Meaning postulates and logical form: the case of Russian indefinite pronouns

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1 Stating the problem

Formal semantics is primarily semantics of syntax. The analysis of a sentence assigns each constituent a meaning that is computed from the meaning of its daughters. Usually, one of the daughters in a binary branching constituent is a function and the other provides its argument. (Coordinating conjunctions and cases of type shifting are the possible exceptions.) Most lexical entries are represented by predicates of the corresponding type: $[[\text{student}]] = \lambda x. \text{student}(x)$; $[[\text{love}]] = \lambda y \lambda x. \text{love}(x, y)$, etc. Whenever the meaning of such an entry gives rise to inferences, this can be explained by recourse to meaning postulates (Borschev, Partee 1998).\footnote{The idea of a meaning postulate is due to Carnap (1952).} Thus the inference from

(1) Some cats are black.

to

(2) Some animals are black.

is justified by a meaning postulate

(3) $\forall x (\text{cat}(x) \rightarrow \text{animal}(x))$

The set of all meaning postulates, on this view, forms a theory, a worldview, so called Natural Language Metaphysics (Bach 1986). Words of the language serve as terms of that theory, and meaning postulates provide information about their relations.

Certain lexicon entries, however, get a much more thorough treatment. These are primarily grammatical morphemes, whose meaning can be approximated by a logical formula. Thus an analysis given to sentence Every man loves some woman in a typical formal semantics text is represented not by the formula

(4) $\text{every}(\text{man, some(\text{woman, love}))}$
but by a more readable

\( \forall x (\text{man}(x) \rightarrow \exists y (\text{woman}(y) \land \text{love}(x, y))) \)

which is obtained by assigning the following meanings to \textit{every} and \textit{some}:

\[
[\text{every}] = \text{every} = \lambda P \lambda Q . \forall x (P(x) \rightarrow Q(x)) \\
[\text{some}] = \text{some} = \lambda P \lambda Q . \exists y (P(y) \land Q(y))
\]

and performing the \( \lambda \)-conversion.

The meaning components that get this preferential treatment are mostly those that can be considered “grammatical”: quantification, number, modals, the copula \textit{be}, etc. A word or morpheme is more likely to be analyzed if its meaning is easily expressible by means of formal logic; also, if it plays a nontrivial role in the meaning of the whole sentence: for example, elements with nontrivial scopal properties are likely to get more attention from the researchers working in formal semantics.

In principle, information contained in the ‘meaning’ of such a lexical item is representable as a meaning postulate; for example, \([\text{every}]\) in (6) above carries the same information as

\[
\forall P \forall Q (\text{every}(P) \leftrightarrow \forall x (P(x) \rightarrow Q(x)))
\]

The biconditional in (8) represents the claim that the formula to the right fully exhausts the meaning of \textit{every}. The postulate can thus be viewed as the definition of this word.

The purpose of this paper is to see how this theory fares when applied to a class of words which has traditionally been a focus of much research in model-theoretic semantics. It turns out that even these words possess meaning components which are not easily representable by a logical formula. That is, the logical form of most sentences can only be adequately represented by a formula like (4), not like (5).

2 Indefinite pronouns

It is easy to provide examples of indefinite pronouns (words such as English \textit{someone}, \textit{anywhere}, \textit{nothing}; Russian \textit{kto-to}, \textit{čto-nibud’}; Dutch \textit{sommige}, Spanish \textit{alguien} etc.), but it is harder to state a definition to match the informal intuitions.

Haspelmath (1997, p. 9–13) defines indefinite pronouns on both formal and functional grounds: the lexical item in question needs to be a pronoun (he

\footnote{\text{In her lecture notes (2005), Barbara Partee explicitly states:}}

\text{Whether such meaning postulates (i. e. \textit{definitions} — \textit{g.b.}) are possible for more than a small fraction of the lexicon of a natural language is a matter of debate which we do not aim to settle.} \text{My arguments in this paper support the conclusion that the number of such lexical items is indeed extremely small.}
gives several examples of formal properties that may distinguish pronouns from common nouns in particular languages), and it needs to be indefinite, that is, its ‘main function’ should be ‘to express indefinite reference’ (p. 11). Both criteria are hard to make precise. The Russian expressions that I am going to deal with in this paper will all contain wh-words as their part — I consider this to be a sufficient (but of course, not necessary) condition to count a lexical item as a pronoun. On the semantic side, the pronoun meanings for the items described in this paper are sufficiently close to those considered in Haspelmath’s book (namely, specific known indefinites and free choice pronouns).

Indefinite pronouns receive a lot of attention; their meaning is typically quite abstract, mostly reducible to quantification; they interact with scope in interesting ways, the number of pronouns in a given language is not very high. Important achievements in the development of formal semantics, such as theories of generalized quantifiers, negative polarity items, weak and strong determiners, specific indefinites treat indefinite pronouns as part of their primary material.

On the other hand, the meaning of at least some indefinite pronouns and corresponding determiners is not reducible to components that are usually studied in formal semantics. These items display characteristics that are more typical for other areas of the lexicon.

3 Specific indefinites

Some some of the items to be discussed serve as specific known indefinites. Specific indefinites are indefinite NPs (such that their content does not identify them uniquely) that have a particular referent. The best known property of specific NPs is their ability to scope out of syntactic islands. Thus, in the following sentence, taken from Fodor and Sag 1982:

(9) Each teacher overheard the rumour that a student of mine had been called before the dean.

the indefinite NP a student of mine can take a wider scope than each, despite being located in a syntactic island headed by the rumour. In this respect, specific indefinites resemble definite NPs.

Specific indefinites can be analyzed by means of choice functions (see e. g. Kratzer 1998). A choice function is a function of type (e → t) → e, that is, it takes a predicate (determined by the content of the NP) as an argument and returns an object satisfying that predicate. Kratzer 1998 takes these functions to be determined by the context, ‘often intended by the speaker, but not revealed to the audience’.

In some languages, some determiners or pronouns are used not just for specific indefinites but only for those whose denotation is known to the speaker. These are called specific known NPs (Haspelmath 1997). English a certain is one example of a marker which only has specific known meaning.

Kratzer’s choice functions are also allowed to take additional arguments, resulting in intermediate scope readings.
There can be different pragmatic reasons for using a specific known indefinite:

1. the speaker might not wish to disclose the identity of the referent;
2. the speaker may consider the identity of the referent unimportant;
3. it may be too difficult to supply an appropriate definite description;
4. finally, such pronouns can be used in a language game: it is expected that the addressee will guess the identity of the referent, even though the information provided is insufficient.4

Kratzer’s analysis does explain the scopal properties of specific NPs; to handle the difference between a specific known marker and a simple marker of specificity, we need to add to our language a predicate $K_s(f)$, meaning ‘the speaker is acquainted with the choice function $f$’. The logical form for the NP a certain man would then be

$$f(\text{man})$$

where $f$ is a new choice function variable, with a meaning postulate

$$K_s(f)$$

This setup says that in the case of specific known indefinites the speaker has to intend a particular choice function. However, as we shall see, Russian also distinguishes between different pragmatic situations of use for specific known indefinites.

4 The Russian koe- pronoun series

Russian is one of the languages where most indefinite pronouns come in series. Each pronoun consists of a wh-word and a morpheme that indicates the series. The pronouns that correspond to English determiners are built using the wh-word kakoj ‘which, what kind’ and have adjectival morphology. Whether they should be considered determiners from the syntactic point of view is a question that I am not going to consider in this paper.5

In most cases, the meaning of an indefinite pronoun can be described as the meaning of its series as applied6 to its ontological class. However, cases where the meaning of a particular pronoun acquires shades of its own are also quite common.

4 Groenendijk and Stokhof 1980 (pp. 157–158) list only two types of pragmatic reasons, those corresponding to my 2 and 3.

5 Assigning these pronouns a category different from determiner would lead to certain problems with standard semantic theories, where the types assigned to CNP and NP (or NP and DP, depending on terminology) are different.

6 This word is used here in an informal sense, not as model-theoretic function application.
For the koe-series, the prefix koe- itself derives from a wh-word *kaj ‘which’ — typologically a widespread source of indefinite pronouns. The series consists of koe-kto (containing the wh-word kto ‘who’), koe-čto (čto ‘what’), koe-kakoj (kakoj ‘which’), koe-gde (gde ‘where, locative’), koe-kuda (kuda ‘where, directional’), koe-kak (kak ‘how’). The series is incomplete; there are no *koe-otkuda (otkuda ‘whence’), *koe-počemu (počemu ‘why’), 2koe-začem (začem ‘for what purpose’?)

Koe-kto and koe-čto have two kinds of uses. One (I will call it the ‘proportional’ reading) is the case where a a certain fraction of possible referents (more than one but certainly less than, say, 20 percent) satisfies the predicate. The set of possible referents may be delimited by a PP:

(12) No koe-kogo iz zagovorščikov ja znal.
but koe-kto.ACC of conspirators I knew

But I knew some of the conspirators. [Mark Aldanov. Ubijstvo Urickogo (The murder of Uritsky)]

The speaker may or may not know the identities of the referents that fall under the predicate. It is also possible for such uses to take narrow scope with respect to modals, and thus they may not be specific indefinites:

(13) Možet byt’, ty poznakomišja koe s kem iz poznakomišja koe-kto.ACC with.koe-kto.ACC of students
Maybe you will make friends with some of the students.

The proportional use of koe-kto can easily be described by the theory of generalized quantifiers.

Koe-kto can also be used as a specific known indefinite. In this case, there is no restriction on the number of referents. However, koe-kto is not appropriate in all cases where a specific known indefinite is required. Namely, its use signals a language game situation (type 4, according to classification on page 4). One can compare it to another specific known marker, odin ‘one’:

(14) Tut pro tebja odin čelovek sprašival
Here about you one man asked

Some man has asked about you.

(15) Tut pro tebja koe-kto sprašival
Here about you koe-kto asked

A certain person has asked about you. (Guess who.)

Koe-začem does not seem to me completely impossible, but there are no examples of its use in the Russian National Corpus, and half of the uses found on Google are clearly examples of language game. Thus, even if this pronoun exists, it is extremely rare.

Still another specific known indefinite marker, nekto, is to be discussed in the next section.
In (14), the speaker has to be acquainted with the referent of *odin čelovek* ‘one man’, but no assumption is made about whether the hearer also knows him. In (15), on the other hand, the hearer needs to know the referent. (15) would be used most naturally in a situation where the speaker expects that news about interest on the part of the unnamed referent will be important for the hearer.

We can try to capture this meaning of *koe-kto* with the same device as we did for *a certain*. We need to say that the same choice object is known both to the speaker and the hearer. We need a new predicate $K_h$, meaning ‘known to the hearer’. One problem is that, if we work with choice functions, we would need to specify the meaning postulate (for a use of *koe-kto* with the LF meaning $f(\text{human})$)

$$K_s(f) \land K_h(f)$$

However, since $f$ is a function from predicates to objects, there will be an infinite number of such functions returning a particular referent when applied to *human*. The speaker would have no reason to expect that the hearer has the same function in mind. The solution is to see that *koe-kto* always specifies *human* as the argument to the choice function. So instead of a choice function we can simply use a free object variable $x$ with the postulate

$$K_s(x) \land K_h(x) \land \text{human}(x)$$

Thus the specific known use of *koe-kto* is indeed capturable within the logical form + meaning postulates theory.\(^9\)

Now we turn our attention to the other pronouns from the *koe*-series. *Koe-kak* and *koe-kuda* have the same proportional and known specific indefinite uses (without the linguistic game effects of *koe-kto*).

*Koe-kak* is in the process of losing the indefinite pronoun status. In its usage, a pragmatic inference is lexicalized: indefinite pronoun $\rightarrow$ depreciative meaning (Hasplomath 1997, Bylinina 2005). Thus *koe-kak* means ‘done badly’.

$$Ved’ ty na vidu u ljudej, znachit, ne možes odet’sja$$

Thus you on sight at people means not may dress

*koe-kak*

koe-kak

People see you, so you may not dress anyhow [*Rabotnitsa*, 1989]

(Sokolova 2006 provides examples of depreciative usage for other pronouns in the *koe*-series in XVII century Russian. In modern language this is impossible.)

There is another type of usage, closer to the indefinite pronoun meaning. *Koe-kak* can mean ‘by whatever means, with great difficulty’. The subject of the predicate containing the adverbial pronoun typically does not know himself how he managed to perform the action. (This probably explains why an indefinite pronoun acquired this meaning. Note, however, that the pronoun meaning is clearly not known specific indefinite.)

\(^9\)The use of additional arguments for intermediate scope cases would disrupt the analysis in a similar way. Interestingly, *koe-kto* does not seem to allow intermediate scope.
(19) *Ja hodil kak pomešannyj ot goloda i koe-kak otyskal*
I walked like mad from hunger and *koe-kak* found
fisherman’s hut

I walked, being mad from hunger, and somehow managed to find the fisherman’s hut. [F. M. Reshetnikov, *Mezhdu lyud’mi* (Among people)]

In both of its uses, *koe-kak* possesses meaning components which are not characteristic for a typical indefinite pronoun. The senses ‘done badly’ or ‘done with difficulty’ are not just pragmatic inferences. The following sentence is inappropriate:

(20) #*Ja koe-kak prigotovila tebe užin*
I *koe-kak* prepared you.Dat dinner

I prepared dinner for you (in some unspecified way).

The sentence cannot be used by a mother who wants to tell her child that the dinner is prepared in some exciting way, which she does not want to disclose. (This would be parallel to the use of *koe-kto* in (15).) The evaluative meaning components of *koe-kak* may have arisen as pragmatic inferences, but now they are clearly part of the lexical meaning. To represent these components in the logical form, one would need a theory of, correspondingly, evaluation and effort/purposeful activity and how they are represented in the language. Moreover, there are reasons to doubt that it would be possible to define the meaning of *koe-kak* using the elementary notions of such a theory, as opposed to just specify aspects of its usage by meaning postulates.

5 *Nekto*

Another series of pronouns whose meaning can roughly be described as known specific indefinites is the one characterized by the prefix *ne-*. Here the irregularity of meaning is even sharper than in the case of *koe*-pronouns. The specific known meaning is restricted to the adjective *nekij*, the nominative case of the animate pronoun *nekto*, and nominative and accusative cases (coinciding morphologically) of the inanimate pronoun *nečto*. The oblique cases of *nekto* and *nečto*, as well as the pronouns *negde* (gde ‘where, locative’), *nekuda* (kuda ‘where, directional’), *neotkuda* (otkuda ‘whence’), *nekogda* (kogda ‘when’), *nezačem* (začem ‘for what purpose’) are only used in a negative construction with subject in the dative case and main verb in infinitive:

(21) *Mne negde spat’, ne s kem pogovorit’ i me.Dat ne-where sleep.INF ne-with-who.INSTR talk.INF and nekogda rabotat’ ne-when work.INF*
I have nowhere to sleep, no one to talk to and no time for work.
The use of *nekto* (again, as with *koe-kto*, I am concentrating on the pronoun with animate referents) is not completely consistent. In official and scientific discourse it can occur as a pronoun with a very wide distribution — more or less like English *someone*:

(22) Jesli *nekto* znaet kakoe-to vyskazyvanie, to on takzhe znaet,
If *nekto* knows some proposition then he also knows
čto on eto znaet
that he this knows
If someone knows a proposition, then he also knows that he knows it.
[Blinov A. K. et al, Analitičeskaja filosofija (Analytic philosophy)]

However in other genres, its uses fall into the specific known class. Among the reasons for using specific indefinites listed on p. 4, only 3 is allowed. That is, *nekto* is used when the speaker is acquainted with the referent, however, it is hard for him to describe it precisely enough for the hearer to identify it uniquely. In such cases the pronoun is often accompanied by some decriptive content, most often within the same NP: the speaker provides as much information as possible.

(23) ...prjamo iz-za klumby na nego vyskočil *nekto* v right from-behind flower bed on him sprang *nekto* in pal’to i so stopkoy knig pod myškoj overcoat and with stack books.GEN under armpit
... some man in an overcoat with a stack of books under his arm sprang at him from behind a flower bed [Stolitsa]

In fact, very often the information provided is the name. In this case, the name does not serve as a rigid designator, but rather as the only piece of information about the person. This information is not considered sufficient for the hearer to really ‘get to know’ whoever is referred to by the pronoun.

(24) Let sorok nazad apteku v Kremenčuge soderžal *nekto* years forty ago drugstore in K. managed *nekto* Aleksandr Andrejevič Zalman A. Z.

About forty years ago the drugstore in Kremenchug was owned by one Alexandr Andreevich Zalman. [A. Fet. Semeistvo Goltz (The family Goltz)]

Among the first 100 instances of *nekto* returned by a query to the Russian National Corpus, 33 are accompanied by proper names, 15 have some descriptive content in the same NP, and 26 have both (thus, only 26 form an NP by themselves).

To characterize this use of *nekto*, it is not enough to include some notion of knowledge state of the speaker in one’s theory. One also needs to incorporate the choice speaker makes between the possible decriptions of the referent. I don’t see any easy way to do this.
6 New pronouns

Indefinite pronouns are not a very stable part of the language from the diachronic point of view. Some paths of grammaticalization are known; Haspelmath 1997 lists, among others, pronouns of ‘dunno’ type and ones derived from expressions meaning ‘want/pleases’. Both types are extremely productive in Russian, with dozens of expressions at various stages of grammaticalization (see Bylinina, Testelets 2004). For example:

(25) Otdavat’ svoi den’gi neizvestno komu nikto ne zahoˇ cet
give.INF one’s money unknown who.DAT no-one not will.want

No one will want to give his money to someone unknown. [Nezavisimaya gazeta]

Semi-grammaticalized pronouns are extremely likely to acquire negative connotations, and these connotations can become a part of their lexicalized meaning.

There are also constructions that are derived from free relatives, whose form is more or less rigid (and thus they can be viewed as pronouns), but whose meaning does not fit the usual expectations for indefinite pronouns. Often these constructions retain certain aspects of meaning from their lexical sources. This holds, for example, for the popalo ‘hit (the target), ended up’ series:

(26) Vasja rasskazyvaet sekrety komu popalo
V. tells secrets to who it hit

Vasya tells secrets (carelessly) to anyone.

If a pronoun of the popalo series is used in a clause, this conveys the meaning that the action denoted by the verb was performed without care as to the choice of the corresponding argument (or manner, or time, or place).

The popalo series is most close in meaning to free choice pronouns (like the Russian ugodno series or English any). However, there are differences. Compare (26) to (27) (where the English translation reflects the Russian meaning quite accurately):

(27) Vasja rasskazyvaet sekrety komu ugodno
V. tells secrets to anyone

Vasya tells secrets to anyone.

The latter sentence entails that every person who asks Vasya will receive his portion of the secrets. In (26) there is no such entailment. Vasya may agree to tell secrets to some people and refuse to divulge them to others. But what the use of popalo does mean is that there is no system in Vasya’s behaviour (presumably, he does not exercise any due care in keeping the secrets).

This difference in meaning is reflected in the syntactic distribution of the pronouns. While free choice items like ugodno need to be in the scope of some operator — modal or future or habitual, popalo pronouns are not restricted in this way.
In some cases, the choice of the referent for the verb argument expressed by popalo is not under control of the subject. In particular, this happens when a popalo argument is itself in the subject position:

(30) Po etomu telefonu kto popalo ne pozvonit
On this telephone not will.call

A random person will not call on this phone. [V. Voinovich. Ivan’kiado]

In such cases, kto popalo conveys the meaning that there is no consistent pattern distinguishing those referents that fall under the predicate and those that don’t (in the case of (30), where negation scopes over kto popalo, the sentence states that there in fact is regularity among those that are able to use a particular phone). This meaning is closer to what one could expect from an indefinite pronoun than the agentive one. In sentences describing volitional action, popalo pronouns contribute two meaning components: carelessness of the action and randomness of its argument. In sentences like (30), only the second one remains.

7 Some general remarks

The Russian indefinite pronoun system is quite rich. Whatever the reason for this, the construction type ‘wh-word + some marker’ is employed to convey more meanings than in most languages. Of the items described in this paper, the evaluative meaning of koe-kak is an example of lexicalization — a process whereby a grammatical expression acquires lexical status. The peculiarities of nekto may be a consequence of the fact that this pronoun is gradually disappearing from the language (it is largely confined to written genres). On the other hand, the meaning of the popalo pronouns is clearly derived from the meaning of their lexical source; in this case the process of grammaticalization is at an early stage.

References


10In the English translation, habitual or iterative interpretation is possible. It is excluded by the perfective aspect of the verb in the Russian sentence.


