Non-specific and dependent indefinites: When -nibud’ meets po[1]

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Abstract. This contribution examines two classes of special indefinites, non-specific and dependent, with a focus on Russian, which features both a *wh*-based non-specific indefinite (-*nibud’*) and a dependent indefinite (*po*). The first part of the work shows how these two types of indefinites share various distributional similarities and constraints, yet differ in terms of which operators license them. The second part presents a formal analysis couched in a team semantics framework that treats non-specific indefinites as requiring evaluation-level plurality (variation) and dependent indefinites as being dependent on their licensor (informational dependence). This formalization captures the empirical patterns in Russian and unifies insights from prior analyses, accounting for differences in scopal behavior, (in)compatibility with modal operators, and interactions with plurality and distributivity.

Keywords: non-specific indefinites, dependent indefinites, distributivity, team semantics, quantification.

1. Introduction

This work focuses on two classes of indefinites: dependent indefinites and non-specific indefinites. Many languages have specialized indefinites whose value *depends* on another operator. Such indefinites are known as *dependent indefinites*. Canonical examples include reduplicated indefinites such as Hungarian *egy-egy* (Farkas, 1997; Brasoveanu and Farkas, 2011), and distributive particles modifying indefinite DPs, such as Romanian *câte* (Farkas, 2002) or Russian *po* (Pereltsvaig, 2008). Another class of indefinites that conveys a similar meaning is represented by *non-specific wh*-based marked indefinites, such as the Russian *-nibud’* or the Georgian *me* (Haspelmath, 1997; Partee, 2005; Yanovich, 2005; Pereltsvaig, 2008).

On the one hand, these indefinites exhibit similar distributional constraints. For instance, neither can give rise to wide-scope readings under bona fide quantifiers. On the other hand, their distributions differ crucially. Dependent indefinites, unlike non-specific indefinites, are not licensed by modal quantifiers. Additionally, non-specific indefinites typically require a distributive marker when licensed by plural determiner phrases, whereas dependent indefinites do not.

The first contribution of this work is an examination of the distribution of these two indefinites within a language that features both, namely Russian, which displays the non-specific *-nibud’* and the dependent *po*.

Several analyses have been proposed in the literature to capture the semantic contribution of these indefinites. Two prominent proposals (Farkas, 2021) are the *Dependent Variable* account (Farkas, 1997; Brasoveanu and Farkas, 2011; Farkas, 2021) and the *Evaluation Plurality* account (Henderson, 2014; Aloni and Degano, 2022). According to the former, these indefinites must co-vary with the values of another variable; according to the latter, they are associated with a set of assignments across which their value must vary.

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The second contribution of this work is to show how these two theoretical perspectives (Dependent Variable vs. Evaluation Plurality) can be uniformly formalized, predicting the distinct distributional patterns observed for dependent and non-specific indefinites.

This work is structured as follows. Section 2 introduces the core data. Section 3 outlines the formal framework, and Section 4 shows how this framework accounts for the data. Section 5 concludes.

2. Non-specific and dependent indefinites

In this section, we outline the core empirical data that will be accounted for by our formal analysis. We start in Section 2.1 with general remarks on the distribution of non-specific and dependent indefinites, before focusing specifically on Russian in Section 2.2.

2.1. Distribution

Non-specific indefinites are typically formed by combining a *wh*-element with a marker of non-specificity. Examples from Haspelmath (1997) include Russian *-nibud'*, Georgian *-me*, Greek *típota*, Lithuanian *nors*, Hindi *bhii*, and Turkish *herhangi*. Dependent indefinites can be categorized into two main types: reduplicated numerals/articles and distributive particles that modify indefinite determiner phrases.

Consider the examples in (1): (1a) illustrates the non-specific indefinite *-nibud'* in Russian; (1b) shows the reduplicated article *egy-egy* in Hungarian; and (1c) illustrates the distributive particle *câte* in Romanian. In each of these examples, the sentences are false under a wide-scope reading, in which every boy reads the same book. This variation requirement is shared by these indefinites. However, non-specific and dependent indefinites differ in their distribution in other respects, as we will see below.

(1) a. Kazhdyy mal'chik prines kakuyu-**nibud'** knigu.
every boy brought which-nibud book.SING.ACC
b. Minden fiú hozott **egy-egy** könyvet.
every boy brought a-a book
c. Fiecare băiat a adus **câte** un carte.
every boy has brought câte a book
'Every boy brought a book' [false if every boy read the same book]

Reduplication and particle modification constructions share similar distributions and functions, as both encode distributivity. Distributive particles often relate to distributive quantifiers such as English *each*. For example, Romanian *câte* derives from the Latin preposition *cata*, originally used distributively, similar to English *by*. In other languages, *cata* combined with the numeral *unum* ('one'), resulting in forms like Italian *cadauno* and French *chacun*, which function as distributive quantifiers and can also appear postnominally, much like English *each* (Cable, 2014; Champollion, 2015). Likewise, reduplication is a common strategy to express distributivity (Gil, 2013). It remains an interesting open question why certain languages prefer one strategy over another. For this discussion, we assume that the class of dependent indefinites includes both distributive particles and reduplicated indefinites.

Farkas (2021) provides a comprehensive overview of dependent indefinites across languages.

Table 1: Simplified distribution of non-specific and dependent indefinites.

	Episodic	Distributive DP	Modal	Plural DP
NON-SPECIFIC	✗	✓	✓	(✓)
DEPENDENT	(✓)	✓	✗	✓

Table 1 summarizes general distributional patterns of non-specific and dependent indefinites.[2] Non-specific indefinites are disallowed in episodic contexts, exemplified in (2) for Lithuanian *nors* from Haspelmath (1997). Dependent indefinites are typically also excluded from episodic contexts, although some exhibit auto-licensing. The Hungarian *egy-egy* illustrates this in (3), where the sentence implies multiple events of student failure, potentially involving different students.[3]

(2) #Kas nors atèjo.
who NORS came.
‘Somebody came.’

(3) Egy-egy diák megbukik de ez ritkán fordul elo.
a-a student fails but this seldom comes up
‘Occasionally, a student fails but this happens rarely.’

Distributive quantified determiner phrases and adverbs of quantification typically licence both non-specific and dependent indefinites. Modals licence non-specific indefinites but not dependent ones. Plurals, when interpreted distributively, licence both types of indefinites. One salient difference is that dependent indefinites seem to force a distributive reading of the plural, while non-specific indefinites do not; if licensed, they typically occur with a dedicated distributive marker or a dependent indefinite itself, as we illustrate in the next section for the case of Russian.

2.2. Russian -nibud’ and po

Russian presents an interesting case study as it features both a *wh*-based non-specific indefinite *-nibud’* and a dependent indefinite *po*. These two indefinites can co-occur, providing valuable empirical data for studying their interaction. In previous work, Pereltsvaig (2008) classified *-nibud’* as a dependent indefinite. However, as discussed earlier, *-nibud’* does not exhibit restrictions regarding possible licensors related to modality; hence, in this contribution, we treat it as a non-specific indefinite.

The non-specific *-nibud’* is a suffix that combines with *wh*-interrogatives of various semantic categories to form indefinite pronouns (e.g., *kto-nibud’* for someone’). It can also combine with the interrogative determiner *kakój* (e.g., *kakój-nibud’ knígu* for some book’). In contrast, *po* is a preposition with multiple uses in Russian.[4] In the relevant contexts discussed here, *po* can

[2]Farkas (2021) distinguishes morphologically marked dependent indefinites from dependent indefinites with numeral determiners. We treat these as one class. Regarding non-specific indefinites in Table 1, the generalizations specifically reflect Russian *-nibud’*. Further research should determine if this classification consistently applies to other non-specific indefinites.

[3]In Hungarian, reduplicated indefinite articles show auto-licensing, unlike reduplicated numerals.

[4]An interesting related use is the combination of *po* with days of the week or times of day to indicate the regular

appear with bare nouns, numerals, and *wh*-indefinites. When used with numerals, the dative case is assigned to the numeral 'one', while the accusative case is used for other numerals.

Both *po* and *-nibud'* are infelicitous in episodic contexts, as illustrated in (4a) and (4b).

(4) a. #Ivan vzyal kakuyu-nibud' knigu.
Ivan took which-nibud book.SING.ACC
b. #Ivan vzyal po knige.
Ivan took po book.SING.DAT

Both indefinites are licensed by distributive quantifiers like *kazhdyy* 'every' and by adverbs of quantification such as *vsegda* 'always'. The intended reading of the examples in (5) is that Ivan always reads a different book each day.

(5) a. Vecherom Ivan vsegda chitaet kakuyu-nibud' knigu.
evening.SING.INS Ivan always read.3.SG which.SING.ACC-NIBUD' book.SING.ACC
'Ivan always reads some book in the evening.'
b. Vecherom Ivan vsegda chitaet po knige.
evening.SING.INS Ivan always read.3.SG PO book.SING.DAT
'Ivan always reads some book in the evening.'

Adverbs of quantification also license *po* when it combines with numeral expressions. This contrasts with dependent indefinites in Hungarian, where numeral-based indefinites marked as dependent are not licensed by adverbs of quantification (Farkas, 2021).

(6) Ivan chasto poseshchal po dva seminara v semestr.
Ivan frequently attended po two seminar.PLR.GEN in semester
'Ivan frequently attended two seminars in a semester' [false under the reading there are two specific seminars which Ivan frequently attended in a semester.]

Interestingly, modals license *-nibud'*, but not *po*. This is illustrated for both existential and universal modals in (7) and (8), respectively. This suggests that *po* aligns with the dependent indefinite type discussed previously.

(7) a. Mozhet byt', Ivan chitaet kakuyu-nibud' knigu.
maybe Ivan read.3.SG which.SING.ACC-NIBUD' book.SING.ACC
'Maybe Ivan is reading some book.'
b. #Mozhet byt', Ivan chitaet po knige.
maybe Ivan read.3.SG PO book.SING.DAT

(8) a. Ivan dolzhen chitat' kakuyu-nibud' knigu.
Ivan must read which-nibud book.SING.ACC
'Ivan must read some book.'
b. #Ivan dolzhen chitat' po knige.
Ivan must read po book.SING.DAT

Next, we consider the universal quantifier *vse* ('all'), which typically admits collective interpre-

occurrence of an event (e.g., *po četvergám*, lit. po Thursday', meaning every Thursday').

tations, with distributive readings arising only when *vse* is heavily stressed (Pereltsvaig, 2008). With *vse*, the non-specific indefinite *-nibud'* in (9a) is infelicitous, whereas the dependent indefinite *po* in (9b) is felicitous, receiving a typical distributive reading. A similar pattern is observed for definite bare plural nouns and numerals.

(9) a. #Vse mal'chiki chitali kakuyu-nibud' knigu.
all boy.PLR.NOM read kakuyu-nibud' book.SING.ACC
b. Vse mal'chiki chitali po knige.
all boy.PLR.NOM read po book.SING.DAT
'All boys read some book.' [false if they read the same book.]

(10) a. #Mal'chiki chitali kakuyu-nibud' knigu.
boy.PLR.NOM read which-nibud book.SING.ACC
b. Mal'chiki chitali po knige.SING.DAT
boy.PLR.NOM read po book.
'The boys read a book.' [false if they read the same book.]

(11) a. #Dva mal'chika chitali kakuyu-nibud' knigu.
two boy.SING.GEN read which-nibud book.SING.ACC
b. Dva mal'chika chitali po knige.
two boy.SING.GEN read po book.SING.DAT
Two boys read some book. [false if they read the same book.]

Although *po* alone is felicitous in environments such as those in (9)–(11), all informants consulted preferred variants including an explicit post-nominal distributive quantifier like *kazhdyj* 'each', as illustrated in (12).

(12) a. Vse mal'chiki chitali po knige kazhdyj.
all boy.PLR.NOM read kakuyu-nibud' book.SING.DAT each
'All boys read some book each.'
b. Dva mal'chika chitali po knige kazhdyj.
two boy.SING.GEN read po book.SING.DAT each
'Two boys read some book each.' [false if they read the same book.]

Crucially, when *po* co-occurs with *-nibud'* in environments such as (9), (10), and (11), *-nibud'* becomes felicitous. This is illustrated in (13) using the universal quantifier *vse*. Even in this case, while this sentence is acceptable, a dedicated distributive post-nominal quantifier like *kazhdyj* ('each') makes the intended reading more natural.

(13) Vse mal'chiki chitali po kakoi-nibud' knige.
all boy.PLR.NOM read po which-nibud book.SING.ACC.
'All boys read some book.' [false if they read the same book.]

The data outlined above present clear challenges. We need a theory that predicts (i) the infelicity of both *po* and *-nibud'* in episodic contexts, (ii) the unavailability of modal licensing for *po*, (iii) the unavailability of plural licensing for *-nibud'*, and (iv) the interaction between *-nibud'* and *po*.

3. A team semantics framework

In this section, we outline the basics of the formal system used to capture the empirical data discussed in the previous section. While we attempt to make this section as self-contained as possible, we refer the reader to Aloni and Degano (2022); Degano (2024) for a more comprehensive introduction.

3.1. Teams and information states

The framework presented in Aloni and Degano (2022) belongs to a family of approaches that can be classified broadly as team semantics (van den Berg, 1996; Hodges, 1997; Väänänen, 2007; Brasoveanu, 2007; Ciardelli et al., 2018; Aloni, 2022). Traditionally, semantic formulas are evaluated with respect to single evaluation points. In contrast, team semantics evaluates formulas with respect to sets of evaluation points, referred to as *teams*. In particular, for a first-order team system, as in Aloni and Degano (2022), these evaluation points are assignment functions.

Table 2: Example of a first-order team. The t depicts a team $T = \{i_1, i_2, i_3, i_4\}$ consisting of four assignment functions. The domain of the team (the set of variables defined in the team) is indicated in the first gray row. The left column represents individual assignments within the team, which may be omitted in later figures for simplicity.

T	v	x	y
i_1	v_1	d_1	d_1
i_2	v_2	d_2	d_1
i_3	v_3	d_3	d_2
i_4	v_4	d_4	d_2

We introduce two standard, helpful notions that will play a role in the formalization to follow. The first is the projection of a sequence of variables $\vec{z}$ within a team T (e.g., for the team in Table 2, we have $T(x) = \{d_1, d_2, d_3, d_4\}$):

(14) $T(\vec{z}) = \{i(\vec{z}) : i \in T\}$

The second notion is the subteam of a team with respect to the value of a particular sequence of variables (e.g., for the team in Table 2, we have $T_{y=d_1} = \{i_1, i_2\}$):

(15) $T_{\vec{z}=\vec{e}} = \{i \in T : i(\vec{z}) = \vec{e}\}$

Teams can be conceptualized as representing the information state of the speaker or the relevant agent. In Aloni and Degano (2022), this is implemented by adopting a two-sorted framework. Specifically, models M are triples $\langle D, W, I \rangle$, where D is a set of individuals, W a set of possible worlds, and I an interpretation function. The variable v is designated as encoding the actual world. For instance, Table 3 illustrates different teams representing different epistemic states. In Table 3(b), for example, the speaker knows that either individual a ran or individual b ran, but excludes the possibility that both ran or that neither ran. Teams where the value of v is constant are said to represent *maximal information*, indicating that the speaker is completely informed about their epistemic state. The team in Table 3(c) is an example of team of maximal information.

Table 3: Teams as information states. The variable v for the actual world encodes epistemic possibilities considered by the speaker. The teams represented here are examples of initial teams and encode different information states of speakers. For illustration, we assume a set of possible worlds corresponding to whether certain individuals (a and b) ran or did not run. We depict (a) a team of minimal information; (b) a team of partial information; and (c) a team of maximal information.

(a)

T_1	v
i_1	v_{ab}
i_2	v_a
i_3	v_b
i_4	$v_\varnothing$

(b)

T_2	v
i_2	v_a
i_3	v_b

(c)

T_3	v
i_3	v_b

Finally, we highlight the notion of an *initial team*, as introduced in Aloni and Degano (2022). A team T is called initial if its domain (the variables defined within the team) includes only the designated variable for the actual world, v. In other words, an initial team encodes only the speaker’s epistemic state, without any additional discourse information. Discourse-related information is subsequently added to initial teams through operations of assignment extensions, as described in the next subsection.

3.2. Extensions and indefinites

There are several possible ways to extend a team with a new variable. Aloni and Degano (2022) rely on three fundamental methods: (i) universal extension, (ii) strict functional extension, and (iii) lax functional extension. In what follows, we present these operations, focusing specifically on initial teams. In particular, we illustrate how an initial team with two assignments, like the one depicted in Table 4a, can be extended with a new variable x. For complete definitions and generalizations to arbitrary teams, we refer the reader to Degano (2024).

The *universal x-extension* of an initial team T extends the domain of T by adding a variable x and assigning to it all possible values from the relevant domain. If x is an individual variable, the relevant domain is D; if x is a world variable, the relevant domain is W. An example is provided in Table 4b, where we assume that x is an individual variable and $D = \{d_1, d_2\}$.

The *strict functional x-extension* of an initial team T extends T by adding x and assigning exactly one chosen value for each assignment in T. This extension does not allow branching, unlike the universal extension. An example of strict functional extension is given in Table 4c.

The *lax functional x-extension* relaxes the uniqueness requirement of strict functional extension. In this case, more than one value can be assigned to the new variable x for a given assignment in T. An illustration is provided in Table 4d. Notice that branching is permitted here, as the second assignment i_2 is now extended twice with the values d_1 and d_2.

Crucially, in the framework of Aloni and Degano (2022), indefinites are interpreted as existential quantifiers that extend teams through strict functional extensions. Universal quantifiers are interpreted as existential quantifiers extending the team through universal extensions. Ex-

Table 4: Initial team and extension with a variable x.

(a) Initial Team

v	T
v_1	i_1
v_2	i_2

(b) Universal x-extension

v	x	$T[x]$
v_1	$\to d_1$	i_{11}
	$\to d_2$	i_{12}
v_2	$\to d_1$	i_{21}
	$\to d_2$	i_{22}

(c) Strict functional x-extension

v	x	$T[f_s/x]$
v_1	$\longrightarrow d_1$	i_{11}
v_2	$\longrightarrow d_2$	i_{22}

(d) Lax functional x-extension

v	x	$T[f_l/x]$
v_1	$\longrightarrow d_2$	i_{12}
v_2	$\to d_1$	i_{21}
	$\to d_2$	i_{22}

istential and universal modals are viewed as lax and universal quantifiers over possible worlds, respectively, leveraging the two-sorted nature of the system.

We refer the reader to Aloni and Degano (2022); Degano (2024) for the full syntax and semantics of the language. Here, we emphasize that in the basic language (without the atoms introduced later in Section 3.3), a formula α in negation normal form is interpreted *distributively* with respect to the assignments in a team. This means that it must hold in each assignment individually, following standard satisfaction clauses for first-order literals and connectives:

(16) $M,T \models \alpha$ iff $\forall i \in T : M,\{i\} \models \alpha$

This clarification is important because some previous related frameworks (e.g., van den Berg 1996; Law 2022) interpret predicates collectively over the set of assignments, which differs from the approach adopted here.

Finally, we define a sentence as *felicitous* if there exists at least one initial team that supports it. This definition will be particularly relevant when explaining the infelicity of non-specific and dependent indefinites in episodic contexts later on.

3.3. Conditions

The core idea behind the approach of Aloni and Degano (2022) is that *marked indefinites*-indefinites characterized by restricted distribution or enriched semantic meanings-impose specific conditions on the variables they introduce. In this section, we present two conditions that capture the distinct properties of these indefinites. In Section 3.3.1, we recall the variation condition employed by Aloni and Degano (2022) for modeling non-specific indefinites. In Section 3.3.2, we introduce the informational dependence condition that we propose for modeling dependent indefinites.

3.3.1. Variation

The variation condition from Aloni and Degano (2022), introduced in (17), captures the idea that the value of the indefinite variable must vary with respect to a given world variable:

(17) VARIATION
$M, T \models var(v,x)$ iff $\exists v_1 \in T(v) : |T_{v=v_1}(x)| \geq 2$

The condition in (17) states that, for at least one fixed value of the world variable v, the variable x must take at least two distinct values. For clarity, we illustrate this in Table 5, assuming x is an individual variable.[5]

This condition formalizes a notion known in the literature as *evaluation plurality*, which was first introduced by Brasoveanu (2011). Evaluation plurality concerns plural assignments, as opposed to plural individuals, meaning that the value of variables vary/are plural across different assignments of a team.

Notably, Henderson (2014) employs the variation condition to model dependent indefinites, and a similar analysis has been extended to binomial *each* by Champollion (2015); Kuhn (2017).[6] By contrast, in our framework, the variation condition will be used to capture non-specific indefinites rather than dependent indefinites, as we argue it aligns better with the empirical data presented earlier.

Table 5: Illustrations. $var(v,x)$ is satisfied in (a), but not in (b) and not in (c).

(a)

v	x
v_1	d_1
v_1	d_2

(b)

v	x
v_1	d_1

(c)

v	x
v_1	d_1
v_2	d_2

3.3.2. Informational dependence

We introduce a new condition, which we call *informational dependence*, defined as follows:[7]

(18) INFORMATIONAL DEPENDENCE
$M, T \models info\text{-}dep_v(y,x)$ iff $\exists v_1 \in T(v) : \exists d_1, d_2 \in T(y) : T_{vy=v_1 d_1}(x) \neq T_{vy=v_1 d_2}(x)$

The condition $info\text{-}dep_v(y,x)$ intuitively states that the values assigned to the variable x informationally depend on the values assigned to another variable y, given a fixed value for the

[5]The condition given in Aloni and Degano (2022) is defined differently, but it is equivalent to (17).
It can be defined more generally for any sequence of variables as follows:
(i) $M, T \models var(\vec{y}, \vec{x})$ iff $\exists i, j \in T : i(\vec{y}) = j(\vec{y})\, \&\, i(\vec{x}) \neq j(\vec{x})$

[6]Note that this condition is typically modelled by requiring variation across all the assignments of the team. Since our framework is two-sorted, this was relativized to the variable for the actual world v.

[7]The general form given below. This atom has also been studied by Galliani (2015), who showed that it is first-order definable.
(i) $M, T \models$ info-dep$_{\vec{z}}(\vec{y}, \vec{x})$ iff there exist $i, i' \in T$ such that $i(\vec{z}) = i'(\vec{z})$, it holds that for all $i'' \in T$, $i''(\vec{x}\vec{z}) \neq i(\vec{x}\vec{z})$ or $i''(\vec{y}\vec{z}) \neq i(\vec{y}\vec{z})$
This notion is closely connected with the independence atom $ind_{\vec{z}}(\vec{x}, \vec{y})$ studied in dependence logic (Grädel and Väänänen, 2013). In fact, $info\text{-}dep_v(y,x)$ is equivalent to the (Boolean) negation of $ind_v(y,x)$.

world variable v. In other words, fixing the world v, knowing the value assigned to y affects the possible values of x.

We illustrate this condition in Table 6. The condition $info\text{-}dep_v(y,x)$ does hold for the team depicted in Table 6a, but it does not for the teams in Table 6b and 6c. As said above, the condition $info\text{-}dep_v(y,x)$ states that for some value of v, knowing the value x conveys some information about the value of y (i.e., x 'depends' on y in v). For instance, for the team in Table 6a, knowing that the value of x is d_2 already informs about the value y, namely a_1.

Table 6: Illustrations. $info\text{-}dep_v(y,x)$ is satisfied in (a), but not in (b) and not in (c).

(a)

v	y	x
v_1	a_1	d_1
v_1	a_1	d_2
v_1	b_1	d_1

(b)

v	y	x
v_1	a_1	d_1
v_1	a_1	d_2
v_1	b_1	d_1
v_1	b_1	d_2

(c)

v	y	x
v_1	a_1	d_1
v_1	b_1	d_1

We call this condition *informational dependence*[8], distinguishing it from the *dependence atoms* known from dependence logic (Väänänen, 2007). Such atoms of the form $dep(y,x)$ would require a functional dependence of the form '$f(y) = x$' . This is a clear a different condition, which neither entails nor is entailed by the informational one.

We remark that the notion of this notion of informational dependence has been extensively discussed in the linguistic tradition, particularly in dynamic semantics approaches (van den Berg, 1996; Nouwen, 2003). In such accounts, the existential quantifier introduces a new variable which is required to be independent of the previously introduced ones.[9] This is in contrast with our notion of existentials (both strict and lax) which allow dependencies in the team by introducing a fresh variable.

4. Predictions

We now outline how the conditions introduced in the previous section account for the core distributional patterns of dependent and non-specific indefinites. Additionally, we show how our approach predicts the specific behavior observed for Russian indefinites.

We propose the following theoretical conditions, connecting non-specific and dependent indefinites to the two atoms defined in the previous section. Non-specific indefinites trigger the variation condition, aligning with the Evaluation Plurality account. In contrast, dependent indefinites impose the informational dependence condition with respect to the operator upon which they depend, consistent with the Dependent Variable account.

(19) NON-SPECIFIC INDEFINITES
Non-specific indefinites obligatory trigger the variation condition $var(v,x)$

[8]The condition $info\text{-}dep_v(y,x)$ is equivalent to the Boolean negation of an independence atom $ind_v(y,x)$ studied in dependence logic (Grädel and Väänänen, 2013).

[9]Such modelling assumption is also taken by Law (2022), who develops an account of binomial *each* by introducing dependence by means of a distributive operator van den Berg (1996).

(20) DEPENDENT INDEFINITES
Dependent indefinites obligatory trigger the informational dependence atom $info\text{-}dep_v(y,x)$ with y being the operator upon which they depend.

Based on these assumptions, we now consider how the predictions derived from these conditions explain the observed distributions of Russian non-specific *-nibud’* and dependent indefinite *po*.

4.1. Episodic contexts

In episodic contexts, both *-nibud’* and *po* are not licensed, and they are infelicitous. In episodic contexts, with no additional operator, non-specific indefinites would be represented as in (21a), while dependent indefinites as in (21b), recalling that indefinites are strict existentials, extending the initial team with the strict, non-branching, functional extension.

(21) a. $\exists_s x(\phi(x,v) \wedge var(v,x))$
b. $\exists_s x(\phi(x,v) \wedge info\text{-}dep_v(y,x))$

We first consider non-specific indefinites. Since indefinites are strict existentials, there is no initial team which would support (21a). Recall, that variation requires x to vary fixing a value for v, but, as discussed in Section 3.2, indefinites are strict existential and any extension of the existential in (21a) would assign only one value for each possible value of v in an initial team (e.g., consider the initial teams depicted in Table 3).

As for dependent indefinites, the framework offers two ways to explain their infelicity. First, we may assume that when no variable is present, $info\text{-}dep_v(y,x)$ results into $info\text{-}dep_v(\varnothing,x)$, then the explanation carries over to the previous case, as (21b) also demands variation. [10]. More interestingly, we may take y as a free variable, and assume that $info\text{-}dep_v(y,x)$ is not felicitous if the variable y is not bound by an operator. In this regard, we observe that the $info\text{-}dep_v(y,x)$ requirement could be linked to the auto-licensing behavior of some dependent indefinites observed in Section 2, as a way to saturate their y argument with a covert variable in the context (e.g., quantification over events).

4.2. Nominal and modal licensing

As discussed earlier in Section 2, non-specific indefinites (*-nibud’*) are licensed by both nominal and modal quantifiers, whereas dependent indefinites (*po*) are only licensed by nominal quantifiers.

Consider first the licensing of indefinites by a bona fide universal quantifier. We predict that the value of the indefinite cannot remain constant with respect to the licensing operator, meaning that the indefinite cannot receive a wide-scope interpretation with respect to the universal quantifier:

(22) a. $\forall y \exists_s x(\phi(x,v) \wedge var(v,x))$
b. $\forall y \exists_s x(\phi(x,v) \wedge info\text{-}dep_v(y,x))$

As for non-specific indefinites, as discussed in Aloni and Degano (2022), a universal quantifier

[10]Recall the general form info-dep$_{\vec{z}}(\vec{y},\vec{x})$ of this atom mentioned in fn. 7. In particular $info\text{-}dep_v(\varnothing,x)$ holds in a team T iff there exist $i,i' \in T$ such that $i(v) = i'(v)$, it holds that for all $i'' \in T$, $i''(xv) \neq i(xv)$ or $i''(v) \neq i(v)$

generates a branching configuration like the one depicted in Table 7b, making it possible to satisfy the variation condition in the resulting x extension from the existential. As for dependent indefinites, we observe that the only case which would make x independent of y is when x is mapped to the same value in all assignments, given that indefinites can only give rise to strict extensions. By requiring x to be non-independent (i.e., informationally dependent) on y, we predict the desired variation behavior, a fact already observed by Law (2022).

In summary, the present analysis predicts that (i) these indefinites are felicitous when occurring under a bona-fide quantifier; (ii) their value cannot be constant, excluding the possibility of a wide-scope reading.

Table 7: Licensing of non-specific and dependent indefinites. Starting from the initial team in (a), the team is extended with the variable y for the universal by means of a universal y-extension. Subsequently, the existential introduces a strict x-extension, compatible with both variation and informational dependence conditions.

(a)

v
v_1
v_2

(b)

v	y
v_1	a_1
v_1	a_2
v_2	a_1
v_2	a_2

(c)

v	y	x
v_1	a_1	d_1
v_1	a_2	d_2
v_2	a_1	d_2
v_2	a_2	d_2

In fact, this point highlights an interesting parallelism between the informational dependence condition and the v-variation condition for non-specific indefinites. While $info\text{-}dep_v(y,x)$ and $var(v,x)$ are clearly not equivalent and encode different conditions in general, the interaction between a licensing operator and the strict existential makes the formulas in (23b) equivalent for initial teams (we indicate this notion of equivalence over initial teams with $\equiv_v$). Importantly, when there is more than one licensing operator, this equivalence no longer holds, as we discuss in the example depicted in Table 8.

(23) a. $info\text{-}dep_v(y,x) \not\equiv var(v,x)$
b. $\forall y \exists_s x(\phi(x,v) \wedge info\text{-}dep_v(y,x)) \equiv_v \forall y \exists_s x(\phi(x,v) \wedge var(v,x))$

We now turn to modality. Recall first that modals in this two-sorted system are analyzed as quantifiers over possible worlds. In particular, universal modals are treated as universal quantifiers, and existential modals as lax quantifiers, which, as discussed previously, allow for branching configurations. Such branching makes it possible to satisfy the variation condition imposed by non-specific indefinites. To account for the unavailability of modal licensing with dependent indefinites, we adopt the *extensional dependency condition* proposed by Farkas (1997). According to this condition, the variable y in $info\text{-}dep_v(y,x)$ cannot be a world variable. Representing dependent indefinites using $info\text{-}dep_v(y,x)$ naturally allows imposing constraints on the value of y, in contrast to the variation requirement $var(v,x)$ associated with non-specific indefinites.

Lastly, we comment on the interaction between multiple operators and dependent indefinites. As an illustration, we consider the example in (24), where a dependent indefinite, schematically represented here by means of *po*, appears within the scope of a universally quantified determiner phrase (its licensing operator), with a universal modal occupying an intermediate scope position. The most salient interpretation is illustrated in Table 8a, where co-variation occurs with respect to the first quantifier, consistent with the formula in (24b). The prediction made by (24b) is that dependent indefinites should not be licensed under a wide-scope interpretation of the indefinite, as depicted in Table 8b. Moreover, we predict that dependent indefinites cannot receive a scopally non-specific interpretation of the kind shown in Table 8c, where the *set* of possible books does not co-vary with each individual. In such an interpretation, the set of possible books each student must read remains fixed across worlds, thereby becoming informationally independent of the value assigned to y. In principle, however, such an interpretation would be compatible with a non-specific indefinite since it satisfies the v-variation condition.[11]

(24) a. Everyone must read *po* book.
b. $\forall y \forall w \exists_s x(\phi(x,v) \wedge info\text{-}dep(y,x))$

Table 8: Intermediate scope reading in (a), wide scope reading in (b); narrow scope reading in (c). Due to the presence of a world variable, dependent indefinites are only compatible with (a), while non-specific indefinite are compatible with both (a) and (c).

(a)

v	y	w	x
v_1	d_1	w_1	b_1
v_1	d_1	w_2	b_1
v_1	d_2	w_1	b_2
v_1	d_2	w_2	b_2

(b)

v	y	w	x
v_1	d_1	w_1	b_1
v_1	d_1	w_2	b_1
v_1	d_2	w_1	b_1
v_1	d_2	w_2	b_1

(c)

v	y	w	x
v_1	d_1	w_1	b_1
v_1	d_1	w_2	b_2
v_1	d_2	w_1	b_1
v_1	d_2	w_2	b_2

4.3. Plurality and additional operators

The remaining data to be accounted for concerns the interaction with plurality. We assume that plurals are strict existentials defined over a pluralized domain. While this is not the only possible way of integrating plurality, we now explore to what extent this assumption explains the data.[12]

One motivation behind this treatment of plurality is that it straightforwardly explains the infelicity of non-specific indefinites under plural contexts. For instance, in (25), the plural *two students* is associated with a strict extension mapping each assignment to a plural individual (e.g., $\{d_1, d_2\} = d_1 \oplus d_2$). Consequently, no branching is generated, and the variation condition $var(v,x)$ cannot be satisfied.[13]

(25) a. #Two students read book-*nibud’*.

[11] The judgments are not entirely clear regarding the availability of the reading represented in Table 8c, possibly due to the complexity of the example and the stronger salience of the reading shown in Table 8a. If this reading indeed proves possible, we would need to assume that the informational dependence condition for cases like (23a) is $info\text{-}dep(yw,x)$, allowing configurations as in Table 8c, but still excluding the scenario in Table 8b. Under this assumption, although world variables cannot license dependent indefinites, they would nonetheless influence the manner in which dependent indefinites co-vary relative to their licensing operator.

[12] Specifically, given a pluralized domain $\wp(D) \setminus \{\varnothing\}$ constructed from D, we assume that singular noun phrases must denote singletons, whereas plurals can denote any subset of the pluralized domain.

[13] We define cardinality requirements on a value of a variable as: $M,T \models |x| = n$ iff $|i(x)| = n$.

b. $\exists_s y \exists_s x(\texttt{student}(y,v) \wedge |y| = 2 \wedge \texttt{book}(x,v) \wedge \texttt{read}(x,y,v) \wedge var(v,x))$

Concerning the non-distributive universal quantifier *vse* ('all') or distributively interpreted definite plurals, we adopt the standard approach of analyzing such expressions with a maximality operator (van den Berg, 1996), defined as follows:[14]

(26) MAXIMALITY OPERATOR
$M,T \models M_x^{\vec{z}}(\phi) \Leftrightarrow M,T[f_s/x] \models \phi$ for some strict function $f_s : T \to \wp(D) \setminus \{\varnothing\}$ and there is no strict function $f_s' : T \to \wp(D) \setminus \{\varnothing\}$ s.t. $(M,T[f_s'/x] \models \phi$ and there is $i \in T$ s.t. $f_s(i) \subset f_s'(i))$

The operator in (26) says that given a value for $\vec{z}$, the value associated with x must be the maximal set such that the team extended with x supports ϕ.

(27) #All boys read book-*nibud'*.
$M_y^v(\texttt{boy}(y,v) \wedge \exists_s x(\texttt{book}(x,v) \wedge \texttt{read}(yx,v) \wedge var(v,x)))$

We then predict that (27) is indeed infelicitous for the same reasons as (25). Most importantly, the default reading of (27) will be collective. In fact, *vse-all* and numerals are typically non-distributive in Russian, explaining the infelicity of *-nibud'* for cases like (9), where *-nibud'* occurs under *vse*. We obtain distributive readings by means of a dedicated distributive operator.

(28) DISTRIBUTIVE OPERATOR
$M,T \models \delta_z(\phi)$ iff $M,T[z/\delta_z] \models \phi$ with $T[z/\delta_z] = \{i' : i \in T$ and $i' = i[\{a\}/z]$ with $a \in i(z)\}$.

To illustrate this, consider the example in (29). The default reading would be the collective one in (29a), and the distributive is generated by the contribution of the $\delta_y(\cdot)$ operator in (29b). A relevant question is what is triggering this operator. In English, the universal quantifier *all* gives rise to both collective and distributive readings, while Russian *vse* is strongly non-distributive (Pereltsvaig, 2008), and prosodic stress might be needed to allow for distributive readings.

(29) All boys read a book.
a. $M_y^v(\texttt{boy}(y,v) \wedge \exists x(\texttt{book}(x,v) \wedge \texttt{read}(yx,v)))$
b. $M_y^v(\texttt{boy}(y,v) \wedge \delta_y(\exists x(\texttt{book}(x,v) \wedge \texttt{read}(yx,v))))$

We have thus shown how this approach accounts for the infelicity of *-nibud'* also in plural constructions. However, in Section 2.2, we observed that *po* is licensed in such contexts. As it is, the default collective behaviour of such constructions would predict infelicity also for *po*.

As discussed, one possibility is that *po* is rescued in such environment by prosodic stress and the application of the distributive operator. However, the fact that licensing *-nibud'* in such environments is not possible, even in the presence of prosodic stress suggests that prosody cannot be the only contributing factor.

This leads to the hypothesis that *po* does not only contribute the informational dependence atom $info\text{-}dep_v(y,x)$, but also a dedicated distributive operator, as in (30). This aligns with the suggestion made in Kuhn (2017), where dependent indefinites also introduce a distributive operator on the same variable they depend on.

[14]Effectively, we analyze *all x* as a strict existential over a pluralized domain, combined with a maximality constraint on the value of *x*.

(30) All boys read *po* book.
$M_y^v(\texttt{boy}(y,v) \wedge \delta_y(\exists x(\texttt{book}(x,v) \wedge \texttt{read}(yx,v) \wedge info\text{-}dep_v(y,x))))$

Importantly, the addition of *po* redeems *-nibud'* from infelicity, without change in meaning: the variation condition $var(v,x)$ from *-nibud'* is trivial given the dependence requirement $info\text{-}dep_v(y,x)$ from *po*.

(31) All boys read *po* book-*nibud'*.
$M_y^v(\texttt{boy}(y,v) \wedge \delta_y(\exists x(\texttt{book}(x,v) \wedge \texttt{read}(yx,v) \wedge info\text{-}dep_v(y,x) \wedge var(v,x))))$

A relevant factor is that while *po* in isolation can occur and give rise to the indented reading, the presence of postnominal *kazhdyj* 'each' in combination with *po* is judged as more natural by all the informants we asked. This relates, again, to the question of the origin of the distributive operator, by prosodic stress or by *po* itself. In any case, the appearance of multiple distributive operators operating on the same variable is not problematic for the current treatment of distributivity, as successive applications of δ_y on the same variable y are vacuous.

5. Conclusion

This contribution has investigated two classes of indefinites, non-specific and dependent, zooming in on the Russian case where both types co-exist in a single language. This approach captures the observed contrasts, providing both a unified view of their shared distribution and a principled explanation of their diverging licensing profiles.

Nevertheless, this study was limited to data from Russian, and future research should address several open questions. First, it would be valuable to explore whether the semantic properties and distributional restrictions identified for Russian hold cross-linguistically for similar types of indefinites. Second, further investigation into the role of prosody, and explicit distributive operators (such as postnominal distributive quantifiers like *kazhdyj* 'each') could help identify finer distinctions among dependent indefinites within and across languages.

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