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Bound and Free Reference
in Russian Infinitival Clauses

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0. In recent years, there has been a considerable amount of interesting work in the areas of pronominal anaphora, the control of verbal forms, and the interpretation of syntactic gaps. These three topics are related in that they all involve referential deixis. That is, the reference of a linguistic element (perhaps phonologically null) must be defined in terms of some external orientation point. It has been shown that there are three categories of referential deixis, distinguished by the set of orientation points permitted. Furthermore, and most interestingly, these three categories are distinguished by clusters of other properties as well, indicating that linguistically significant categories are involved.

I have set two tasks for myself in this paper. The first is to present an outline of a general theory of referential deixis, based on the work cited in footnote 1. The investigations cited there differ in many points of terminology, detail, and overall approach. Nevertheless, I believe that it is possible to construct an internally-consistent synthesis of

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these views on referential deixis based on their many points of agreement. A central concept in this synthesis is the necessity to distinguish between bound deixis and free deixis, each with its own specific properties.

Second, working within this theory, I will investigate the control of infinitival clauses in Russian. In particular, it will be argued that the subject interpretation of this single morphological form is either bound or free, and that, despite apparent counterexamples, the choice is determined by syntactic context. If this correlation between syntactic structure and semantic interpretation can be maintained, it would be a major step toward a general theory of referential deixis.

1. Toward a theory of referential deixis

Consider first² some well-known sorts of examples of pronominal anaphora:

(1)

- a. Mary_i told John_j that Betty_k hated herself_k.
- b. The men_i noticed the dogs_j chasing each other_j.

(2)

- a. Billy loves Toyotas_i. John loves them_i too.
- b. I love you.
- c. John_i knows that he_{i,arb} is a goner.

A pronoun has no lexical content. It is a cluster of grammatical features (i.e., person, number, gender) associated with a phonological representation. Semantic interpretation requires reference to some external orientation point. Reflexive and reciprocal pronouns, illustrated in (1), may be termed bound, because their orientation point is grammatically constrained to lie within the same sentence as the anaphor; i.e., deictic reference must be intrasentential. The admissible coreference is indicated in (1) by referential indices. Personal pronouns, on the other hand, exemplify free deixis, because their reference is not grammatically restricted to intrasentential orientation points. In (2a), the orientation point for the pronoun them is in another sentence of the discourse; that is, deictic reference is intersentential. I and you in (2b) refer to the speaker and addressee, respectively. In this case, the orientation points are not mentioned in the discourse at all. Deictic reference extending beyond the content of the discourse may be termed exophoric. A free anaphor does not exclude intrasentential reference. Thus, the personal pronoun he in (2c) may refer to the intrasentential John, as indicated by coindexing. But being a free anaphor, he in (2c) may also refer to an entity not mentioned in the discourse. Furthermore, since he is a third person pronoun, its

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reference ranges over the set of (single male human) elements in the domain of discourse, as indicated by the index designating arbitrary reference (arb). In some pragmatic situations, of course, this domain may be severely restricted, even to a unique entity. For example, if (2c) were uttered in a context in which John were observing a man falling off a bridge, the domain of discourse could be understood to consist of the falling man alone.³

A similar picture obtains for the control of verbal forms. For convenience, we include a PRO element in our examples to refer to the subject of the verbal form, although nothing in this presentation depends upon this assumption. In the familiar sorts of 'Equi' and 'Raising' constructions, PRO is bound to an NP in the matrix clause:

- (3)
- a. I_i asked Bill_j [PRO_j to come].
 - b. He_i seems [PRO_i to be sleeping].

On the other hand, while the PRO 'subject' of a gerund appears to be bound in some⁴ cases (e.g., 4a), it may exhibit free reference as well (4b):

- (4)
- a. Mary_i considered [PRO_i dropping out].
 - b. John_i disapproves of [PRO_{arb} shooting deer].

The deictic reference of PRO seems to depend upon the semantics of the matrix verb (Thompson 1973). Again, in the case of arbitrary reference, a particular instantiation of the PRO variable may be forced by a pragmatic restriction of the domain of discourse. For example, say that (5) were uttered in connection with a particular hunting trip by John's friends:

- (5) John disapproved of [PRO shooting the deer].

Here, PRO would be understood as referring specifically to John's friends. In any case, it is clear that PRO may be either bound or free.

Finally, consider the interpretation of syntactic gaps, as in:

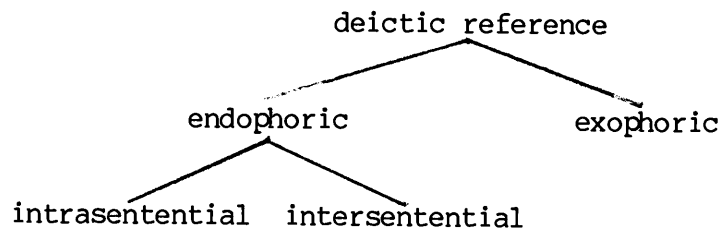
- (6)
- a. Who(m) do you think [Bill talked about ____].
 - b. The FBI is after the man [I was talking to ____].
 - c. I have more money [than Bob has ____].
 - d. I ate with Mary, and [John ____ with Marie].
 - e. Bill can conjugate a Swahili verb. [I can ____ too].

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The gaps from Wh movement (6a,b) and Comparative Deletion (6c) are bound to the underlined constituents. The gaps from Gapping (6d) and VP Deletion (6e) admit either intrasentential reference (6d) or intersentential reference (6e), but not exophoric (Hankamer and Sag 1976). These forms of deixis, then, occupy a position intermediate between bound deixis and free deixis. Intra- and intersentential reference together constitute endophoric reference. Deictic reference restricted to endophoric reference may be termed discourse deixis.

Thus, we have the following taxonomy of deixis:

(7)



Deixis:

bound	[.....]
discourse	[.....]
free	[.....]

The three forms of deixis differ in more ways than just with regard to the set of orientation points permitted. For example, free deixis, sometimes characterized as a component of Discourse Grammar, is not constrained by rule conditions (such as the Specified Subject and Nominative Island Constraints of Chomsky 1980) or by governing categories (cf. Chomsky 1979). As illustrated above, pragmatic considerations and lexical meaning play a primary role in the interpretation of free deixis. Nevertheless, free deixis may also be sensitive to derived syntactic structure. For example, the reference of personal pronouns, clearly a case of free deixis, is constrained by a Backwards Anaphora Constraint defined in terms of linear order and command relations in surface structure (see, for example, Lasnik 1976, and Hankamer and Sag 1976).

In bound and discourse deixis, on the other hand, the relative importance of syntactic and pragmatic factors is the opposite. Both of these two forms of deixis are sensitive to superficial syntactic structure; furthermore, bound deixis is

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constrained by rule conditions (or governing categories), Pragmatic and lexical factors play a much more restricted role. Control, i.e., the unique determination of an orientation point conditioned by syntactic context or lexical feature, is limited to bound deixis.

These necessarily sketchy remarks will serve as our outline of a theory of referential deixis (for further details, see the references listed in footnote 1). The general theoretical question to be addressed here is this: are the deictic properties of a linguistic element predictable from any other information, such as its phonological form (say, null versus non-null) or syntactic context. Bresnan (1979) has suggested that bound deixis (in the form of 'obligatory control') is universally a defining property of predicate complements. It will be argued here that for Russian infinitival clauses, this correlation can indeed be maintained. This result is not obvious because of the existence of apparent counter-examples: predicate adjuncts and NP complements which appear to be controlled by the grammatical subject. A more careful investigation of these constructions reveals that despite apparent control, bound deixis is not involved.

2. Infinitival clauses in Russian

2.1 First consider Russian infinitival clauses which exhibit bound deixis and which are predicate complements. These clauses occur in three types of constructions, which may be called 'Equi' constructions, indirect questions, and supine clauses. For example:

(8)

a. Equi

Mat_i' zapretila Anne_j [PRO_j nalit' čaj].
'The mother_i forbade_j Anna_j [PRO_j to pour tea].'

Mne_i nado [PRO_i čitat' doklad].
'To me_i it is necessary [PRO_i to read a report].'

b. Indirect question

Mne_i neizvestno, [čto PRO_i delat'].
'To me_i it is not known [what PRO_i to do].'

c. Supine

On_i pošël [PRO_i uznat' domašnee zadanie].
'He_i went [PRO_i to find out the homework assignment].'

The predicate complement status of the bracketed clauses in (8) is generally unproblematic, except for the impersonal sort of construction represented by the second Equi example. Since

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there is no lexical subject, it is conceivable that the bracketed clause is the grammatical subject. It is difficult to adduce convincing arguments either way, especially in view of the relatively free word order in Russian. In the absence of evidence to the contrary, we will assume that the infinitival clause in such a construction is in fact the predicate complement.

Sometimes the verb governing an infinitival predicate complement can appear without overt specification of the controlling NP, the orientation point; e.g.:

(9)

- a. [PRO pisat' iz tjur'my pis'mo] zapreščeno (NP/dative)
'[PRO to write a letter from prison] is forbidden
(to NP).'
- b. Ne neizvestno (NP/dative) [čto PRO delat']
'It is not known (to NP) [what PRO to do].'
- c. (NP/nominative) pojdi [PRO uznat' domašnee zadanie]!
'(NP) go [PRO to find out the homework assignment]!'

PRO is bound even in such cases. For example, (9b) cannot mean that it is not known to one person what another person should do. The null dative case form referring to the non-understanding person is interpreted by free deixis. But whatever orientation point is chosen and assigned to this null NP, PRO is bound to it.

2.2 We now turn to infinitival clauses which are not predicate complements. Infinitival clauses are found in more syntactic configurations in Russian than in English, often corresponding to the English *-ing* gerund. Thus, a complete survey is not possible here. In this paper, we will consider only adverbial clauses (predicate adjuncts).

There are three types of infinitival adverbial clauses, each with different deictic properties. One type is introduced by any one of several subordinating conjunctions meaning 'before'. For example:

- (10) Prežde čem [PRO_i postavit' figuru], on_i smotrel
na protivnika.
'Before [PRO_i moving a piece], he_i would look
at his opponent.'

The PRO subject of such a clause invariably refers to the matrix clause subject. The sentence-initial position of the clause, combined with the comma intonation of detachment, rules out the possibility that the clause is a predicate complement. This

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construction would thus appear to exemplify grammatical subject control. If this is true, the correlation between predicate complement status and bound deixis is not valid.

But now consider purpose clauses, introduced by *čtoby*. The typical case, canonized by the grammar books, involves subject reference, as in:

- (11) [Čtoby PRO_i ne prospat'], otec_i zavěl budil'nik.
'[In orderⁱ PRO_i not to oversleep], father_i wound the alarm clock.'

However, the PRO of a purpose clause does not necessarily refer to the matrix clause subject, or even to any endophoric orientation point. Consider, for example, the following:

- (12) Èjnštejn nastojčivo vystupal na mirovoj arene,
[čtoby PRO_{arb} obespečit' mirnoe razvitie novyx
otnošenij meždu evrejskimi poselencami i arabskim
naseleniem].
'Einstein insistently spoke out in the world arena,
[in order PRO_{arb} to guarantee the peaceful
development of new relations between the Jewish
settlers and the Arab population].'

The PRO in (12) is not bound to the matrix clause subject, Einstein, even though the latter is a pragmatically eligible referent. There need be no assertion that Einstein himself is capable of single-handedly guaranteeing peace in the Middle East. Rather, PRO is assigned arbitrary exophoric reference: Einstein spoke out in order that mutual understanding be guaranteed (by whomever). Thus, while the PRO subject of purpose clauses is typically bound, it may be free as well.

The third type of infinitival adverbial is the antecedent of a conditional construction, introduced by the conjunction *esli* 'if'. A PRO subject of such a clause freely admits arbitrary exophoric reference; e.g.,

- (13) [Esli PRO_{arb} poprosit' normal'nogo čeloveka
otmetit' samuju xorošen'kuju na gruppovom snimke
škol'nic], on ne vseгда tknet v nimfetku.
'[If (you) ask a normal person to point out the
prettiest in a group picture of school girls],
he won't always point to a nymphet. '

Here it is obvious that the matrix clause subject on 'he' is not asking himself, a normal person, to point anyone out. As far as I can tell, PRO in such constructions admits only arbitrary exophoric reference.

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2.3 We are faced, then, with a bit of a puzzle. The temporal adverbial clause of time, illustrated by (10), appears to indicate that bound deixis is not restricted to predicate complements. On the other hand, viewing infinitival adverbial clauses as a whole suggests something of a continuum with regard to the possibility of arbitrary reference. Purpose clauses sometimes exhibit arbitrary exophoric reference, and conditional clauses always do.

What determines the possibility of exophoric reference? There seems to be no clue in the syntactic structures involved, as they are comparable. While other factors may be involved, it appears that the possibility of arbitrary reference varies in direct proportion to the modality of the event described by the infinitival clause. I use the term modality here in the rather traditional sense of the degree of certainty of the event. At one extreme, a temporal adverbial clause such as (10) establishes a sequence of two propositions whose truth is being asserted. At the other extreme is the conditional clause, which by its very nature suspends any assertion that the described event actually takes place. Purpose clauses occupy an intermediate position on the modality scale. 'A in order for B' expresses a weakened causal relation between the two propositions, entailing not B is the consequence of A, but rather B is the desired consequence of A.

It was noted above that purpose clauses exhibit intrasentential reference in some cases, but not others (cf. 11 and 12). Here it is even more difficult to find a structural motivation. Rather, arbitrary reference seems to be possible to the extent that the agent is distinguishable from an action which could proceed without the intermediation of this agent. For example, peaceful relations could (in principle) be secure in the absence of any particular person's efforts (cf. 12). In contrast, there is no way to distinguish the act of oversleeping from the activity of the sleeping person (cf. 11). This observation is somewhat vague, but it does make the empirical prediction that semantically intransitive verbs (i.e., those without Verb Phrase arguments) and many sorts of transitive verbs (e.g., to read a book) cannot allow a PRO in the adverbial clause to have exophoric reference. As far as I can tell, this prediction is correct. In any case, if reference to the internal semantic structure of the verb at least is involved, then there is a clear difference in principle between the PRO of adverbial clauses and that of predicate complements.

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3. What can we conclude from the facts and observations presented above?

Elsewhere (Rappaport 1979), I have discussed the subject interpretation of detached adverbial participles (i.e., those set off by comma intonation), such as:

- (14) [PRO vernuvs̃is' domoj], babuška menja kormila.
'[PRO having returned home], grandma fed me.'

It was shown that the reference of PRO in such constructions is sensitive to various forms of prominence, including subjecthood (syntactic prominence), agency (semantic role prominence), topichood (functional prominence), speaker status (pragmatic prominence), and animacy (referential prominence). This complex of factors interact to give an effect which in the literary language is quite close to that of grammatical subject control, but not identical to it. The relative importance of non-syntactic prominence increases considerably in non-literary stylistic registers. It is not odd that surface syntax should affect a free deictic process (cf. the Backwards Anaphora Constraint). What would be odd is a case of bound deixis affected by such a variety of non-syntactic factors.⁸ From this, as well as from direct evidence of exophoric reference, it was concluded that the subject interpretation of adverbial participles involves free deixis, despite appearances to the contrary.

I would like to suggest that a similar phenomenon is involved in the interpretation of Russian infinitival clauses which are not predicate complements. In some cases there is direct evidence of exophoric reference, in the form of arbitrary reference. In other cases, there is no such direct evidence, and we must rely on indirect evidence, relating to the sorts of facts which deictic reference can be sensitive to. It has been shown that the possibility of exophoric arbitrary reference is conditioned, at least in part, by two sorts of semantic factors: the modality of the subordinate clause event and the internal semantic structure of the subordinate clause verb. Such factors are not⁹ known to play a role in the bound deixis of Sentence Grammar. Since the free deixis of Discourse Grammar (e.g., personal pronouns) has virtually unconstrained access to pragmatic and semantic information, we conclude that the PRO elements in infinitival adverbial clauses are free deictic elements.

In looking at infinitival adverbial clauses in Russian, we have observed that this single morphological form can involve different forms of deixis, depending upon its syntactic context. While perhaps the most typical cases uniformly point to the control of bound deixis, more careful investigation lends

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support to the proposal that the bound deixis of infinitival clauses is limited to predicate complements.

FOOTNOTES

¹See especially the following papers: Bach 1979, Brecht 1974, Bresnan 1979, Chomsky 1979, 1980, Hankamer and Sag 1976, Lasnik 1976, and Williams 1977, 1980. This brief list is intended only to illustrate the type of relevant work.

²Special attention should be paid to how terms are defined in this section. Unavoidably, new or different terminology may be used for familiar concepts.

³Personal pronouns may be restricted to intrasentential reference in certain contexts, as in Bill lost his way. We would not consider such cases to involve bound deixis, because of the agrammatical nature of the conditions constraining deixis. This point cannot be pursued here.

⁴For more detailed discussion of gerunds in English, see especially Wasow and Roper 1972, Thompson 1973, Wasow 1975, Schachter 1976, and Bresnan 1979.

⁵The converse is not true; i.e., bound deixis need not be controlled. For example, in English the reference of reflexive and reciprocal pronouns is arbitrary, within certain constraints imposed by Sentence Grammar. For example, John_i told Bill_j a story about himself_{i,j}.

⁶Chomsky (1980) assigns arbitrary reference to PRO in such cases. We are reserving this term for a very different phenomena, one which we feel is more suited to the term.

⁷This statement must be qualified. Generally in Russian, a well-defined set of non-nominative constituents share the control properties of nominative case subjects regarding reflexive pronouns and subject-controlled (i.e., non-detached) adverbial participles (Rappaport 1979, 1980). It is not apparent whether this is the result of non-nominative grammatical subjects, the diffusion of subject properties over non-subjects, or some non-discrete notion of subjecthood. In any event, the same phenomenon is observed with respect to PRO in 'before' clauses.

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⁸When the use of a bound form is optional, non-syntactic factors such as topichood can affect the likelihood or relative acceptability of the bound form. Examples from Russian are discussed in Nichols, Rappaport, and Timberlake 1980. This is a distinct question from the one being discussed here: given a bound or free deictic element, what sort of factors can constrain its reference.

⁹Timberlake (1980) argues that the rule interpreting reflexive pronouns in Russian (typically involving subject-controlled bound deixis) has access to the lexical structure of the verb, for only in these terms can cases of object reference be explained: "object reflexivization is restricted so that the target [reflexive pronoun-GR] must express a semantic function of the controller [orientation point]". Timberlake is referring to a very restricted form of semantic information, involving only predicate-argument structure. The interpretation of purpose clauses involves much more subtle distinctions: not just agency, but agency over what sort of event.

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