

Binding without Agree

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Abstract: This paper argues that Binding is possible without Agree (BWA) by examining the distribution of PRO in gerundive clauses in Russian. I show that PRO in Russian gerundives has properties of Obligatory Control despite the fact that gerundives are TP-adjuncts, which blocks Agree. BWA is explained by analyzing PRO as a definite description with a free individual concept and a bound situation variable. The paper concludes by discussing the consequences that BWA has for the theory of null subjects and syntax-semantics interface.

Keywords: binding, Agree, control, gerundives, Russian

1. Introduction

Variable binding (hereafter Binding) was borrowed by generative semanticists from logic and used in late 1960s - early 1970s to resolve (among others) a problem with deletion rules in Transformational Grammar (Partee 2014). The problem was that (1b) could not have the same derivation as (1a), in which the identical NP is deleted. Instead, it was proposed that the subject of the infinitive is a variable bound by a lambda operator or quantifier, as in (1c) (Partee 2014:10–11).

- (1) a. Mary was eager (for) ~~Mary~~ to win.
b. #Everyone was eager (for) ~~everyone~~ to win.
c. everyone'($\lambda x[x \text{ was eager (for) } [x \text{ to win}]]$)
(Partee 2014:10–11)

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A similar problem and solution were discussed for sentences like in (2):

- (2) a. John voted for himself. = John voted for John.
 b. Every man voted for himself. ≠ Every man voted for every man.
 (Partee 2014:7)

Binding appears to correlate with Agree in syntax. For example, **The Pope saw herself* is assumed to be ungrammatical because the variable of the reflexive cannot be bound due to gender mismatch (Giannakidou 2011:33). Agree here is understood as a probe-goal relation restricted by c-command, match, activation, and locality conditions, as in Chomsky (2001:4).¹ There are cases, however, that disprove the Binding-Agree correlation. Kratzer (2009) argues that reflexive possessives in direct objects show Agree without Binding (see section 4).² In this paper, I argue for a dissociation in the opposite direction, that is, Binding without Agree (BWA).

I use an observation first reported by Franks and Hornstein (1992) that secondary predicates in gerundive clauses in Russian show unexpected case restrictions. They disallow both the agreeing nominative and the so called ‘second dative’ on the secondary predicate, as schematically shown in (3) using English glosses.

- (3) John_{NOM} went to bed right away, having returned home *drunk_{NOM}/*alone_{DAT}.

¹ The definition of Agree in (i) is standardly assumed based on Chomsky (2001).

- (i) Agree: α can agree with β iff:
 a. α carries at least one unvalued and uninterpretable feature and β carries a matching interpretable and valued feature
 b. α c-commands β
 c. β is the closest goal to α
 d. β bears an unvalued uninterpretable feature (as summarized in Zeijlstra 2010)

² Kratzer (2009) defines two kinds of agreement mechanisms: *with* and *without* binding. Feature Transmission under Binding and Predication are instances of the first kind. Agree is an example of the second kind, see definitions on pp. 195–197. In Kratzer’s system Agree is defined more narrowly than in Chomskyan tradition. My proposal in this paper adds to the taxonomy in Kratzer (2009) a binding relation without Agree, as shown in (i):

(i) <i>mechanism</i>	<i>binding</i>	<i>agreement</i>
Feature Transmission, Predication (Kratzer 2009)	✓	✓
Agree (Kratzer 2009)	*	✓
BWA (this paper)	✓	*

I argue that the nominative and second dative are unavailable in (3) because Russian gerundives are TP-adjuncts. Following Stepanov (2007), I assume that adjuncts are necessarily merged post-cyclically and thus, disallow Agree. I also argue that PRO in Russian gerundives shows properties of Obligatory Control (OC), such as the requirement to have a local, c-commanding antecedent, sloppy readings under ellipsis, and an obligatory *de se* interpretation. These are the properties that are standardly associated with Binding. As a result, PRO in Russian gerundives is an example of Binding without Agree.

In section 2, I present in detail the Binding without Agree Puzzle. In section 3, I propose a solution for the puzzle. In particular, I propose to analyze PRO as a definite description with a free individual concept and a bound situation variable. First, I outline the proposal (§3.1). Then, I provide evidence for treating Russian gerundives as TP-adjuncts (§3.2). Finally, I show the advantages of using the decompositional analysis of PRO (§3.3). In section 4, I discuss the consequences of BWA for the theory of null subjects and syntax-semantics interface.

2. The Binding without Agree Puzzle

Secondary predicates in Russian have two options: they can either bear the same case as the noun they predicate of, or acquire the instrumental case, see (4). Semi-predicatives - *odin* 'alone' and *sam* '(emphatic) self' - have only the first (agreeing case) option, see (5) (Landau 2008 and references therein).

- (4) a. Ivan prišěl domoj pjanyj/pjanym.
 Ivan-NOM came home drunk-NOM/drunken-INS
 'Ivan came home drunk.'
- b. Maša našla ego pjanogo/pjanym.
 Masha-NOM found him drunk-ACC/drunken-INS
 'Masha found him drunk.'
- (5) a. Ivan prišěl domoj odin/*odnim.
 Ivan-NOM came home alone-NOM/alone-INS
 'Ivan came home alone.'
- b. Maša našla ego odnogo/*odnim.
 Masha-NOM found him alone-ACC/alone-INS
 'Masha found him alone.'

Franks and Hornstein (1992) observe that secondary predicates in gerundive clauses in Russian do not accept the agreeing case, and thus, can surface only with the instrumental case, see (8a). Instrumental is a ‘default’ predicative case in Russian unrelated to Control and is arguably assigned (or checked) structurally by PredP within the embedded clause (Bailyn 2001). Hence, (8a) shows that case-transmission is impossible in gerundive clauses in Russian. In addition, Franks and Hornstein (1992) observe that surprisingly, second dative on semi-predicatives in gerundive clauses is also unavailable, see (8b). As we saw above, second dative is related to C-control in Russian and is derived via Agree. The unavailability of second dative, thus, is an indication that C-control is equally impossible in Russian gerundives. In other words, if we assume, following Landau (2008), that case reveals Agree relations, on which Control is based, the data in (8) show that neither of the routes in (7) are available in Russian gerundives.⁵

- (8) a. [Vernuvšis’ domoj ?*p’janyj/p’janym] Ivan
 having.returned home drunk-NOM/drunk -INS] Ivan-NOM
 lëg spat’.
 lay.down to.sleep
 ‘Having returned home drunk, Ivan lay down to sleep at once.’
- b. [Vernuvšis’ domoj odin/*odnomu] Ivan
 having.returned home alone-NOM/alone -DAT Ivan-NOM
 srazu lëg spat’.
 at.once lay.dow to.sleep
 ‘Having returned home alone, Ivan lay down to sleep at once.’
 (Franks and Hornstein 1992:28–29, 31)

Note that *odin* in (8b) can bear nominative. This nominative, however, is not the agreeing case. As argued by Franks and Hornstein (1992:32–33), semi-predicatives *odin* and *sam* in examples like (8b) are frozen, adverbialized expressions, with no case-marking. Support for this analysis comes from the contrast in (9). In (9a), the subject of the main clause is dative; yet, *odin* cannot agree with it. *Odin* must remain nominative, as shown in (9b).

- (9) a. *[Slušaja ètu muzyku odnomu] emu stalo grustno.
 listening.to this music alone-DAT he-DAT became sad
 ‘While listening to this music alone, he became sad.’

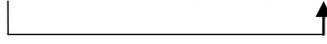
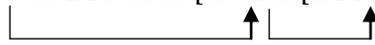
⁵ Polish shows a similar pattern, see Franks and Hornstein (1992).

- b. [Slušaja ètu muzyku odin] emu stalo grustno.
 listening.to this music alone-NOM he-DAT became sad
 ‘While listening to this music, Ivan became sad.’
 (Franks and Hornstein 1992:29, 31)

Franks and Hornstein (1992) analyze PRO in gerundives as being pronominal, rather than anaphoric. Their analysis is based on the ability of PRO in gerundives to have split antecedents. Below, I show that PRO in gerundives has anaphoric properties; therefore, Franks and Hornstein’s analysis is untenable.

To summarize the discussion so far, case marking facts indicate that Russian gerundive clauses do not use any of the two Control strategies advanced by Landau (2008). Neither the agreeing nominative nor second dative assigned by the C-head is available. This is schematized in (10):

(10) *Unavailability of PRO-control and C-control in Russian gerundive clauses*

- a. *T ... DP_{NOM} ... [CP C [TP PRO_{NOM} T ... Adj_{NOM}]]

- b. *T ... DP_{NOM} ... [CP C_{DAT} [TP PRO_{DAT} T ... Adj_{DAT}]]


The instrumental in (8a) and the apparent nominative in (8b) are uninformative. They can tell us nothing about the case of PRO and consequently, about the Control mechanisms. The instrumental is assigned by PredP of the secondary predicate and the apparent nominative is a frozen expression. In other words, whichever mechanism is responsible for Control in general (without a secondary predicate or a semi-predicative) is employed in these cases as well.⁶

The central claim of this paper is that despite the unavailability of Agree (i.e., PRO-control and C-control), PRO in Russian gerundives shows properties of OC, such as referentiality and locality restrictions on the antecedent, sloppy reading under ellipsis, and obligatory *de se* interpretation. If we follow the standard assumption that OC properties result from Binding (Chierchia 1989; Landau 2000; among others), we come to the Binding without Agree Puzzle in (11):

⁶ Landau (2008) uses only semi-predicatives to construct his theory, as they provide ‘a better tool’ for the investigation. Landau is interested in Agree and the agreeing form is obligatory with semi-predicatives, whereas it is dispreferred with secondary predicates (Landau 2008:882). By assumption, examples with the instrumental case are derived as direct PRO-Control on a par with examples with the agreeing case.

(11) *The Binding without Agree Puzzle (BWA)*

The properties that are standardly associated with Binding are (sometimes) independent of Agree.

The rest of this section demonstrates that PRO in Russian gerundives has OC properties and discusses one exception, namely, the possibility of split antecedents. Split-antecedents are characteristic of Non-Obligatory Control (NOC) rather than OC. (12) lists properties that are usually attributed to OC (e.g., Chierchia 1989; Hornstein 1999; Landau 2000, 2013; Pires 2007). Examples are from Pires (2007:177–180).

(12) *OC properties of PRO*

a. PRO needs an antecedent.

*It was never liked PRO staying up late.

b. The antecedent must be local.

*Peter_j thinks that Mary counted on PRO shaving himself_j.

c. The antecedent must be c-commanding.

*John_i's mother favoured PRO_j shaving himself.

d. Under ellipsis, only a sloppy interpretation is possible.

*John hates PRO losing and Bill does too. (= Bill hates Bill's/ *John's losing.)

e. PRO has an obligatory *de se* reading.

Only Churchill remembers PRO giving the BST speech.
(Hornstein 1999)

f. PRO cannot have split antecedents.

*Bill_i knew that Mary_j hated PRO_{i+j} hurting themselves/each other.

Starting with (12a), let us consider gerundives in impersonal sentences in Russian. One (relevant here) way to form impersonal sentences in Russian is by using *pro*_{IMP} with a verb in 3rd person plural, as in (13):

(13) *pro*_{IMP} v dver' postučali.
 at door knocked-3PL

'There was knocking at the door.'

Nikitina (2012) shows that gerundives are anomalous in impersonal sentences. According to her, this is because subjects of gerundives are high on the referentiality scale, whereas subjects of impersonal sentences are, on the contrary, low. (14a)

illustrates the anomaly. This deviance is not structural, as PRO can be bound by a referential *pro*, as shown in (14b).

- (14) a. #PRO podojdja, *pro*_{IMP} v dver' postučali.
 having.approached, at door knocked
 '*Having approached, there was knocking at the door.'
 (Nikitina 2012:25–26)
- b. Ivan vstal. Potom, PRO podojdja, *pro*_{REF} protjanul
 Ivan stood.up then having.approached extended
 mne ruku.
 to.me hand
 'Ivan stood up. Then, having approached (me), he extended his hand.'

The deviance is reinforced when the lexical semantics of a verb requires an individuated subject. This phenomenon is often used to achieve a humorous or satirical effect, as (15) from Bulgakov shows. In (15), the lexical semantics of the verb *priščjurivat'sja* 'to squint' conflicts with the impersonal use of *sprosili* 'asked-3PL' (Nikitina 2012:26).

- (15) #“To est' kak?” – *pro*_{IMP} sprosili u Nikonora Ivanoviča,
 that is how asked-3PL from N. I.
 priščjurivajas'.
 squinting
 'How do you mean? – Nikonora Ivanoviča was asked squinting.'

High referentiality status of PRO in gerundives can be also demonstrated by the minimal pair in (16). In (16), a gerundive construction is contrasted with an adjectival participle. The use of the gerundive in (16a), according to Nikitina (2012:25), gives rise to a definite and dynamic interpretation that there is only one brother who lives sometimes in Moscow, sometimes elsewhere and while living in Moscow, he does not write to me. (16b) does not have this interpretation. The participle is interpreted as a restrictive relative clause triggering the interpretation that there are more than one brother.⁷

⁷ The deviance of gerundives in impersonal constructions does not extend to the arbitrary PRO, which is often used in proverbs, as in (ia). That PRO_{ARB} is different from the referential PRO is shown by the fact that PRO_{ARB} does not need to be co-referential with the subject of the main clause, see (ib). By contrast, PRO_{REF} when non-coreferential with the subject of the main clause creates a non-normative, dangling participle situation, see (ic).

- (16) a. Živja v Moskve brat ne pišet mne.
 living-GERUNDIVE in Moscow brother not writes to.me
 ‘The brother, while living in Moscow, does not write to me.’
- b. Živuščij v Moskve brat ne pišet mne.
 living-PARTICIPLE in Moscow brother not writes to.me
 ‘A/the brother who lives in Moscow does not write to me.’

The property (12b) that the antecedent must be local is shown in (17). In (17), the possessive *svoego* ‘self’ can refer to Masha but not to Ivan. The adverb *zavtra* ‘tomorrow’ is used to ensure that the gerundive clause is not interpreted as adjoined to CP1. Gerundive clauses are anchored relative to the reference time of the clause they are adjoined to. This characteristic of gerundives will be discussed in §3.1.

- (17) [CP1 Ivan_i dumal [CP2 čto Mašaj ne uedet [PRO]_{j/*i} ne
 Ivan thought that Masha not will.leave not
 pokormiv zavtra svoego]_{j/*i} kota]]].
 having.fed tomorrow self cat
 ‘Ivan thought that Masha wouldn’t leave without having fed her/*his cat the next day.’

The property (12c) that PRO in gerundives must have a c-commanding antecedent is shown in (18). (18) cannot be interpreted that Peter’s sister left without Peter’s shaving himself. The only interpretation it has is an odd one that suggests that Peter’s sister was expected to shave herself.

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- (i) a. PRO_{ARB} za soboj slovo ne uderžav, za drugimi ne uderživajut.
 from self word not having.kept from others not keep
 ‘A gossip betrays a confidence; so avoid anyone who talks too much.’
- b. Škola byla na drugoj storone ulicy, PRO_{ARB} ne perexodja dorogu.
 School was on other side street not crossing road
 ‘The school was on the other side of the street, not crossing the road.’
- c. #PRO_{REF} podjezžaja k ciej stancii i PRO_{REF} gljadja na
 approaching to this station and looking at
 prirodu v okno, u menja sletela šljapa.
 Landscape from window on me flew.away hat
 ‘Approaching the station and looking at the landscape from the window, my hat flew away.’
 (Chekhov, NRC)

(a and b are from Nikitina 2012:23, 25)

- (18) #Petina_i sestra / #Sestra Peti_i ušla, [PRO_i ne pobrivšis’].
 Peter’s sister/ sister of.Peter left not having.shaved
 ‘*Peter’s sister left without shaving himself.’

The property (12d) states that under ellipsis, PRO has only a sloppy interpretation. This is true about PRO in gerundives in Russian, as shown in (19).

- (19) Ivan ušel [PRO ne pocelovav Mašu] i Petr tože.
 Ivan left not having.kissed Masha and Peter too
 ‘Ivan left without having kissed Masha and Peter too.’ (= Peter left without Peter/*Ivan kissing Masha.)

The property (12e) concerns the obligatory *de se* reading of PRO in OC. I model my examples on Pires (2007:179, fn. 25), who uses the scenario from Higginbotham (1992). Consider the following situation: Ivan has lost his memory. He is looking at a picture where he himself is being awarded a medal and is very happy. He is not mindfully aware that the person on the picture is himself, but he is glad that the person on the picture received a medal. Ivan thinks to himself: ‘That’s great! That guy (on the picture) received a medal!’ (20a) with PRO cannot be used to describe this situation, whereas (20b) with the pronoun can.

- (20) a. Ivan_i radovalsja PRO_i polučaja medal’.
 Ivan cheered getting medal
 ‘Ivan was pleased while getting a medal.’ (*de re/√de se)
- b. Ivan_i radovalsja kogda on_i polučal medal.
 Ivan cheered when he was.getting medal
 ‘Ivan was pleased when he was getting a medal.’ (√de re/√de se)

The last property (12f) states that PRO in OC cannot have split antecedents. This is the only property with respect to which PRO in Russian gerundives departs from PRO in OC and patterns with PRO in NOC. Consider English examples in (21). (21a), repeated from above, shows that PRO in OC cannot have split antecedents, whereas (21b) shows that PRO in NOC can. PRO in Russian gerundives can have split antecedents as shown in (22) from the Russian National Corpus (RNC).⁸ This exception will be explained in §3.3.

⁸ RNC online is available at <http://ruscorpora.ru/>.

- (21) a. *Bill_i knew that Mary_j hated PRO_{i+j} hurting themselves/each other.
 b. John_i told Mary_j that PRO_{i+j} washing themselves/each other would be fun.
 (Pires 2007:179–180)
- (22) i naš-to_i sidit s generalom_j [oba PRO_{i+j} razvalivšis'] ...
 and our is.siting with general both sitting.gracelessly
 '... and ours (= our son) is sitting with a general, both were sitting gracelessly'
 (RNC)

To summarize, PRO in gerundive clauses in Russian displays all properties of OC PRO, but one. Like OC PRO, PRO in Russian gerundives requires a local and c-commanding antecedent, has a sloppy reading under ellipsis, and an obligatory *de se* interpretation. Unlike OC PRO, PRO in Russian gerundives permits split antecedents. These properties are puzzling because Russian gerundives lack the two Control mechanisms (PRO-control and C-control) proposed for Russian infinitives (Landau 2008). The two mechanisms are based on Agree relation and detected in case-marking on secondary predicates and semi-predicatives. I labelled this situation BWA Puzzle. The next section presents a solution for this puzzle.

3. The Solution for the BWA Puzzle

3.1. Outline

The gist of my proposal is that gerundive clauses in Russian are TP-adjuncts that lack a (full) CP layer,⁹ which explains the failure of Agree. They are adjuncts merged post-cyclically (Stepanov 2007). However, the failure of Agree does not preclude PRO from having properties standardly associated with Binding because PRO is an individual concept with a bound situation variable. This analysis solves the BWA Puzzle.

More generally, this analysis shows that (syntactic) Agree is not a necessary condition for (semantic) Binding. The disassociation of Agree and Binding is not inconsequential. It shows that we need to reconsider the syntax-semantics relationship in this domain. A strong revision would be to say that Bind-if-Agree is a false correlation and has to be abandoned. A weaker revision would be to postulate

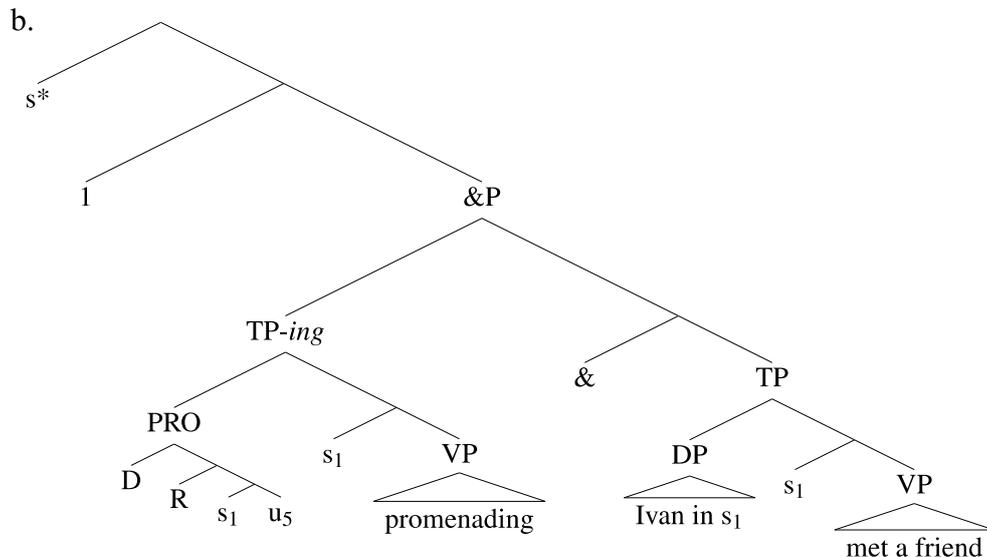
⁹ I assume that some heads from the extended CP-layer (Rizzi 1997) are present in Russian gerundive clauses. For example, a Focus Phrase can be merged above TP and host focus particles and fronted focused objects. However, gerundive clauses lack FinP, (arguably) ForceP, and the head responsible for assigning the second dative to semi-predicatives in C-Control.

an economy principle that permits Binding without Agree in definable cases. I discuss these questions in section 4.

In the rest of this section, I provide the details of my proposal and show an exemplary derivation. In §3.2, I provide evidence for analyzing Russian gerundives as TP-adjuncts. In §3.3, I discuss advantages of using individual concepts to analyze PRO.

Consider a simple sentence with a gerundive clause in (23a). I propose that (23a) has the LF in (23b) (abstracting away from tense, aspect, and subject-raising).

- (23) a. Guljaja, Ivan vstretil prijatelja.
 Promenading Ivan met friend
 ‘Ivan met a friend while promenading.’
 (based on Shvedova 1980:672)



Russian gerundives are interpreted as adverbial modifiers (Shvedova 1980). In (23b), the gerundive clause – TP-ing – is adjoined to the main clause by a (usually) silent conjunction. The conjunction may be pronounced as in the English example in (24). Note the optional presence of the event/situation bound variable *so* in (24) (Progovac 2005). In §3.2, I present evidence that Russian gerundives are adverbial adjuncts, including the fact that they appeared with an overt conjunction up to XIXth century.

- (24) John read the book, and quickly (so).
 (Progovac 2005:200, fn. 3)

Following Kratzer (2004), Wolter (2006), among others, I assume that situation variables are present in syntax and are part of the denotation not only of VPs, but also of nominal expressions. For example, I take *Ivan* to denote a definite description ‘the Ivan in *s*’ (see Fara (2015) for one of the recent proposals along these lines). s^* is a topic situation that (minimally) specifies the person under discussion (Aboutness Topic, usually the subject of the main clause)¹⁰ and the reference time. Note that the situation variables in *TP-ing* and the main clause are bound by the same index, which ensures that *TP-ing* does not have an independent reference time anchoring and PRO has anaphoric properties.

I assume, following recent works on null categories (Camacho 2013; Massam, Bamba and Murphy 2014), that PRO is a simple determiner. For the decomposition of a determiner, I use a hybrid Wolter-Elbourne representation. Like Wolter (2006), I use a Kratzer-style (Kratzer 1989) situation variable that restricts the context with respect to which the uniqueness must be satisfied. Like Elbourne (2008), I deconstruct the determiner into a definiteness marker *D*, an identity relation *R*, and a referential index. The referential index can be supplied, for example, by a pointing gesture. Alternatively, the referential index can be obtained by applying a free variable individual concept to a situation variable. PRO uses the second option. The two options are mutually exclusive, which explains the incompatibility of null categories with pointing (Camacho 2013). (25) shows the derivation of PRO.

$$(25) \llbracket \text{PRO} \rrbracket^g = D(R(u_5(s_1))) = [\lambda f_{et}. \iota x f(x)=1](\lambda y \lambda z. y=z([\lambda s. u_5(s)](s_1))) = \\ = \iota x x=u_5(s_1), \text{ defined iff there is exactly one } x \text{ such that } x=u_5(s_1)$$

¹⁰ That the relevant notion is the Information Structure, rather than a syntactic status, is suggested by the fact that PRO in Russian gerundives can be co-referential with objects, see (i). Nikitina (2012:33–34) argues that subjects of gerundives refer to the center of empathy, which sometimes can be shifted to objects. Sometimes, these examples are perceived as marginal, but the examples in (i) are naturally occurring from newspapers and interviews.

- (i) a. v Germanii, daze dostignuv 18-letnego vozrasta, invalidov ne
 in Germany even having.reached 18-years age handicaps-ACC not
 otlučaujt ot takix centrov
 exclude-3PL from such programs
 ‘Even after PRO_i having reached the age of 18, they do not exclude handicaps_i from such programs in Germany.’
- b. Buduči vpolne zrelym človekom, menja vymanil Mixalkov igrat’ Oblomova
 being enough mature person me lured M. to.play O.
 ‘PRO_i being already a mature person, Mixalkov lured me_i into playing Oblomov.’
 (Nikitina 2012:33–34)

(26) shows the derivation of (23a) based on the LF in (23b), abstracting away from tense, aspect, and subject-raising.

(26) a. $[s^* [1 [TP-ing [\& TP]]]] = [\lambda s. [[TP]]^g \& [[TP-ing]]^g](s^*) =$
 $= [\lambda s. \text{Ivan in } s \text{ met a friend in } s \& \iota x x=U_5(s) \text{ promenades in } s](s^*) =$
 $= \text{Ivan in } s^* \text{ met a friend in } s^* \& \iota x x=U_5(s^*) \text{ promenades in } s^*$

b. In words: The unique individual in the topic situation called Ivan (about whom we are talking) met a friend in this situation and (this coincides with) the unique most salient individual in the topic situation promenading.

In sum, I propose that Russian gerundives are TP-adjuncts conjoined with the main clause. The adjunct status of gerundives disallows the Agree relation between PRO and the matrix T detected by the unavailability of the nominative case on secondary predicates (case-transmission in the terminology of Landau 2008). I assume that Russian gerundives lack a (full) CP-layer, which accounts for the unavailability of second dative. PRO is a determiner with a complex structure. The anaphoric dependency of PRO comes as a result of binding of the situation variable which is part of the denotation of PRO.

3.2. Gerundives in Russian Are TP-Adjuncts

Russian gerundives (*deepričastija*) are characterized in Russian grammars as modifiers that combine meanings of a verb and an adverb (e.g., Shvedova 1980:664). Unlike English *-ing* forms, Russian gerundives do not have a nominal function, cannot be used with prepositions, and in absolute constructions.¹¹

However, like *-ing* forms in English (Duffley 2006), Russian gerundives are dependent on the main clause with respect to reference time anchoring. They can have different relations to the reference time of the main verb: 1) precedence (*ostanovivšis' skazal* 'having stopped, he said'); 2) overlap (*sedit naxmurivšis'* 'he is sitting, frowning'); 3) subsequence (*rastignul sjurtuk otkryv rubašku* 'he unzipped his jacket, revealing the shirt'), see Shvedova (1980:672). This dependency of gerundives on the reference time of the main verb is captured in §3.1 by co-binding the situation variables of the two VPs.¹²

¹¹ English *-ing* forms are a heterogeneous class. It lumps together two historically different forms: a verbal noun ending in *-ing/-ung* and a present participle ending in *-indel/-ande/-ende* (Duffley 2006:167).

¹² Also like English *-ing* forms, Russian gerundives are non-declinable morphological forms: they do not inflect for case, number, and gender.

The proposal in §3.1 is based on the claim that Russian gerundives are TP-adjuncts. This claim is supported by the following. First of all, gerundives in Russian show adverbial meanings (manner, time, rationale) that are argued to be associated with adjunct structure in other languages (Progovac 2005).

Secondly, Russian gerundives constitute a separate domain of NPI/*ni*-word licensing. *Ni*-words in Russian need a clause mate negation, see (27) (Brown and Franks 1995; Brown 1999; Penka 2010).

- (27) a. *Maša ne skazala čto Ivan nikogo vstretil.
 Masha not said that Ivan ni-person met
 [Intended] ‘Masha did not say that Ivan met nobody.’
- b. Maša (ne) skazala čto Ivan nikogo ne vstretil.
 Masha not said that Ivan ni-person not met
 ‘Masha did (not) say that Ivan met nobody.’

(28a) shows that the negation in the main clause cannot license a *ni*-word in the gerundive clause. The negation must be in the gerundive clause, as in (28b). Compare the situation in (28) with infinitives in (29). (29a) shows that infinitives are transparent with respect to *ni*-word licensing. Adding negation to the infinitive clause results in double negation, as in (29b).

- (28) a. *Ivan ne vernulsja domoj [nikogo vstretiv].
 Ivan not returned home nobody having.met
 [Intended] ‘Ivan didn’t return home without having met anybody.’
- b. Ivan vernulsja domoj [nikogo ne vstretiv].
 Ivan returned home nobody not having.met
 ‘Ivan returned home, without having met anybody.’
- (29) a. Ivan ne nadejalsja [nikogo vstretit’].
 Ivan not hoped nobody to.meet
 ‘Ivan did not hope to meet anybody.’
- b. Ivan ne nadejalsja [nikogo ne vstretit’].
 Ivan not hoped nobody not to.meet
 ‘Ivan did not hope not to meet anybody.’

The difference between gerundives and infinitives with respect to *ni*-words licensing suggests that gerundives and infinitives in Russian have different categorial

status.¹³ According to Landau (2008), Russian infinitives are weak phases, not subjects to the Phase Impenetrability Condition (PIC). In this section, I argue that gerundives are adjuncts. In other words, they constitute a separate derivational cycle, not transparent for Agree and *ni*-words licensing (Stepanov 2007).

Thirdly, as mentioned above, Russian up to XIXth century permitted an overt conjunction between a main clause and a gerundive, see (30). This is not true of modern Russian. I assume that in modern Russian, the conjunction must be silent.

- (30) a. I tako na vsjakoj mesjac vsjakogo syna
 and this on every month every son-ACC
 poseščal by i [podkreplja ix, čtob pamjatovali
 visited PART and encouraging them so.that remember
 to čemu ego na ispovedi učil]
 that what him at confession taught
 ‘And he visited every son every month and encouraged (lit. encouraging)
 them to remember what they were taught at confessions.’

- b. Ja mučajus’ i den’ i noč’ i rvusja i [stenja]
 I worry and day and night and mourn and wailing
 ‘I worry day and night, and mourn and wail.’
 (XVIIIc. Abdulxakova 2007:42)

Lastly, another historical fact suggests that Russian gerundives are TP-adjuncts: they were able to host an overt subject, as shown in (31). When this subject is co-referential with the subject in the main clause, the latter must be null (Yokoyama 1979, 1980).

- (31) a. [Sie točnye slova ja napomnja], sim vozražaju.
 these exactly words I having.reminded with.this object
 ‘With this I object, having reminded these exact words.’

- b. a [sej on jazyk uslyšav], i sam dlja
 but this he language having.heard and self for
 česti ne zaxočet drugim govorit
 proud not will.want other speak
 ‘But having heard this language, he himself will not want to speak another
 language.’
 (XVIIIc. Abdulxakova 2007:42)

¹³ I thank an anonymous reviewer for pointing out to me the categorial difference between gerundives and infinitives.

An anonymous reviewer suggests that the analysis developed in this paper predicts that a null subject of the main clause can have a disjoint reference, if the subject of the gerundive clause is overt. This is because an overt PRO does not need to be bound. I could not find such cases in the literature. However, there are examples in which the null subject of the main clause has a split antecedent, as in (32). In (32), *pro* in the main clause refers to Frol Skobeev and Luvchikov - the overt subject of the gerundive and the object of preposition.

- (32) [I Frol Skobeev prišedši k Lovčikovu], i imeli
 and F. S. having.come to L. and had
 mnogo razgovorov
 many conversations
 ‘And Frol Skobeev having come to Lovchikov, and they conversed about many things.’
 (Yokoyama 1979:104)

The remainder of this historical stage can be glimpsed in the ability of subjects of gerundives and main clauses to have mismatching cases. In (33), the subject of the main clause is dative, whereas PRO bears nominative as witnessed by the nominative on the modifier *oba* ‘both’. In §3.3, I discuss PRO modification in more detail. The case mismatch in (33) is underivable in the Agreement Theory of Control (Landau 2000, 2008). PRO in (33) does not agree with the matrix subject as would be the case in PRO-control, see (7a), nor does it bare the second dative as in C-control, see (7b).

- (33) [Oba PRO igraja černymi], čempionam ne udalos’
 both-NOM playing black champions-DAT not succeeded
 zaxvatit’ iniciativu.
 to.take initiative
 ‘Playing black, the champions did not succeed in taking the initiative.’
 (based on Nikitina 2012:23)

To summarize, this section presented evidence for treating gerundive clauses in Russian as TP-adjuncts: they have the interpretation of manner/time/rationale adverbs that are commonly analyzed as adjuncts; they constitute a separate domain for licensing of *ni*-words; up to XIXth century, they could be introduced by an overt conjunction and host an overt co-referential subject.

3.3. Individual Concepts Reloaded

Abott (2011) argues for the return of individual concepts as denotations of nominal expressions. She provides two arguments: one based on the problem with empty names, the other based on the specific/non-specific distinction in the interpretation of indefinites.¹⁴ The second argument is more relevant for us here. Consider (34). In (34a), *a logician* is ambiguous between a specific and a non-specific reading. In (34b), *a logician* can have only a non-specific interpretation, which is reinforced by the fact that specific (non-demonstrative/anaphoric) *this logician* and *a certain logician* cannot be used, see (34c). Abott (2011) proposes that the distinction between specific and non-specific indefinites is semantic (conventionalized) and can be captured if we incorporate individual concepts in our semantics. More precisely, we need to assume the distinction between *constant* individual concepts (that pick out the same individual in different time-situations) and *variable* individual concepts (that have different values in different time-situations). Specific indefinites are constructed with constant individual concepts, whereas non-specific indefinites are constructed with variable individual concepts.

- (34) a. Mary had a lunch with a logician. (✓specific/✓non-specific)
 b. Get me a logician! (*specific/✓non-specific)
 c. #Get me this (cool)/a certain logician!
 (Abott 2011:11–12)

The individual concept in PRO (u_5 in (23b) and (26)) is a constant individual concept, in the sense above. It requires there to be a specific individual in the mind of the speaker. What distinguishes PRO from specific indefinites is that it is referential rather than quantificational (PRO contains a t -operator with its presupposition).

The decomposition of PRO (and use of an individual concept) has advantages in cases where PRO is modified. As observed by Yokoyama (1979), Klenin (1980), and Franks and Hornstein (1992), PRO in Russian gerundives can be modified by the quantifiers *každyj* 'each', *oba* 'both', and an emphatic *sam* 'self'.¹⁵

¹⁴ The specific/non-specific distinction with indefinites is parallel to Donnellan's (1966) referential/attributional distinction. Abott (2011) proposes that non-specific indefinites and attributional definite descriptions can be analyzed as containing a *variable* individual concept. Specific indefinites and referential definite descriptions, on the other hand, contain a *constant* individual concept. The difference between indefinite and definite descriptions is in their presuppositional force.

¹⁵ This *sam* is different from the semi-predicative *sam* discussed in section 2. See Eckardt 2001, König, Haspelmath, Oesterreicher and Raible 2001, Gast 2006, Goncharov 2015, on different types of SELF-intensifiers.

Consider the following examples with the distributive quantifier *každyj*:

- (35) a. Matrosy ... mnogo govoriли, [každyj PRO starajas'
 sailors-NOM a.lot talked each.m-M.SG.NOM trying
 govorit' tol'ko o sebe]
 to.talk only about self
 'The sailors were talking a lot, each trying to talk only about himself.'
- b. desjatki Aleksandrovskix rassylali pis'ma ... [každyj
 tens-NOM of.Alexandrovskie sent.out letters each-M.SG.NOM
 PRO vystupaja po svoemu]
 acting on own
 'Dozens of Alexandrovskie sent out letters, each acting on his own accord.'
- c. I vse èti ljudi, [každyj PRO imeja
 and [all these people]-NOM each-M.SG.NOM having
 v vidu svoj osoblivyj predmet], sostavjat odin
 in mind self special topic will.form one
 obščij xor
 general choir
 'And all these people who each has his own topic will form one general choir.'
 (RNC)

Note again the nominative case on the quantifier. *Každyj* in Russian has an adjectival inflection and must agree with the head it modifies in gender, number, and case. The nominative on *každyj* suggests that PRO bears nominative, as well. I assume, following McFadden and Sundaresan (2011), the nominative on PRO to be a default case (rather than transmitted from the main clause).

That *každyj* in (35) is not a floating quantifier can be seen from the fact that it does not agree with the subject of the main clause in number. Additionally, in (35b), *každyj* quantifies over a quantificational expression and does not distribute over dozens of Alexandrovskie, rather over Alexandrovskie themselves. Moreover, in (35c), *každyj* cannot form a constituent with either the QP in the subject position – **každyj vse èti ljudi* 'each all these people' – or the group denoting noun – **každyj ljudi* 'each people'. See Bobaljik (2001) for some discussion of floating quantifiers.

If PRO is a simple variable, distributive quantification over PRO is not easy to construct. But if we adopt the decompositional analysis of PRO as a definite description derived from an individual concept, as in (25), examples like (35) can be analyzed on a par with regular distributive quantification (for example, adopting Matthewson's (2001) proposal that quantifiers take DPs as their arguments, i.e., are of

PRO in Modern Russian and Old Russian, and Finite *pro* in Modern Russian. The table shows that Gerundive PRO in Old Russian patterned with Finite *pro*, whereas in Modern Russian it shares most properties with Infinitival PRO. The metamorphosis of *pro* into PRO in Russian gerundives supports the desirability of a unified analysis of null subjects.

Table 1: Properties of null subjects in Russian.

property	Infinitival PRO (OC)	Gerundive PRO		Finite <i>pro</i>
	Modern Rus.	Modern Rus.	Old Rus.	Modern Rus.
requires local antecedent	✓	✓	*	*
is interpreted only <i>de se</i>	✓	✓	n/a	*
can take split antecedent	*	✓	n/a	✓
can be non co-referential	*	*	✓	✓
is used in standard alone sentences	*	*	✓	✓
can be overt	*	*	✓	✓

BWA claims that it is possible to have Binding without Agree. This is not an innocent claim. In its strongest version, it claims that the dependence of Binding on Agree is a false correlation. However, there are well-documented cases in the literature that support this dependence. For example, consider the interpretation of fake indexicals (Kratzer 2009). (37) shows that the bound reading of the possessive pronoun is possible only if its person and number features are compatible with the inflected verb in the embedded clause, which is a case in (37b), but not in (37a).

- (37) a. Ich bin der einzige, der meinen
 1SG be-1SG the-M.SG only.one who-M.SG 1SG.POSS.ACC
 Sohn versorg-t.
 son take.care.of=3SG
 'I am the only one who is taking care of my son.' (*bound reading)
- b. Wir sind die einzigen, die unseren
 1PL be-1/3PL the-PL only.ones who-1PL 1PL.POSS.ACC
 Sohn versorg-en.
 son take.care.of-1/3PL
 'We are the only ones who are taking care of our son.' (✓bound reading)
 (Kratzer 2009:191)

Kratzer (2009) explains the asymmetry in (37) by analyzing possessive pronouns as minimal pronouns bound by the little *v* in the embedded clause under Agree (Feature Transmission in her terminology). The (full) disassociation of Binding and Agree will lose this explanation.

Note, however, that in Kratzer's system Agree can exist without Binding (although not Binding without Agree), which is used to account for possessive reflexives in direct objects. In other words, in Kratzer's system two mechanisms are available: Agree with and without Binding. BWA suggests that the disassociation in the opposite direction is also possible.

The question, then, arises how to reconcile BWA with facts like in (37). One way would be to propose an economy condition following Reuland (2001). Reuland (2001) argues that two expressions can receive the same value via different processes: syntactic chain, semantic binding, or discourse storage (co-reference). These processes are ordered by their relative cost as shown in (38) with the most economical process on the left. Economy rules block a more costly process when a less costly one is available.

(38) *Economy hierarchy of cross-modular processes* (Reuland 2001)

syntactic chain < semantic binding < discourse storage

The availability of BWA, then, can be placed into the economy hierarchy in (38) presumably between semantic binding and discourse storage. I leave a precise formulation of the economy rule that allows BWA for future research.

In sum, this paper examined the distribution of PRO in gerundive clauses in Russian. The central claim of this paper is that being TP-adjuncts, gerundives do not allow Agree, but in spite of this, PRO shows properties of OC, such as referentiality and locality restrictions on the antecedent, sloppy reading under ellipsis, and obligatory *de se* interpretation. I labeled this phenomenon Binding without Agree (BWA). To account for BWA, I proposed to analyze PRO as a definite description with a bound situation variable. I showed that this proposal has additional advantages accounting for PRO modification.

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