

Choice-functional Series of Indefinites and Hamblin Semantics*

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1. Introduction

1.1. Haspelmath's 1997 challenge

Haspelmath 1997 poses a challenge for current theories of indefinites. Extensive data from 40 languages show there are too many differences between indefinite pronoun series to account for with the usual machinery for indefinites. For instance, we can take Russian as an example: below are 4 main Russian indefinite pronoun series. There are at least 4 other series unlisted in (1), and Bylinina & Testelets 2004 show there are even more indefinite series that are grammaticalizing now.

(1)

interrogative	to	nibud'	libo	ni
<i>kto</i> 'who'	kto-to	kto-nibud'	kto-libo	nikto
<i>čto</i> 'what'	čto-to	čto-nibud'	čto-libo	ničto
<i>gde</i> 'where'	gde-to	gde-nibud'	gde-libo	nigde
<i>kogda</i> 'when'	kogda-to	kogda-nibud'	kogda-libo	nikogda
<i>kak</i> 'how'	kak-to	kak-nibud'	kak-libo	nikak
<i>kakoj</i> 'what/which'	kakoj-to	kakoj-nibud'	kakoj-libo	nikakoj

(2) (Haspelmath's (A.16)):

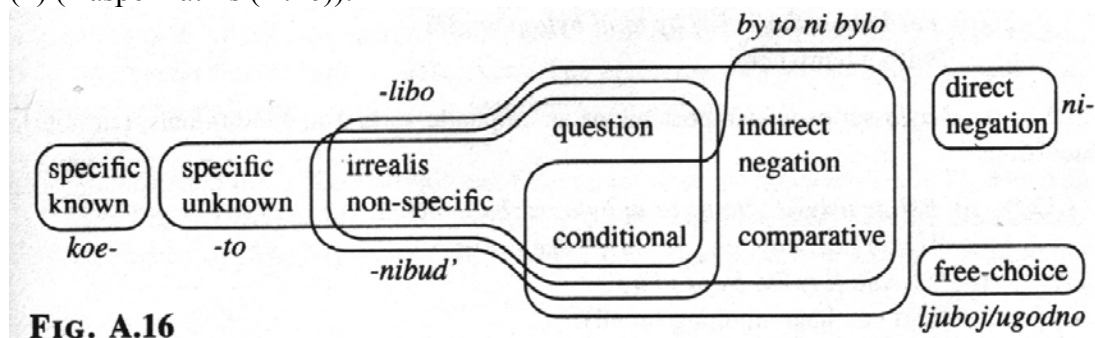


FIG. A.16

1.2. Kratzer & Shimoyama 2002

Though differences between indefinite pronouns were not unnoticed by semanticists (for instance, Donka Farkas tries to introduce more fine-grained typology for indefinites in her papers Farkas 1997, Farkas 2002a, Farkas 2002b), to my knowledge, there is only one explicit attempt to

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provide a principled explanation for Haspelmath's 1997 data: it is Kratzer & Shimoyama 2002. The core of their proposal consists of two claims:

K&S1: bare indefinite roots denote not properties but Hamblin sets of alternatives.

K&S2: series markers are simple meaningless agreement morphemes.

The first claim is justified by Shimoyama's 2001 analysis for Japanese indeterminate pronouns. The second one is intended to capture differences between indefinite pronoun series. For a given indefinite, its morphology determines what kind of operators this indefinite pronoun can associate with. For instance, there may be Negative Concord indefinites, Interrogative Concord indefinites (familiar *wh*-words), and even Universal and Existential Concord ones. (K&S 2002 argue German *irgendein* is an instance of Existential Concord indefinites). So if we have an indefinite pronoun that is assigned to nodes "Question" and "Negation" on Haspelmath's map, we should say that this pronoun can carry Q or Neg agreement features, and similarly for other combinations of nodes.

Let us elaborate some details of the Hamblin system. First, we turn pronoun roots meanings into Hamblin non-singleton sets, (3). Second, meanings for all other expressions are turned into singleton sets containing their usual meanings as the only member, (4). Third, we change our semantic rules into alternative-friendly ones, see (5) for Functional Application (see also Shan 2003 for the discussion of the Predicate Abstraction rule).

(3) $[[\text{who}]]: \lambda x.\text{human}(x)(w) \Rightarrow \{x: \text{human}(x)(w)\}.$

(4) $[[\text{boy}]]: \lambda x.\text{boy}(x)(w) \Rightarrow \{p: p=\lambda x.\text{boy}(x)(w)\}$

(5) Hamblin Functional Application (from K&S 2002):

If α is a branching node with daughters β and γ , and $[[\beta]]^{w,g} \subseteq D_\sigma$ and $[[\gamma]]^{w,g} \subseteq D_{\langle\sigma\rangle}$, then $[[\alpha]]^{w,g} = \{a \in D_\tau: \exists b \exists c [b \in [[\beta]]^{w,g} \& c \in [[\gamma]]^{w,g} \& a = c(b)]\}.$

Proper sentence meanings for declarative sentences are not propositions, but singleton sets of propositions, for instance, $\{\lambda w.\text{slept}(\text{John})(w)\}$ for 'John slept'. If we do not have any alternative-inducing (that is, Hamblin) expressions in a sentence, a singleton set is the only possible outcome, given the FA rule in (5).

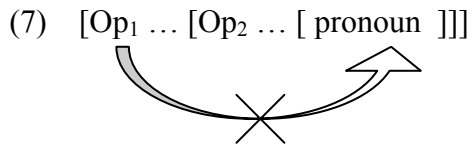
However, if we happen to have an alternative-inducing expression, we may arrive at a non-singleton set of propositions at the end of the derivation. If we do, it means that the derivation has crashed. In order to prevent the crash, alternatives must be 'caught' by some *alternative quantifier* that takes a Hamblin non-singleton set and yields a singleton set. Here is an example of a Japanese generalized quantifier over alternatives, a word that combines with DPs and PPs that contain (possibly deeply embedded) indeterminate pronouns, and thus performs universal quantification "at a distance":

(6) $[[\text{mo}]]^{w,g} = \{\lambda\alpha\lambda P\lambda w'. \forall a [(a \in \alpha) \rightarrow P(a)(w')]\}, \alpha \text{ a Hamblin set.}$

In effect, an alternative-inducing expression will seem to scope at the position of the alternative quantifier it is associated with. Thus, though the association mechanism is not related to syntactic movement in any way, we may (informally) say that the relation between indeterminate pronouns and their operators resembles the relation between a QR-ed DP and its trace, with respect to scope taking.

There are two crucial details about the association between alternative quantifiers and alternative-inducing expressions as indefinite pronouns: 1) association between a quantifier and a pronoun is insensitive to syntactic islands (unlike in the case of QR), since no syntactic movement is involved at all: alternatives are just "passed up" during the semantic composition; 2) alternatives

keep expanding just till they meet the first alternative operator on their way: such operators always map their input to singleton alternative sets, so they cannot preserve alternatives. Thus, association with alternative operators is not local in the usual syntactic sense, but is subject to the other type of locality: alternatives cannot escape the first operator they meet. In other words, an association of the kind in (7) is not possible.



The overview for the rest of the talk

- 2.1. CF series marker *-to*: mere (Generalized) Choice Functions.
- 2.2. CF series marker *-nibud'*: already Skolemized (Generalized) Choice Functions.
3. Russian vs. Japanese: CF series vs. Hamblin series.
4. Russian Hamblin series and Hamblin Choice Functions.
5. Implications and further problems.

2. Choice-functional series of indefinite pronouns

2.1. Russian *-to* series: (almost) familiar choice functions

- (8) **Kto-to** vošel v komnatu.
 Who-TO came into the room
 ‘Someone came into the room.’

As (8) shows, *-to* pronouns are grammatical in simple declarative sentences. However, what is interesting for us is not that fact, but the fact that *-to* indefinites (not only indefinite DPs, but AdjPs and AdvPs as well) can scope out of scope islands¹:

- (9) a. Petja budet ščastliv esli **kakaja-to** devuška pridet.
 Petja will be happy if which-TO girl will come
^{OK}∃ > if ‘There is a property p_(et) such that Petja will be happy
 if a girl y such that p(y)=1 comes.’
^{OK}_{if} > ∃ ‘Petja will be happy if there a girl who comes.’
- b. ... esli ∅ **gde-to** vstretit Mašu.
 ... if [he] where-TO will meet Masha
^{OK}∃ > if ‘There is a place x_e such that Petja will be happy
 if he meets Masha at x’
^{OK}_{if} > ∃ ‘... if there is a place for him to meet Masha at’

¹ For me as a Russian speaker, *kogda-to* cannot receive an analogous interpretation. It is probably due to the fact it has a strong ‘conventional’ meaning ‘very long ago’.

- c. ... *esli* ∅ **kak-to** *smožet* *sdat' ekzamen.*
 ... if [he] how-TO will be able to pass the exam
^{OK}∃ > if 'There is a manner $p_{\langle(et),\langle et \rangle\rangle}$ such that Petja will be happy
 if he manages to p (pass the exam)'
^{OK}_{if} > ∃ '... if there is a way in which he will pass the exam'
- d. ... *esli* **kto-to** *smožet* *sdat' ekzamen.*
 ... if [he] who-TO will be able to pass the exam
^{OK}∃ > if 'There is a person x_e such that Petja will be happy
 if x manages to pass the exam'
^{OK}_{if} > ∃ '... if there is someone will be able to pass the exam'
- e. ... *esli* ∅ **čto-to** *najdet.*
 ... if [he] what-TO will-find
^{OK}∃ > if 'There is a thing x_e such that Petja will be happy if he finds x '
^{OK}_{if} > ∃ '... if there is a thing that he finds'
- f. ... *esli* ∅ **kuda-to** *pojedet.*
 ... if [he] to-where-TO will-go
^{OK}∃ > if 'There is a place x_e such that Petja will be happy
 if he will go to x '
^{OK}_{if} > ∃ '... as long as there is a place and he goes to that place'

If an indefinite can escape from islands, there are two options: it can be either a CF indefinite (Reinhart 1997, Kratzer 1998) or a Hamblin indefinite (K&S 2002). Which of the two do we have in the case of *-to* indefinites?

(Known) CF indefinites do not need licensing, and they can take the widest (pseudo-)scope; Hamblin indefinites need licensing from an alternative quantifier, and cannot take the widest pseudoscope (as a result of our interpretation procedure, they end up having a pseudoscope in the immediate scope of their licenser). (9) shows that *-to* can take the widest scope, and there is not any operator resembling an alternative quantifier in (8) and (9)². And it can be shown (though we will not do it here, to keep the exposition a bit shorter) that *-to* does not obey the locality constraint of Hamblin indefinites, which is “Associate with the nearest alternative quantifier”³.

² One may try to argue that there is a silent alternative quantifier in simple declarative sentences that binds alternatives induced by the pronoun. The two options are present: This quantifier can be present either in all indicative clauses or in all sentences of the declarative sentence type. Consider (i), where we have simple indicatives in both clauses: If there is some alternative operator in all indicative clauses, then we would have only narrow scope reading, since alternatives would be already caught in the embedded clause. If, on the other hand, there is an alternative quantifier in all sentences of the declarative sentence type, then we would have only wide scope construal, since the ‘declarative’ alternative quantifier would be the only operator able to catch alternatives. So if we are still willing to pursue this line of positing null operators further, we need to accept that such an operator is not only silent, but also optional. It is hard to argue against this kind of analysis, since almost every possible criticism can be answered by positing a new silent – and optional – operator.

- (i) Petja kupil každyju knigu kotoraja
 Petja bought every book that
 ponravilas' komu-to iz ego ljubimyx devušek
 has-been-liked-by who-TO of the girls he loves.
^{OK}∨ > ∃: Petja bought all books any of the girls liked.
^{OK}∃ > ∨: There is a girl x such that Petja bought all books x liked.

³ It will be clear in Section 2 that *esli* ‘if’ can serve as an alternative quantifier in Russian. Since *-to* in (9) can scope over *esli* ‘if’, it does not obey the Hamblin locality constraint.

In order to arrive at a somewhat complete CF analysis, we must answer following questions:

- (10) 1. Are *-to* indefinites CF only or they are CF/GQ ambiguous?
 2. Where is the CF located (if present)?
 3. What is the contribution of *-to*?

Not all possible combinations of answers to the questions in (10) are equally defensible. The answer to (10.1) determines how we should answer other questions. Let us examine both possible lines and their predictions.

The first line is to accept that *-to* pronouns are not always CFal. If that is the case, they are parallel to *a* indefinites in English. A CF is a silent lexeme that optionally applies on some level of sentence composition (in our case, the only suitable place where a CF can appear is a sister of the pronoun itself). When this lexeme is present, *-to* indefinites are choice-functional, and they are not CFal in other cases. The contribution of *-to* on this approach is completely unclear.

The alternative line is to accept that *-to* is always CFal. In this case it is not wise to posit a silent lexeme, because such a lexeme will need to be present always, and it is simpler to assume that the CF is inside the pronoun itself. *-To* pronouns consist of two morphemes – that is, a bare indefinite root, the same as the corresponding interrogative pronoun, and a series marker *-to*. The CF may be contained in the meaning of either morpheme. However, if the CF is inside the meaning of the root, then all pronouns with the same root (i.e., Negative Concord pronouns, free choice pronouns, etc.) must be CFal too, which is clearly impossible⁴. But if the CF is inside the meaning of the *-to* morpheme, the resulting picture is more natural: first, we know what the contribution of *-to* is (namely, it is the introduction of a CF), and secondly, CFality will be a property specifically of *-to* series.

Now the question is: Which of these two alternative lines is more adequate? The key question is whether there are cases when *-to* pronouns have non-CFal readings. A good way to test it is to check the interaction of *-to* and negation. Consider the case of English *a* and *a certain* indefinites. The former can be interpreted CFally, but do not need to, while the latter are always CFal (cf. Kratzer 1998). Now note that while it is possible for *a* indefinites to take scope in the immediate scope of negation, it is impossible for *a certain* indefinites⁵:

- (11) a. Mary did not buy *a certain house*.
 b. Mary did not buy *a house*.
^{OK} for (a), (b): $\exists > \text{not}$ (There is a house that Mary did not buy.)
 * for (a), ^{OK} for (b): $\text{not} > \exists$ (Mary did not buy any house.)

Now we can check the interaction between Russian *-to* and negation. If we find that *-to* can have narrow scope reading as *a* in (11) can, then it is not always CFal, and if it cannot, then it is not ambiguous between GQs and CFs but always CFal.

⁴ The most striking case is negative indefinite pronouns that are formed from the same indefinite roots. Such a pronoun in (i) cannot scope over the negation, let alone over the island. Thus, it is clearly not a choice-functional indefinite pronoun.

(i)	Petja	kupil	vse	masiny	kotoryje	nikomu	ne	nraivilis'.
	Petja	bought	all	the cars	that	no one	NEG	liked.
	*	$\exists > \text{all} > \text{not}$		'for a certain man, all the cars that man did not like'				
	*	$\text{all} > \exists > \text{not}$		'all the cars some man or other did not like'				
	OK	$\text{all} > \text{not} > \exists$		'all the cars no one liked'				

⁵ Under Kratzer 1998, the inability to be in the scope of negation follows from the ban on unselective binding of pronominal elements. Under Reinhart 1997, some stipulation is needed, see Winter 2005 for such an analysis.

- (12) Petja ne zametil kogo-to iz svoix odnoklassnic.
 Petja not has-noticed who-TO of his girl-classmates.
 OK $\exists >$ not (There is a girl from his class that Petja did not noticed.)
 * not $> \exists$ (Petja did not notice any of the girls in his class.)

(12) shows that *-to* patterns with *a certain*, and not with *a*, and I conclude⁶ that the right set of answers for the questions in (10) is the second one, repeated below as (13).

- (13) 1. *-to* pronouns are always choice-functional.
 2. and 3. The CF is located in the meaning of *-to* morpheme.

Standard CF accounts of wide-scope indefinites as Reinhart 1997 and Kratzer 1998 assume that a silent CF of type $\langle\langle et \rangle, e\rangle$ is applied to an $\langle et \rangle$ -denoting constituent inside the relevant DP. The only domain where choice functions are put to work is DPs, and the only expressions that escape from their islands with the help of CFs are DPs. But we can see from (9) that the same effect can be observed for AdjPs, AdvPs and PPs too. Thus, we need to replace the definition of basic CFs in (14) by a more general definition of Generalized CFs in (15). Unlike basic CFs, GCFs can yield, for instance, a property from a set of properties, as in (9a), or a manner from a set of manners, as in (9c).

$$(14) \quad f_{\langle\langle et \rangle, e\rangle} \text{ is a C(hoice) F(unction) if } P_{\langle et \rangle}(f(P_{\langle et \rangle})) = 1$$

$$(15) \quad f_{\langle\langle \tau t \rangle, \tau\rangle} \text{ is a G(eneralised) C(hoice) F(unction) if } P_{\langle \tau t \rangle}(f(P_{\langle \tau t \rangle})) = 1$$

Now we have all we need to formulate the meaning for *-to* series marker: *-to* denotes a GCF, and when this GCF-denoting morpheme is combined with a set-denoting wh-word, a choice-functional indefinite pronoun is formed, (16). The GCF in the denotation of the pronoun should either stay free and be supplied by the context (Kratzer 1998) or be existentially closed at some compositional level (Reinhart 1997). We will return to the issue of the choice between these two options in Section 2.2, so let us remain agnostic for the moment.

- (16) a. $[[to]]_{\langle\langle \tau t \rangle, \tau\rangle} = \lambda p_{\langle \tau t \rangle}. f(p)$, where f is a GCF.
 b. $[[kto-to \text{ 'who-TO'}]]_e = [[to]]([[kto]]) =$
 $= (\lambda p_{\langle \tau t \rangle}. f(p))(\lambda x. \text{human}(x)) = f_{\langle\langle et \rangle, e\rangle}(\lambda x. \text{human}(x)).$

2.2. *-Nibud'* indefinite pronouns: Choice Functions with an obligatory Skolem argument

Unlike *-to* indefinites, *-nibud'* indefinites are not grammatical in simple declarative sentences, (17). To be more accurate, they are not grammatical in every simple declarative sentence, (17) vs. (18a). *-Nibud'* licensers include quantificational DPs as in (18a), quantificational adverbs, (18b), and intensional verbs, (18c), and *if*-clauses. What these licensers have in common is that all of them introduce tripartite quantificational structures, be it individuals, (18a), situations, (18b), or worlds, (18c), that are quantified over.

⁶ If you do not believe the negation argument, you can safely wait for the next section, where we will encounter a different pronoun series that is CFal as *-to* series is, but has rather different properties. Then it will become clear that if CFs are not contained in series marker meaning, we cannot derive the differences between these two Russian series, because their markers are the only thing that is not the same for the two series.

- (17) *Petja uvidel kogo-nibud' iz svoix odnoklassnic.
 Petja has-seen who-NIBUD' of his girl-classmates.
- (18) a. Každyj mal'čik vstretil kogo-nibud' iz svoix odnoklassnic.
 Every boy met who-NIBUD' of his girl-classmates
 * $\exists > \text{every}$ (There is a girl whom every boy met.)
 OK every $> \exists$ (For every boy, there is a girl he met.)
- b. Petja često vstrečal kogo-nibud' iz svoix odnoklassnic.
 Petja frequently met who-NIBUD' of his girl-classmates
 * $\exists > \text{frequently}$ (There is a girl whom Petja frequently met.)
 OK frequently $> \exists$ (The situation in which Petja met some girl was frequent)
- c. Petja xočet vstretit' kogo-nibud' iz svoix odnoklassnic.
 Petja wants to meet who-NIBUD' of his girl-classmates
 * $\exists > \text{want}$ (There is a specific girl whom Petja wants to meet.)
 OK want $> \exists$ (Petja wants to meet a girl, it does not matter which girl it may be)

However, even when it is licensed, *-nibud'* is forced to be in the scope of the licenser. Informally, we can say that the reason why *-nibud'* is not licensed in simple declarative sentences is that such sentences do not contain any suitable quantificational operator for *-nibud'* to be in the scope of. What if we have two possible licensers? Then two scopal options will be possible for *-nibud'* indefinite: it can either have narrow or intermediate scope:

- (19) Každyj mal'čik_i budet rad esli
 Every boy_i will be glad if
 \emptyset_i vstretit kogo-nibud' iz svoix odnoklassnic.
 [he_i] will-meet who-NIBUD' of his girl-classmates
- * $\exists > \forall > \text{if}$ (There is a girl that every boy will be happy to meet.)
 OK $\forall > \exists > \text{if}$ (For every boy, there is a girl he will be happy to meet.)
 OK $\forall > \text{if} > \exists$ (For every boy, if there is a girl he meets, he will be happy.)

The same (19) shows that *-nibud'* can scope out of its island, as *-to* can: under the intermediate reading, *-nibud'* takes scope over the *if*-clause it is contained in. The difference, though, is that *-to* can obtain the widest scope, while *-nibud'* cannot. As with *-to* pronouns, we have two options: either CFs or alternatives must be involved in the interpretation of *-nibud'* indefinites.

On the one hand, *-nibud'* pronouns resemble Japanese Hamblin pronouns much more than *-to* pronouns do. *-Nibud'* needs a licenser, and is forced to be in the scope of this licenser, just as Hamblin pronouns do. However, the locality constraint on alternatives does not hold for *-nibud'*: it can 'skip' the nearest operator, cf. the intermediate reading in (19). Therefore, we have no choice but to accept that CFs are involved in *-nibud'* interpretation (or, more accurately, Generalized CFs).

2.2.1. *-nibud'* licensing.

When we adopted the CF analysis for *-to* pronouns, matters were simple, since all scope construals were possible for them. But if we try to provide an analogous analysis for *-nibud'* indefinites, matters become more complicated, because we need to give an explanation for two facts:

1) *-nibud'* needs licensing by quantificational operators; 2) *-nibud'* cannot have a scope wider than that of its (highest) licenser. Though it may seem to be a problem to explain these properties of *-nibud'*, I argue these properties actually provide a new argument in favor of Kratzer-style CFs over Reinhart-style CFs.

Suppose we are to describe the two facts above under Reinhart 1997, who claims that CF variables are subject to obligatory existential closure that can be applied at any compositional level. We cannot help but make two corresponding stipulations: namely, that *-nibud'* does need a licenser, and that the existential closure must be applied only at those sites that are in the scope of the licenser. No principled explanation why this should be so can be available. We cannot even explain the fact that the class of *-nibud'* licensers includes all and only quantificational expressions in natural language.

Under Kratzer 1998, things can be made better. In contrast to Reinhart, Kratzer argues that CFs are not subject to existential closure at all. Instead, they must stay free. A value for a CF is supplied by the context of the utterance just the way the context supplies values for all free variables (i.e., unbound pronouns). As for cases where a CF indefinite takes intermediate (pseudo-)scope, Kratzer 1998 proposes that the relevant reading must be captured not via positing an existential quantifier over CFs at some intermediate compositional level, but via Skolemization of a CF. A Skolemization operation adds an argument to a CF; thus a choice from the set denoted by the argument of our CF is relativized: the function can pick different individuals from the set for different values of the additional argument. It is exactly what we need to capture intermediate readings: the Kratzer-style meaning using Skolemization in (20c) is logically equivalent to the Reinhart-style meaning using existential closure for choice functions in (20b). Of course, Skolemization can be applied more than one time, in order to derive narrow scope readings for more embedded CF indefinites.

- (20) a. Every girl kissed a certain boy.
 b. *Reinhart-style*: $\forall x \text{ girl}(x) \exists f (\text{kissed}(f(\text{boy}))(x))$
 c. *Kratzer-style*: $\forall x \text{ girl}(x) (\text{kissed}(f(x, \text{boy}))(x))$

To account for *-nibud'* properties, we need to use an additional stipulation. This stipulation is a rather costly one, namely, it says that Skolem arguments are not the same variables as overt pronouns denote, and are not subject to the usual variable binding mechanism. While pronouns can be bound by both quantifiers and individual-denoting expressions, I argue that for Skolem arguments, only quantificational operators are proper binders, and that individual-denoting DP binding is excluded. How can this stipulation help us to account for *-nibud'* properties?

How will a CF indefinite with an already added Skolem argument behave, if we accept that only quantifiers can bind Skolem arguments? First, we will need to satisfy the argument requirement, and our Skolemized CF will need to find a binder in some c-commanding position. If such a binder does not exist, the Skolemized CF will not be licensed, since its argument is left unbound. And if we have found a quantifier that binds the Skolem argument, the resulting interpretation is equivalent to the interpretation where the CF is existentially closed in the immediate scope of the quantifier. In other words, a CF that is obligatorily Skolemized will have two peculiar properties: first, it will need to have a quantifier as a licenser; secondly, it will seem to us that it must always be in the scope of its licenser.

That is exactly how *-nibud'* behaves. The need for a licenser is just the need for a proper binder. The (pseudo-)scope of *-nibud'* in the resulting interpretation cannot be wider than the scope of its licenser because binding the Skolem argument of a CF by a quantifier is equivalent to having this CF existentially closed in the scope of this quantifier.

Just like the meaning of *-to*, the meaning of *-nibud'* is a Generalized CF. However, *-to* denotes an 'unmarked' GCF, while *-nibud'* denotes a GCF that is already Skolemized for one argument.

What is the type of the Skolem argument *–nibud’* has? It seems that a quantifier over any natural language type is enough to license *–nibud’*. Thus, in order to get proper licensing conditions, we must accept that Skolemization is polymorphic, and the meaning for *–nibud’* looks like this:

- (21) a. $[[nibud’]]_{\langle\langle\tau\rangle,\langle\nu\tau\rangle\rangle} = \lambda p_{\langle\tau\rangle} \lambda x_{\nu}. [f(x,p)]$, where f is a GCF.
 b. $[[kto-nibud’]]_{\langle\nu e\rangle} = (\lambda p_{\langle\tau\rangle} \lambda x_{\nu}. f_{\langle\langle\tau\rangle,\langle\nu\tau\rangle\rangle}(x,p))(\lambda y. human(y)) = \lambda x_{\nu}. f(x, \lambda y. human(y))$.

This straightforward analysis looks nice, but in order to arrive at it, we rejected the idea that binding of Skolem arguments is the same as familiar overt pronoun binding. In the absence of independent positive evidence in favor of this decision, is it not too costly to accept that we have two different binding mechanisms?

2.3. Skolem argument binding.

The conceptual problem with our stipulation that only quantifiers can bind Skolem arguments is that it states there are different binding mechanisms for different bindees (namely, Skolem arguments and overt pronouns). However, let us note that if we take seriously ideas of File Change Semantics and Discourse Representation Theory, then we accept that there are at least two different kinds of variables and two binding mechanisms, since discourse referent variables introduced by indefinites are different from those introduced by pronouns. Namely, the latter can be unselectively bound, while the former cannot, (22). Thus our stipulation adds not the second type of binding, but the third type. It does not mean to say that having many different types of binding is a good thing; but if we allow for different binding mechanisms for indefinites and anaphoric pronouns, why not allow for another one for Skolem arguments, while hoping that whatever solves conceptual problems of allowing two types of binding will equally well solve problems of allowing three types?

- (22) a. John did not buy a house. ^{OK}= ‘John did not buy any house’
 b. John did not buy it. \neq ‘John did not buy anything’

Besides this purely conceptual problem, we need to make sure if we preserve the welcome results of Kratzer 1998, who uses individual binding for Skolem arguments. To be accurate, Kratzer 1998 uses individual binding only in one case, that is, she argues that when the covert variable of *a certain* is not bound by any quantificational operator, it has the speaker as its value. Kratzer hopes to capture the insight of Hintikka 1986 that way. This insight concerns the difference in truth conditions of (23a) and (23b). Suppose the speaker intends to construe the indefinites in both (23a) and (23b) as ‘specific’. For instance, he may think of a specific individual while uttering (23a) and (23b). However, if it happens that there is a man walking in the park, but he is not that specific person the speaker thought of, (23a) will still be true, but (23b) will not. The conclusion to draw from this example is that *a certain* indefinites are somehow related to the speaker’s actual beliefs, while *a* indefinites are not. Kratzer hopes that if the value of the Skolem argument of *a certain* in (23b) is the speaker, we can capture this insight.

- (23) a. A man is walking in the park. (He is tall.)
 b. A certain man is walking in the park. (He is tall.)

However, Kratzer’s account cannot capture the insight. In both (24a) and (24b), the context provides a value for f . If we do not use the speaker argument, as Kratzer would argue, we cannot make sure that the value chosen will be the actual individual that the speaker thought of. For instance, the context can supply a function $f_1(p)$ such that f_1 picks the individual that the speaker

thinks of, which is right, but it can equally well supply a function $f_2(p)$ that will hold, say, of some friend of the addressee, and that is not the right function, if we want to derive the actual meaning for (23b). But in the case of the function (24b) that uses the speaker argument, it is just the same, as Breheny 2003 notes. The only difference between (24a) and (24b) is that the latter function chooses a value that is somewhat relative to the speaker of the utterance. Now suppose that the context supplies the function $f_3(x,p)$ where f_3 chooses the individual of which p holds and such that x ‘has in mind’ this individual. This function f_3 will allow us to derive the right truth conditions. However, the context, again, may equally well supply a function $f_4(x,p)$ that will choose the individual of which p holds and such that x hates this individual the worst. As f_1 will do while f_2 will not, f_3 will do while f_4 will not. So we have no reason to use (24b) instead of (24a): It cannot help us to derive the right meaning for (23b) with *a certain*.

- (24) a. $f(\lambda x.\text{man}(x))$
 b. $f(\text{speaker}, \lambda x.\text{man}(x))$

But is there a way to capture Hintikka’s insight? I argue we can find a solution by examining one more problem for the contextualist account of Kratzer 1998. Kratzer argues that the context directly supplies values for CF variables. However, as Breheny notes, contextually-supplied values (i.e., values of unbound overt pronouns) are usually presupposed to be known to both the speaker and the addressee (cf. *he* in ‘He left’), but that is not the case for choice functions involved in the interpretation of indefinites: As a rule, only the speaker knows the function, not the addressee. We have the two problems so far: 1) we need to capture the relation to the speaker in (23b); 2) it does not seem like the context provides the value for a CF directly, as in the case of overt pronouns.

There is a simple and elegant solution under a Kratzer-style CF approach that allows us to solve both problems at the same time. Instead of leaving our CF free, we can add a condition on it that requires that the speaker must know the CF, (25). The first problem is solved, because now it is the speaker that decides which function is used, not just the context. The second problem is solved too, since the context does not provide the value directly.

Another welcome consequence of our improvement is that now we can safely ban individual binding of Skolem arguments, since we do not need the speaker argument anymore, and that in turn allows us to use our stipulation from the previous section to account for *–nibud’* pronouns in Russian. After the improvement, our meanings for *–to* and *–nibud’* look like this:

- (25) a. $[[to]]_{\langle\langle\tau\rangle,\tau\rangle} = \lambda p_{\langle\tau\rangle} . [f(p)]$, where f is a GCF, and the speaker knows f .
 b. $[[nibud’]]_{\langle\langle\tau\rangle,\langle\nu\rangle\rangle} = \lambda p_{\langle\tau\rangle} \lambda x_{\nu} . [f(x,p)]$, where f is a GCF, and the speaker knows f .

After we have modified our meaning this way, the context still plays a role in interpreting *–to*, since the condition we added is relative to the speaker of the utterance, but this kind of contextualism does not lay on the addressee the burden of identifying the value. This analysis is analogous to the proposal in Breheny 2003, who formulates the rule for *a certain* roughly as (26) (I have oversimplified Breheny’s original (16) for the sake of exposition)⁷:

⁷ The definition in (26) implies that *a certain* denotes an identifying property, not a CF. Von Stechow 1999, Schwarzschild 2002, and Breheny 2003, a.o., have argued that choice functions used in Reinhart 1997 and Kratzer 1998 should not be used, since we have the mechanism of covert domain restriction that can do the same work. Under this kind of approach, identifying properties (that is, properties that hold of exactly one object) replace CFs. I do not discuss important differences between the CF and domain restriction approaches in this paper. Suffice it to note that if the domain restriction approach and not the CF approach, is right, it is easy to reformulate the analyses in Section 2. Under this kind of approach, *–to* and *–nibud’* would denote (‘generalized’) identifying properties, and not generalized CFs, but all welcome results of our analyses will be preserved.

(26) *certain* denotes an identifying property P such that the speaker of the utterance U knows this identifying property P.

3. Choice-functional series: an (intermediate) summary.

We have examined two series of indefinite pronouns in Russian and arrived at a purely semantic analysis that accounts for their distribution and interpretational possibilities. Under our analysis, both series markers denote generalized choice functions. *-to* denotes a basic GCF, while *-nibud'* denotes a GCF that is already Skolemized for one argument. Thus, we have made another step towards explaining differences among indefinite series in natural languages described in Haspelmath 1997, providing an explicit account predicting the distribution and interpretation of the two Russian pronoun series on semantic grounds.

Moreover, comparing analyses for *-nibud'* data under the Reinhart 1997 and Kratzer 1998 proposals for choice functions, we concluded that our data provides a strong empirical argument for the use of Kratzer-style choice functions, provided that we make necessary improvements to the proposal. Along with other pieces of evidence in Schlenker 1998, Matthewson 1999, and Kim 2003, a.o., this argument provides further support for the (modified) analysis of Kratzer 1998⁸.

If our account is on the right track, then the proposal of K&S 2002 that all indefinite pronoun series differences can be explained as agreement differences cannot be maintained: first, *-to* and *-nibud'* indefinite pronouns are not alternative-inducing; secondly, my analysis derives their properties using not some syntactic agreement features they carry, but using their meanings. Thus, the claim K&S2 (see Section 1.2) does not hold universally: it may be true that there are Hamblin pronouns with their series markers carrying meaningless agreement features, but there are other types of indefinite pronouns as well, with meaningful series markers.

However, what about K&S1? The analysis so far presupposed that indefinite root meanings are set meanings (be it sets of individuals, sets of properties, etc.) And if we believe that K&S's analysis for Japanese is right (and there are very good reasons to believe it), then we will get the following picture: While Japanese indefinite pronoun roots denote Hamblin sets, Russian ones denote mere sets (properties). Is this a parameter that can be set differently in different languages, or is it just an artifact caused by the way one of the analyses is formulated?

In the next section I show that the two accounts can be easily unified once we reject the assumption that a choice function takes as its argument a predicate. I argue that instead of taking predicate arguments CFs denoted by *-to* and *-nibud'* take Hamblin set arguments.

4. Hamblin indefinite pronouns in Russian

K&S 2002 convincingly argued that Japanese bare indefinite roots denote Hamblin alternative sets, while we assumed that Russian indefinite roots denote usual properties that can serve as arguments for GCFs denoted by *-to* and *-nubud'*. There are three logical cases:

⁸ One problem is left for this analysis. It is the fact that indefinites do show readings equivalent to those that can be obtained by applying existential closure in the immediate scope of downward-entailing operators, as shown in Chierchia 2001 and Schlenker 2004. However, as Schwarz 2004 shows, it is not the case that *all* wide-scope indefinites are able to do this (namely, Schwarz shows that *some* can have the relevant reading while *a certain* cannot). Thus, the evidence of Chierchia 2001 and Schlenker 2004 does not hold for all indefinite types. If CF existential closure were the source of the problematic readings, then why are these readings not possible for all CF indefinites? It may prove that there is some other mechanism that produces effects resembling existential closure effects that works for some indefinites. If that is the case, the data of Chierchia 2001 and Schlenker 2004 are not a threat to (the core of) Kratzer's proposal.

- (27)
- 1) Japanese and Russian indefinite roots can denote different things, and our account cannot be unified with the K&S account;
 - 2) K&S1 is not true, and Japanese pronoun roots denote not Hamblin sets, but usual sets (properties);
 - 3) both Russian and Japanese indefinite pronoun roots denote Hamblin sets.

The first option is unsatisfying on conceptual grounds, since it is a last resort option that we can use if we fail to use any other option. If we accept the second option, we need to explain peculiar properties of Japanese indeterminate pronouns in some other way, which does not seem an easy task. If we accept the third one, we need to accept that choice functions denoted by *-to* and *-nubud'* take Hamblin sets instead of usual properties as their arguments.

How can we find empirical evidence to tease apart these options? Hamblin pronouns have four important properties:

- (28)
- H1: Hamblin pronouns need a licenser. They always have their pseudoscope in the immediate scope of their licenser.
 - H2: Hamblin pronoun licensers are alternative quantifiers.
 - H3: The pseudoscope of Hamblin pronouns is island-insensitive.
 - H4: Hamblin pronouns must associate with the nearest licenser.

If we can find in Russian some pronoun series that have these properties, we will have a good empirical reason to accept that Russian bare indefinite roots denote Hamblin alternative sets. I argue that there is a series that shows these properties: the bare indefinite series.

This series of indefinite pronouns looks the same as the interrogative series, but the two have different interpretational possibilities. While (29a), hosting an interrogative pronoun, is a typical wh-question, (29b), hosting a bare indefinite, is a yes-no question, and the pronoun seems to be an indefinite that is existentially closed in the scope of the question.

- (29)
- a. Kto prišel?
who came
'Who came?'
 - b. Razve kto prišel?
is-it-true-that who came
'Is it true that someone came?'
- * $\exists > Q$ (The question is about some specific person.)
OK $Q > \exists$ (The question is whether just anyone came.)

Though bare indefinites and interrogatives look the same, the pronoun in (29a) (under the neutral question intonation) cannot have an indefinite interpretation. If bare indefinites and wh-words are homonymous, why can (29a) not be understood as containing a bare indefinite? That is because bare indefinites need licensing (*razve* in (29b) is such a licenser). Moreover, even when bare indefinites are licensed, they take scope under their licensing operator:

- (30)
- a. Particles forming yes-no questions:
Ne prišodil li kto?
not came Q who
'Did anyone come?'

b. If-clauses:

Esli kto pridet, zovi menja.
 if who come call me
 ‘If anyone comes, call me.’

c. Subjunctive clauses:

Petja zaper dver’ čtoby kto ne vošel.
 Petja locked the door that-SUBJ who not come in
 ‘Petja locked the door in order that anyone cannot come in.’

d. Some epistemic operators:

Možet, kto prišodil.
 It may be that who came
 ‘It may be that someone came.’

In all cases, bare indefinites scope under their licensers. Moreover, they have to be in the immediate scope of their licensers: consider (31). The universally quantified DP *každyj mal’čik* ‘every boy’ cannot license the bare series, cf. (31a) where the pronoun only can be the interrogative one, while *razve* ‘is-it-true-that’ can license bare indefinites, (29b). However, we can check whether both scope possibilities with respect to the universally quantified DP in (31b) are possible for bare indefinites. If bare indefinites are something like usual GQs, it should be so, but if they are Hamblin pronouns, only the intermediate scope possibility will be available in (31b).

- (31) a. Každyj mal’čik videl kogo.
 every boy saw who
 * $\forall > \exists$ ‘Every boy saw someone’
 OK who $> \forall$ ‘Who did every boy see?’, non-functional
 OK $\forall > \text{who}$ ‘Who did every boy see?’, functional
- b. Razve každyj mal’čik videl kogo?
 is-it-true-that every boy saw who
 * $\exists > Q > \text{every}$
 ‘There is a person, and is it true that every boy saw this person?’
 OK $Q > \exists > \text{every}$
 ‘Is it true that there is a person that every boy saw?’
 * $Q > \text{every} > \exists$
 ‘Is it true that every boy saw some person or other?’

The data in (31) shows the bare series has the property H1, and thus are the candidates to be considered if we want to find Hamblin pronouns in Russian. What about other properties of Hamblin pronouns?

(32) shows that the bare series is in fact island-insensitive, so H3 holds⁹. And (33) shows that H4 holds too, since the bare series cannot skip the nearest licenser.

⁹ Some Russian speakers question the acceptability of (32). Certainly, (32) is far from perfect, but I believe we can safely accept it as grammatical, given the following considerations. First, (32) is undoubtedly better than (i) where we have a bare indefinite and no licenser, and than (ii) where we have a wh-movement across the island boundary.

- (i) Petja čitaet knigu kotoruju kto uže bral
 Petja read a book that who already took

- (32) Razve Petja čitaet knigu
 Is-it-true-that Petja read a book
 kotoruju kto uže bral?
 that who already took? (from the library)
 ‘Is it true that Petja read the book that someone (just anyone) had borrowed
 before (from the library)?’
- (33) Razve Petja ujdjet esli kto pozvonit?
 Is-it-true-that Petja will-leave if who will-call?
 * $\exists > \text{if}$ (There is a specific person x such that Petja will leave if x calls)
 OK $\text{if} > \exists$ (If whoever calls, Petja will leave)

We have good reasons to believe that the bare series are Hamblin pronouns! The only thing that we have not confirmed yet is that bare series licensors are all and only alternative quantifiers in Russian. However, it is not easy to confirm this: After all, the only stable diagnostic we can use is the ability to catch alternatives induced by Hamblin pronouns. In order to know whether the bare series are Hamblin, we need to check whether their licensors are alternative quantifiers; in order to check whether these licensors are alternative quantifiers, we need to make sure they can license Hamblin pronouns.

Maybe we can get some indirect evidence? For instance, it may happen that the class of alternative quantifiers is cross-linguistically stable, and that Russian bare series licensors belong to this class. Unfortunately, it is not the case.

First, bare series licensors in Russian do not form any existing natural class. Why some expressions are such licensors while others are not is a complete mystery. To get a taste of it, compare (30d) and (34): Both have epistemic operators, but only *možet* ‘it-may-be’, and not *dolžno byt’* ‘it-is-likely’, can license the bare series:

- (34) *Dolžno byt’, kto prixodil.
 It is likely that who came
 ‘It is likely that someone came.’

And even worse, some other Indo-European languages have bare indefinite series too; such series always need licensing, but actual members of the class of bare series licensors vary (Haspelmath 1997, pp.170-4). E.g., Slovene and Byelorussian allow bare pronouns in imperatives, while Russian does not.

Since it does not seem that the class of licensors is cross-linguistically stable, we need to account for this fact somehow. The fact that Russian does not have any special expression licensing

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- (ii) Kto_i Petja čitaet knigu kotoruju t_i uže bral?
 Who_i Petja read a book that t_i already took?

Second, Russian bare indefinites do not like being separated from their licensors by a clause boundary, cf. (iia), which is a perfect example, and (iib), which is as imperfect as (32) is. Since acceptability of (32) and (iib) is the same (or almost the same), while the association with a licensor in (32) holds over the island boundary and in (iib) just over the clause boundary, we conclude that islands do *not* affect the association process.

- (iii) a. ^{OK}Razve kto prixodil?
 Is-it-true-that who came?
 b. ?Razve Petja skazal čto kto prixodil?
 Is-it-true-that Petja said that who came?

the bare series but use rather common operators instead should be accounted for too. The following solution will do the work: Let us assume that licensers *are* just “normal” expressions, not alternative quantifiers. However, the grammar of a given language may contain lexical-shifting rules like (35). The expression on the left side in (35) wants a mere proposition as its argument. The expression on the right side receives a Hamblin alternative set argument, then applies an existential propositional quantifier \exists_p to it (this yields a singleton set of propositions), and then apply the ‘old’ meaning, the meaning from the left side, to the only proposition in the singleton set.

$$(35) \quad \lambda p_{\langle st \rangle}. [[mo\dot{z}et]](p) \Rightarrow \lambda P_{\langle ST \rangle}. [[mo\dot{z}et]](\exists_p P),$$

where \exists_p is a propositional quantifier defined as in K&S 2002:
 $[[\exists_p \alpha]]^{w,g} = \{ \lambda w'. \exists p [(p \in [[\alpha]]^{w,g}) \ \& \ p(w') = 1] \}.$

Since such rules are lexeme-specific, it is normal that different languages have different shifts. Of course, it is just a description of facts, and much more work is needed to arrive at a more explanatory account.

In any way, even if we do not have any clearer evidence about the nature of the class of licensers, and thus to find out whether H2 holds for the bare series, the three other properties of the bare series are enough to prove it is a Hamblin pronoun series: If we accept the Hamblin analysis, we get these properties for free, and if we do not, we need to find a way to derive these three properties. What consequences does our finding that Russian has Hamblin indefinite pronouns have? The bare series does not bear any series marker, the pronouns in it are just bare indefinite roots. Thus, we have confirmed that bare indefinite roots in Russian denote Hamblin sets, just as Japanese indefinite roots do, and have arrived at the point where we can unify the Japanese and Russian analyses.

The only problem that is left is that our GCFs want properties as their arguments, not Hamblin sets. The solution for this problem is simple: We need to replace our Generalized CFs by Hamblin CFs.

$$(36) \quad f_{\langle T, \tau \rangle} \text{ is a Hamblin GCF if } (f(p_{\langle T \rangle})) \in p_{\langle T \rangle}.$$

$$(37) \quad \begin{aligned} \text{a. } & [[to]]_{\langle T, \tau \rangle} = \lambda p_{\langle T \rangle}. [f(p)]_{\tau}, \text{ where } f \text{ is a Hamblin CF, and the speaker knows } f. \\ \text{b. } & [[nibud']]_{\langle T, \langle v, \tau \rangle \rangle} = \lambda p_{\langle T \rangle} \lambda x_v. [f(x, p)]_{\tau}, \text{ where } f \text{ is a Hamblin CF,} \\ & \text{and the speaker knows } f. \end{aligned}$$

$$(38) \quad \begin{aligned} \text{a. } & [[kto-to]] = \lambda p_{\langle T \rangle}. (f_{\langle T, \tau \rangle}(p))(\{x: \text{human}(x)\}_{\langle E \rangle}) = f_{\langle E, e \rangle}(\{x: \text{human}(x)\}). \\ \text{b. } & [[kto-nibud']] = \lambda p_{\langle T \rangle} \lambda x_v. (f_{\langle T, \langle v, \tau \rangle \rangle}(p))(\{y: \text{human}(y)\}_{\langle E \rangle}) = \\ & = \lambda x. (f_{\langle E, \langle v, e \rangle \rangle}(x, \{y: \text{human}(y)\})). \end{aligned}$$

5. Implications and open issues.

Our analysis is certainly not the last step on the road to understanding how indefinites in different languages work. While providing answers to some of the puzzles about indefinites, it poses some new problems as well.

One of the major problems concerns the precise analysis for alternative quantifiers in Russian and other languages. Can we find some stable diagnostics that will help to determine whether some expression is an alternative quantifier or not, or is their interaction with Hamblin pronouns the only possible test? Independently of this question, a mystery concerning the exact class of Russian bare indefinite licensers must be solved. Even if there are lexeme-specific shifts turning simple

expressions into alternative quantifiers, for what reason does the grammar allow such shifts for some lexemes, but not for others? For instance, in what way *možet* ‘it-may-be’, differs from *dolžno byt’* ‘it-is-likely’?

The other important set of problems is related to the unification of our proposal and familiar CF proposals of Reinhart 1997 and Kratzer 1998. Namely, what is the relation between basic CFs and Hamblin CFs? Do we have both, or are basic CFs a specific case of Hamblin CFs? If yes, what specific case, and if not, then why do we have two similar, but slightly different mechanisms?

And the main question that arises after every new piece of work on indefinites is: Do we at last have all that we need to account for all differences between natural language indefinites? If I were to answer this question seriously, I would say “Probably not yet”, as the history of theories for indefinites suggests, and this concludes the paper.

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