)). If Kazym Khanty bare singulars and

bare duals are interpreted via *ex* as in (21), we expect them to show the scopal properties of generalized quantifiers. On the other hand, nouns shifted via *iota* are expected to denote unique individuals (type *e*) and, therefore, to only take the widest scope.[5]

Below we show that Kazym Khanty bare nouns may take intermediate and narrow scopes, as well as wide scope with non-unique reference. Both kinds of examples argue against *iota* being available in Kazym Khanty and for bare nouns being interpreted as existential GQs via *ex*.

6.1. Narrower than wide scope

Example (22) shows that a bare singular can take narrow scope with respect to the frequency adverbial *kăt pʉš* 'twice'. This is ensured by the follow-up context in (22) that was also translated to Kazym Khanty and presented alongside the target example. It states that there were in fact two different dogs at the two occasions.

(22) kər_χărij-ən kăt pʉš **amp** χurt-əs.
courtyard-LOC two time dog bark-PST[3SG]
'In the courtyard, a dog barked twice [today]. [First time it was a black dog, second time it was a white dog.]'

If the bare singular in (22) was interpreted via *iota* according to the neo-Carlsonian predictions, we would expect the narrow scope reading (22b) to be unavailable. On the other hand, in our approach the narrow scope reading is perfectly expected as the existential GQ derived via *ex* may scope both above and below the frequency adverbial.

Bare singulars can also take intermediate scope, for instance, with respect to a universal quantifier and a propositional attitude 'want' as in (23). For a definite bare singular interpreted with *iota*, intermediate scope would be impossible, and (23) would mean 'Everyone wants to meet the (same) scientist)' contrary to fact. This suggests that the bare singular is interpreted with *ex* here.

(23) kašəŋ χujat lăŋχa-λ **učonij** **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)

Other examples where KKh bare singulars take narrow scope with respect to negation, *paśi* 'again', adverbial (A-) and determiner (D-) quantifiers may be found in (Tiutiunnikova 2024; (in preparation)).

Bare duals too can take narrow scope. Consider (24).

(24) tata kašəŋ χătλ **amp-ŋən** χuraś-λ-əŋən
here every day dog-DU bark-NPST-3DU

[5] Strictly speaking, type *e* objects are scopeless under standard assumptions.

‘A couple of dogs barks here every day.
[Yesterday, one pair barked, today, another pair is barking.]’ (∀ > ∃)

Here, the bare dual takes narrow scope with respect to the universal A-quantifier, as the follow-up context shows.[6] This would be impossible, if it were interpreted via *iota*. The same is shown in (25) where the bare dual takes narrow scope with respect to *pa_śi* ‘again’.

(25) tămχătλ 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.]’ (again > ∃)

6.2. Wide scope with non-unique reference

Kazym Khanty bare nouns may also take wide scope with non-unique reference, exactly as expected if they are interpreted via *ex*. We show this with examples involving negation.

In (26), the speaker is sad because she couldn’t buy one of the books she wanted to. At the same time, she did manage to buy the other two books. Thus, (26a) means that there is a (non-unique) book such that the speaker didn’t buy it. This reading of (26a) can only be possible if we assume that the bare singular *kinška* ‘book’ is existential (it does not refer to a unique book) and it scopes over the negation: the narrow scope interpretation would entail that the speaker bought no book, contradicting (26b). This suggests an interpretation for *kinška* achieved via *ex*.

(26) [The speaker returns home from the bookshop sad. Her mother asks her: “What happened?”]
a. ma kinška ăn λət-s-əm,
I book NEG buy-PST-1SG
‘I didn’t buy a book.’ (∃ > ¬)
b. wajna i mir kinška ăntəm wə-s
war and peace book NEG.EX be-PST[3SG]
‘There was no “War and Peace”. [I only bought “Eugene Onegin” and “Doctor Zhivago”.]’

Ditto for the bare dual in (27). The nurse wants to correct Vasya who thinks that the two children having trouble sleeping are boys. What the nurse says could be rendered as ‘it is two GIRLS who aren’t sleeping’. The dual clearly scopes above negation and, at the same time, its referent is not unique as there are other girls in the camp who are asleep.

(27) [In a summer camp, two of the girls cannot sleep. This was reported to a counselor Vasya, who then needed to calm them down. However, Vasya did not know the gender of the two children. Assuming those are boys, he takes soldier toys with him to play with the kids. On his way to the dorm, he meets a nurse who reported the issue, and she tells him:]
Waśa, **ewɛ-ŋən** ănt uλ-λ-əŋən, akań wuj-a

[6] Wide scope is also available but is not illustrated in the interest of space.

V. girl-DU NEG sleep-NPST-3DU doll bring
'Vasya, GIRLS are not sleeping, bring the dolls (instead).' (∃ > ¬)

Overall, the data presented above clearly shows that the scopal properties of Kazym Khanty bare singulars and duals are the properties of existential quantifiers, derived via *ex*, not of definites. The classic neo-Carlsonian theory states that *iota* should be used over *ex*, and this gives the wrong predictions for the data above.

7. Analysis

We have shown that bare NPs in Kazym Khanty do not require uniqueness (19) or the widest scope (Sect. 6.1). It is unexpected under the classic neo-Carlsonian approach, which predicts that bare singulars are obligatorily interpreted via *iota* due to the *Meaning Preservation* (11) (repeated below).

(28) Dayal's Revised Meaning Preservation (Dayal 2004, (39c))
{∩, ι} > ∃

Based on these observations, we assume that bare nouns do not appear to be interpreted as definites via *iota*, but rather have existential readings via *ex*. We argue that **the *iota* type-shift is absent from the grammar of Kazym Khanty, and bare nouns are interpreted via *ex* across the board**. If *iota* 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.

Let us demonstrate why the ranking *iota* > *ex* leads to false predictions using the example (19a) with the contradiction test (repeated below). The ranking *iota* > *ex* predicts that (19a) ought to be pragmatically odd, even though it is felicitous, see the truth conditions which (19a) would receive if *iota* applied in (30a) and the truth conditions with *ex* in (30b) that we argue for.

(29) Amerikanets mɛt siri juχtəs pa mɛt juλta χaśəs iśi amerikanets
'An American came first and an(other) American came last' = (19a)

(30) a. *iota*⟦American⟧ leads to a contradiction:
$\#came.first'(\iota x.american'(x)) \wedge came.last'(\iota y.american'(y))$
b. *ex*⟦American⟧ does not lead to a contradiction:
$\exists x[american'(x) \wedge came.first'(x)] \wedge \exists y[american'(y) \wedge came.last'(y)]$

The fact that *ex* is accessible also makes correct predictions for various scope readings. Wide-scope indefinite reading and intermediate- and narrow-scope readings can be derived via Quantifier Raising (QR). We present the logical form of the example (26a) below in (31a), where a nominal referring to a non-unique entity takes wide-scope with respect to negation, resulting in the truth conditions in (31b).

(31) Ma kinška ăn λɵtsəm
'I didn't buy a book' = (26a)
a. LF before QR: $[\ [\![I]\!]\ NEG\ [\ ex[\![book]\!]_{\langle et,t\rangle}\ [\![buy]\!]_{\langle e,\langle et\rangle\rangle}\ ]]\ \overset{QR}{\Rightarrow}$
LF after QR: $ex[\![book]\!]_{\langle et,t\rangle}\ [\ \lambda_8\ [\ [\![I]\!]\ NEG\ [\ t_8\ [\![buy]\!]\ ]]]_{\langle e,t\rangle}$

b. $[\![ma\ kinška\ ăn\ λətsəm]\!] = 1$ iff $\exists x[book'(x) \wedge \neg bought'(Speaker, x)]$

Thus, our proposal makes the correct predictions for the contradiction test (19) and the scope facts from Section 6.

7.1. Accounting for definite readings

We believe that definite-like contexts are covered by essentially indefinite nominals. This option logically follows from the semantics of *ex*. While *iota* presupposes uniqueness (7), *ex* has no presupposition ((8); Partee 1986; Coppock & Beaver 2015).

In languages with definite articles, existential NPs cannot be used in the contexts of uniqueness, since it would contradict the *Maximize Presupposition!* principle (Heim 1991). However, if there are no competing definites, indefinite NPs can also refer to unique / familiar entities (Heim 2019; Dayal 2018). This is observed, for instance, in Salish languages, where NPs with an indefinite determiner are used in definite-like contexts. Consider the examples from St'át'imcets (< Northern Interior Salish; British Columbia, Canada) in (32)-(33) (for further discussion, see (Matthewson 1999; Gillon 2013, a.o.)): both unique and non-unique objects are marked with the same determiner.

(32) ka hál'h-a [ta nkakúsent-a]
OOC show-OOC DET star-DET
'A star appeared.' (Matthewson 1999: (58))

(33) ka hál'h-a [ta snéqwem-a]
OOC show-OOC DET sun-DET
'The sun appeared.'(Matthewson 1999: (64))

Thus, we argue that just as Salish indefinites, Kazym Khanty bare singulars and bare duals shifted via *ex* can refer to unique referents on pair with non-unique ones, being insensitive to the parameter of uniqueness whatsoever due to absence of *iota*.

Given this, the sentence (16b) with a "definite" reading of a bare NP in Kazym Khanty has the following truth conditions:

(34) a. *χătλ ɛts*
'The sun came out' = (16b)
b. $[\![\chi ătλ\ ɛts]\!] = 1$ iff $\exists x[\![sun'(x) \wedge appear'(x)]\!]$

In the absence of competing definites, the truth-conditions in (34b) are compatible with a unique sun.

7.2. Why not {∃, ι}

There is another conceivable alternative to the 'no *iota*' approach that we pursue here. We could also say that *iota* is still in the inventory, but the ranking is different, as in either one of the 'Anything Goes' rankings (35) for which *iota* and *ex* are equals and either applies freely

where possible. (Since we don't discuss the role of *nom* in Kazym Khanty, its position is irrelevant.)

(35) ANYTHING GOES
a. $^{\cap}$ > {∃, ι}
b. {∃, ι, $^{\cap}$}

Indeed, the Anything Goes (AG) ranking (35) makes sense if the type-shift ranking is language-specific. If that were the case, it would be natural to expect that different options are available in different languages, and equal ranking of *iota* and *ex* could lead to correct predictions. However, if the ranking is derived from some independent pragmatic or grammatical principle, crosslinguistic variation in ranking becomes unlikely, given the null hypothesis that such principles are not subject to crosslinguistic variation. This is how the ranking was conceived by our predecessors.

Focusing on English bare plurals, Chierchia (1998) has argued that *nom* outranks *ex* on the grounds that *nom* "merely changes the type of its argument, leaving the information associated with it otherwise unchanged" (Chierchia 1998, 374). This is so because *nom* applies to a property ($\langle s, et\rangle$) and returns a function from worlds into the largest individual of which P is true ($\langle s, e\rangle$), which is in Chierchia's system equivalent to a set. So, the difference between *P* and *nom*(*P*) is the difference between (the intension of) a characteristic function and (the intension of) its set. This is indeed meaning preserving, even if it requires some specific assumptions about plurality.

As Chierchia makes clear, *iota* and *nom* are intrinsically linked, the latter being the intensionalized version of the former: *iota* can be thought of as having the type $\langle et, e\rangle$, whereas *nom* is $\langle\langle s, et\rangle, \langle s, e\rangle\rangle$ or $\langle s, et\rangle$. This similarity provides the conceptual motivation for Dayal (2004) to rank *iota* and *nom* as equals, both outranking *ex* (we have already shown her empirical motivation to do so in Section 2).

To summarize, in the neo-Carlsonian approach, more meaning preserving type-shifters are preferred over less meaning preserving ones. This puts {$^{\cap}$, ι} above ∃ (28).

As far as we can tell, the deeper theoretical grounding of this principle has not been made explicit in neo-Carlsonian work. One way to think of it is as of an innate rule, inherent to the language faculty (specifically, its semantic module). Perhaps, it may also be conceptualized as a functionally-driven performance principle along the lines of (Beaver and Coppock 2015). Either way, this would make this principle universal and cross-linguistic variation allowing the AG ranking (35) should be impossible.

8. Conclusions

In this paper we argued for a parametrization of the neo-Carlsonian theory of bare noun semantics. We contend that languages may differ in the inventory of type-shifters available to them, based on our central claim that Kazym Khanty lacks the *iota* type-shifter.

No *iota* in Kazym Khanty

We investigated the range of interpretations available to Kazym Khanty bare nouns and their scopal properties, focusing on bare singulars and bare duals. We showed that they can be used both in definite and indefinite contexts, they don't presuppose uniqueness, and they have the scopal properties of generalized quantifiers. These facts are incompatible with the classic neo-Carlsonian theory which predicts that bare singulars (and duals) are obligatorily interpreted via *iota*. Instead, we accounted for these facts by assuming that bare singulars and duals are interpreted via *ex* across the board, while *iota* is absent from the inventory of available type shifters. Kazym Khanty bare nouns are existential quantifiers used in both indefinite and definite contexts.

Thus, Kazym Khanty presents the case of a language with no *iota.*

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