

On Syntax-Semantics of Gapping Constructions*

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1 Introduction

Recently, an alternative semantics originally proposed for questions in English (Hamblin 1973) has been extended to natural language quantification (Ramchand 1997; Hagstrom 1998) including indeterminate phrases (Kratzer and Shimoyama 2002; Shimoyama 2006) and disjunction (Alonso-Ovalle 2006; Hulseley 2008). The key idea behind the alternative semantics is that linguistic items of the different categories have “denotation-sets” rather than denotations. For example, the proper name ‘Mary’ stands not for the individual ‘Mary’ but for the set whose only member is ‘Mary’. Similarly, indeterminate phrases and disjunction denote sets whose members are Hamblin alternatives created by an indeterminate phrase and by disjuncts, respectively. For example, a disjunction phrase ‘Mary or John’ is a set where ‘Mary’ and ‘John’ are two members of the set. Hamblin alternatives combine with other elements of the sentence (by pointwise function application) until they are caught by an operator that selects them. Only the closest available operator is able to associate with alternatives. According to this approach, several facts about the interpretation and distribution of indeterminate phrases and disjunction fall out naturally (Kratzer and Shimoyama 2002; Alonso-Ovalle 2006).

In this paper, I adopt a Hamblin semantics and extend the approach to conjunction. I propose that natural language conjunction is a set forming operator and conjoined structures denote the set whose members are Hamblin alternatives created by the conjuncts. The new approach gives a natural explanation for the syntax-semantics of gapping constructions in English and Russian, which I discuss in the paper. It provides further evidence for Hamblin alternatives as an analytical tool and sheds light on the nature of existential closure by addressing why a logical possibility people do not normally attend to – that there might be closure operations with other quantificational force, such as universal – might actually be realized.

The paper is organized as follows. Section 2 introduces core gapping data in English and Russian that produce different readings when embedded under a modal verb. Section 3 provides a brief background on gapping constructions and discusses two main approaches to gapping. In section 4, I discuss properties of gapping in Russian and argue for the small-conjunct approach for gapping in Russian. The

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syntactic structure for gapping motivated in section 4 produces some puzzling interpretation facts. Section 5 proposes an alternative semantics for conjunction and reanalyzes the puzzling data. Section 6 concludes.

2 Core data

We present the observation that modals in gapping with conjunction have both wide and narrow scope readings in Russian. The core data are given in (1) – (4).¹

- (1) Petja **možet est'** ikru, a Vanja **est'** boby.
 Petja can eat caviar and Vanja eat beans
 'Petja can eat caviar and Vanja eat beans.'
- a. $\diamond (P \ \& \ V)$
 Life is not always fair. Petja can eat caviar while Vanja eats beans.
- b. $(\diamond P \ \& \ \diamond V)$
 People have different allergies. Petja can eat caviar and Vanja can eat beans.

The sentence in (1) is a gapping sentence where the modal appears in only the first conjunct. The non-finite main verb is present in both conjuncts. The sentence has two readings. According to the first reading (1a), the modal takes wide scope over the entire coordinate structure. The wide scope reading is true just in case it is possible that Petja and Vanja both eat the foods mentioned. According to the second reading (1b), the modal takes narrow scope with respect to conjunction. The narrow scope reading is true just in case either boy can eat the food named.

The narrow scope reading of the modal is also possible if the modal is negated in Russian. Consider the following sentence (2), which has two interpretations.

- (2) Petja **ne možet est'** ikru, a Vanja **est'** boby.
 Petja not can eat caviar and Vanja eat beans
 'Petja cannot eat caviar and Vanja eat beans.'
- a. $\neg \diamond (P \ \& \ V)$
 It is not fair! Petja cannot eat caviar while Vanja eats beans.
- b. $(\neg \diamond P \ \& \ \neg \diamond V)$
 Petja and Vanja have allergies. Petja cannot eat caviar and Vanja cannot eat beans.

¹There is speakers' variation of the acceptability of the sentence in (1). A simple google search indicates that constructions with a modal scoping over coordination and a non-finite main verb in each conjunct do occur in Russian, e.g.:

(1) Politik **možet govorit'**, čto narod dolžen znat' pravdu, a žurnalist **zajavljat'**, čto
 politician can say that people must know truth and journalist state that
 'A politician can say that people must know the truth and a journalist state that ...'

I leave a more detailed investigation of the variation for future research.

In (2a), the negated modal takes wide scope with respect to conjunction. According to this reading, it is not possible that Petja eats caviar and Vanja eats beans. In (2b), the negated modal takes narrow scope with respect to conjunction. The modal and negation both distribute into each conjunct. According to this reading, Petja is not allowed to eat caviar and Vanja is not allowed to eat beans.

In the corresponding gapping construction in English, the wide scope reading of the modal is available, but the narrow scope reading of the modal is not possible, as shown in (3).

- (3) Ward can eat caviar and Sue eat gravel. (Siegel 1987)
- a. $\diamond (W \ \& \ S)$
It is possible that Ward eats caviar and Sue eats gravel.
 - b. $*(\diamond W \ \& \ \diamond S)$
Ward can eat caviar and Sue can eat gravel.

The wide scope reading of the modal is salient if the modal is negated, as indicated in (4a). The narrow scope reading of the negated modal is not available (4b).

- (4) Ward **can't eat** caviar and Sue **eat** beans. (Siegel 1987)
- a. $\neg \diamond (P \ \& \ V)$
It is not possible that Ward eats caviar and Sue eats beans.
 - b. $*\neg (\diamond P \ \& \ \diamond V)$
It is not the case that Ward can eat caviar and Sue can eat beans.

To summarize briefly, gapping with conjunction has both wide and narrow scope readings of the modal in Russian, but only wide scope reading of the modal in English. In the rest of the paper, we develop an approach to conjunction which will account for the data. I adopt a Hamblin semantics (Hamblin 1973) for conjunction and argue that conjunction denotes the set of Hamblin alternatives. The new approach will account for the data without complicating the syntax of gapping constructions. According to this approach, both conjunction and disjunction are set forming operators whose members are Hamblin alternatives formed by conjuncts and disjuncts, respectively. To distinguish between conjunction and disjunction, I claim that there might be closure operations with different quantificational force. Whereas the set of Hamblin alternatives formed by disjunction is closed by existential closure, the 'conjunction' set must be 'universally' closed (Chierchia 2004). I now provide a brief background on gapping constructions and introduce two main approaches – the large-conjunct and small-conjunct approaches to gapping. I then discuss gapping constructions in Russian and argue for the small-conjunct approach for gapping in Russian.

3 Background on gapping

Starting with (Ross 1970), sentences such as (5) have been referred to as gapping. In (5), the verb *ate* in the second conjunct is omitted but it is interpreted as if it were there.

- (5) Some **ate** natto and others rice.

In a gapping construction, a verb and other material can go unpronounced if their content can be recovered from the preceding conjunct. In the example (5), the verb *ate* of the first conjunct is the antecedent for the gap in the second conjunct. In case only a verb is gapped, the gap is called a single gap (6a). When more material is gapped, the gap is referred to as a complex gap (6b).

- (6) a. Some **ate** natto and others rice. (single gap)
 b. Some **ate the natto** hungrily and others timidly. (complex gap)

Gapping can target finite verbs (7a), or finite auxiliaries or modals (7b).² In the latter case, the main verb may retain in the second conjunct. In the paper, we will primarily be dealing with gapping structures such as (7b).

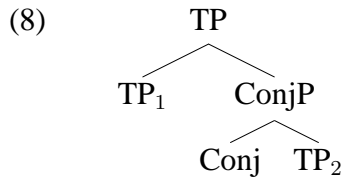
- (7) a. Jill **watched** the hockey game and Jori the luge race.
 b. Jill **will referee** the hockey game and Jori **time** the luge race.

In the theory of gapping, there are two main questions with regard to properties of gapping constructions. First question is about the size of the conjunct containing the gap. There are two main approaches to the size question. On the one hand, it is assumed that the conjunct containing the gap is much larger than it appears on the surface and that it is of the size of the ungapped conjunct. This approach is usually referred to as the large-conjunct approach (Ross 1967; Neijt 1979; van Oirsouw 1987; Wilder 1994; Wilder 1997; Hartmann 2000). On the other hand, it is hypothesized that the gapped conjunct is smaller than its ungapped counterpart. This approach has been called the small-conjunct approach to gapping (Johnson 1996; Johnson 2009; Coppock 2001; Lin 2002). Second question asks how the gap is produced. There are three approaches to the way the gap in the second conjunct is derived. According to the first approach, the gap is the result of ellipsis (Coppock 2001). According to the second approach, the 'shared' material in gapping constructions moves across-the-board (Johnson 2009). Third approach assumes that the gap is a null pro-form (Williams 1997). In this paper, we will be dealing with the size question.

According to the large-conjunct approach, bigger phrases, such as TPs, are coordinated (8).³

²These sentences are from (Lin 2002) (p.10).

³Following (Munn 1993), I assume that conjunction phrase is an adjunction in the syntax. According to this view, the conjunction and the second conjunct adjoin to the first conjunct.



Some kind of a (syntactic) reduction mechanism derives the gap, by which the verb and other material of the second conjunct get deleted under identity with material in the first conjunct. Correspondingly, the sentence in (9a) receives the parse as in (9b), where the strike-out represents reduced material.

- (9) a. John ate natto and Bill rice.
 b. [_{TP} John ~~ate~~ natto] or [_{TP} Bill ~~ate~~ rice]

The large-conjunct approach predicts that no item of the first conjunct will be able to bind an element or to scope over an element of the second conjunct. However, the prediction is not born out. The following scope and binding facts pose a problem for the large-conjunct approach (Siegel 1984; Siegel 1987; Oehrle 1987; McCawley 1993; Johnson 1996; Lin 2002). In gapping, the subject of the first conjunct binds the pronoun in the subject of the second conjunct (10).

- (10) a. No woman_i can join the army and her_i girlfriend the navy.
 b. Not every student_i bought a hat, and her_i brother a sweatshirt.

Standard assumptions about how binding works suggest that in the sentences (10), the subject of the first conjunct c-commands the subject of the second conjunct. Notice that binding is not possible in corresponding non-gapped sentences (11).

- (11) a. *_{TP} No woman_i can join the army] and [_{TP} her_i girlfriend can join the navy.]
 b. *_{TP} Not every student_i bought a hat] and [_{TP} her_i brother bought a sweatshirt.]

In (11), the whole sentences (TPs) are coordinated and a quantifier of the first conjunct cannot bind into the second conjunct. On the large-conjunct approach, the sentences in (10) are analyzed as conjoined TPs and are wrongly predicted to be ungrammatical.

In the gapping sentence in (12a), the negated modal takes wide scope with respect to coordination, receiving the non-distributed modal reading, paraphrased in (12b).

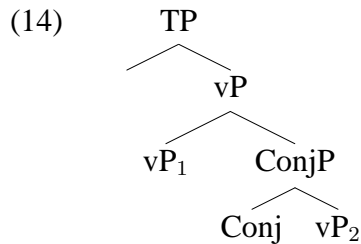
- (12) a. Ward can't eat caviar and Mary eat beans.
 b. It is not possible that Ward eats caviar and Mary eats beans.

The corresponding non-gapped sentence, conjoining two TPs, has the distributed modal reading.

- (13) [_{TP} Ward can't eat caviar] and [_{TP} Mary can't eat beans.]

On the large-conjunct approach, (12a) is analyzed as (13), but they do not mean the same thing.

According to the small-conjunct approach, smaller phrases are conjoined and “shared” material lies outside coordination (14).



According to this approach, the sentence in (15a) is a vP-coordination and has a parse as in (15b).

- (15) a. John **can** eat natto and Bill eat rice.
 b. John_i **can** [_{vP} t_i eat natto] and [_{vP} Bill eat rice]

The approach makes correct predictions about wide scope modals and cross-conjunct binding. According to this approach, finite auxiliary and modal verbs lie outside coordination, as in (15b). This allows the modals or other auxiliary operators to take scope over the coordination. The subject of the first conjunct moves out of its vP and c-commands the subject of the second conjunct correctly predicting the binding fact, as in (16).

- (16) a. No woman_i can join the army and her_i girlfriend the navy.
 b. No woman_i can [_{vP} t_i join the army] and [_{vP} her_i girlfriend the navy.]

The wide scope of modals and cross-conjunct binding facts show that a small-conjunct approach should be adopted to analyze gapping constructions in English (Coppock 2001; Lin 2002; Johnson 2009). We now discuss properties of gapping constructions in Russian. I show that properties of gapping in Russian can be accounted for if we use the small-conjunct approach. I extend the analysis to gapping in Russian and argue for a unified treatment of gapping cross-linguistically.

4 Gapping in Russian

There are two conjunctions in Russian, *i* and *a*, that correspond to the English conjunction *and*, but only the *a* conjunction can be used in gapping in Russian. Consider a minimal pair in (17), which shows that gapping is possible with *a*, but not with *i*.

- (17) a. *Ženščiny zakazali vino, a mužčiny kon’jak.*
 women ordered wine and men cognac
 ‘Women ordered wine and men cognac.’

- b. # Ženščiny zakazali vino i mužčiny kon'jak.
women ordered wine and men cognac
'Women ordered wine and men cognac.'

One of the characteristic properties of gapping is a restriction to coordination (Jackendoff 1971; Hudson 1976; Johnson 2009).

- (18) a. Some had eaten mussels and others shrimp.
b. *Some had eaten mussels because others shrimp.

(18a) is a gapping structure with coordination and it is grammatical. On the other hand, (18b) is a subordinating clause with gapping and it is ungrammatical. We observe the same distribution in Russian (19).

- (19) a. Petja kupil dom, a Vanja yahtu.
Petja bought house and Vanja yacht
'Petja bought a house and Vanja bought a yacht.'
b. *Petja kupil dom, potomučo Vanja yahtu.
Petja bought house because Vanja yacht
'*Petja bought a house because Vanja a yacht.'

Compare the grammatical coordinate structure with gapping (19a) and the ungrammatical subordinating clause with gapping (19b).

Gapping in Russian and English share syntactic properties, including locality constraints. In both languages, gapping obeys subadjacency.

- (20) a. *Kolja sel na poezd, iduščij v Peterburg, a Vanja v Moskvu.
Kolja sat on train going to Petersburg and Vanja to Moscow
'Kolia took the train going to St.Petersburg and Vanja took the train going to Moscow.' (complex NP island)
b. *Ja ušel, kogda prišel Petja, a ty Vanja.
I left when came Petja and you Vanja
'I left when Petja came and you left when Vanja came.' (wh-island)

(20) shows that gapping is not possible out of an island (Kazenin 2009). We observe the same effects in English (Johnson 2004).

- (21) a. *John wondered what to cook today and Peter tomorrow. (wh-island)
b. *I read out the order to fix tortillas, and Mary beans. (complex NP island)

Gapping in Russian shares scope and binding facts with gapping in English. The subject of the first conjunct is able to bind a pronoun in the subject of the second conjunct (22a). The corresponding non-gapped sentence does not allow cross-conjunct binding (22b). This is similar to cross-conjunct binding fact in English.

- (22) a. Ne každyj mal'čik_i budet igrat' v kukly, a ego_i sestra v zvezdnye
 not every boy will play in dolls and his sister in star
 vojny.
 wars
 'Not every boy_i will play dolls and his_i sister – star wars.'
- b. *Ne každyj mal'čik_i budet igrat' v kukly, a ego_i sestra budet igrat'
 not every boy will play in dolls and his sister will play
 v zvezdnye vojny.
 in star wars
 '*Not every boy_i will play dolls and his_i sister will play star wars.'

The contrast in (22) indicates that subject should occur outside of coordination in gapping in Russian.

When embedded under a modal verb (23a), a wide scope reading of the modal is one of the possible readings (23b).

- (23) a. Petja **možet est'** ikru, a Vanja **est'** boby.
 Petja can eat caviar and Vanja eat beans
 'Petja can eat caviar and others eat beans.'
- b. It is possible that Petja eats caviar and Vanja eats beans.

In order to take a wide scope, the modal verb should outscope coordination. This is similar to what we see in English.

Cross-conjunct binding and wide scope of modals suggest that coordination should be smaller (such as coordination of vPs) in gapping in Russian. I claim that the small-conjunct approach should be adopted for the Russian gapping constructions. This is favorable since it provides a unified analysis of gapping in English and Russian.

If we are going to adopt the small-conjunct approach to gapping in Russian, then interpretation facts of the sentence in (24) are puzzling. In particular, the narrow scope reading of modals (24b) is not accounted for under this approach.

- (24) Petja **možet est'** ikru, a Vanja **est'** boby.
 Petja can eat caviar and Vanja eat beans
 'Petja can eat caviar and Vanja eat beans.'
- a. \diamond (P & V)
 Life is not always fair. Petja can eat caviar while Vanja eats beans.
- b. $(\diamond P \ \& \ \diamond V)$
 People have different allergies. Petja can eat caviar and Vanja can eat beans.

The small-conjunct approach to gapping predicts a modal to always have wide scope with respect to coordination. On this approach, only the reading in (24a) is derived. The narrow scope readings of the modal in (24b) is not predicted, which is

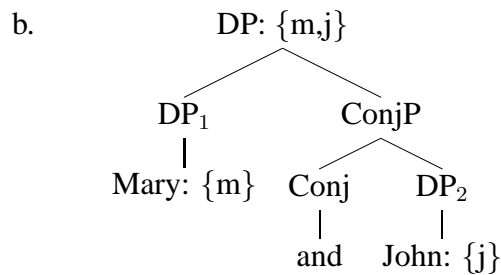
puzzling. Another puzzling fact is why narrow scope reading of the modal is available in Russian but not in English. In the next section we provide a solution to the puzzles. I argue that adopting a Hamblin semantics (Hamblin 1973) for conjunction will account for the data without abandoning the small-conjunct approach to gapping constructions. To account for the difference between English and Russian, we refer to selectivity implemented as feature checking mechanism (Kratzer and Shimoyama 2002).⁴ I propose that conjunctions can be selective in a way that they carry uninterpretable features corresponding to the interpretable features on operators. In English, *and* has an uninterpretable feature [\forall] which has to be checked by its interpretable counterpart such as a universal quantifier. In Russian, *a* has also an uninterpretable feature [\forall], but it has to be checked against an ‘inflectional category’ such as aspect. The interaction between the features and corresponding operators is subject to syntactic constraints. The latter explains why there is no wide scope conjunction reading in English.

5 An alternative semantics for conjunction

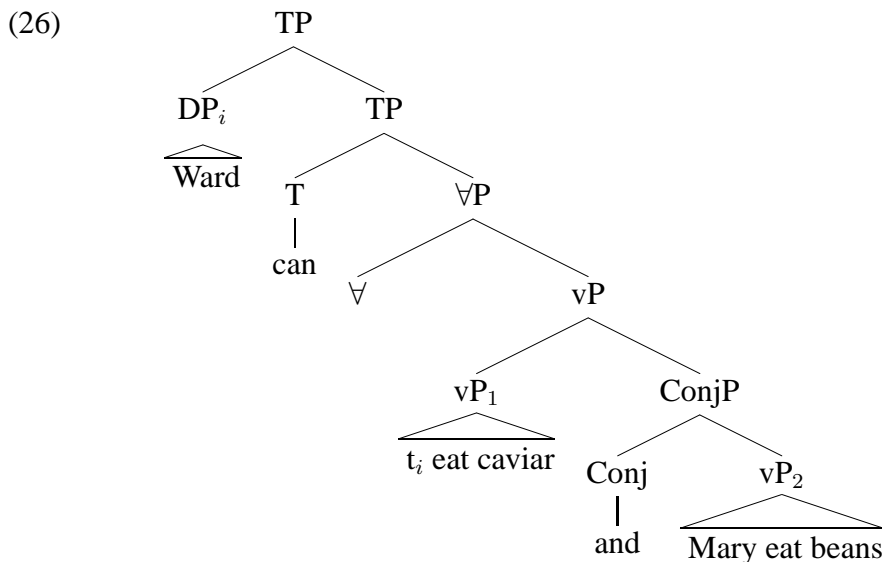
Recently, it has been argued that a set-based approach should be adopted for disjunction. In particular, a Hamblin semantics (Hamblin 1973) has been extended to disjunction (Alonso-Ovalle 2006; Hulsey 2008). On this approach, disjunction does not denote the truth-conditional logical operator \vee ; rather it introduces a set of Hamblin alternatives. Hamblin alternatives combine with other elements of the sentence (by pointwise function application) until they are caught by an operator that selects them. Only the closest available operator is able to associate with alternatives. On this approach, several facts about the interpretation and distribution of disjunction fall out naturally. If we are going to adopt a Hamblin semantics for disjunction, it is conceptually preferred to have the alternative semantics analysis for both disjunction and conjunction. I propose that the natural language conjunction introduces into the semantic derivation the denotation of its conjuncts as Hamblin alternatives created by the conjuncts. For instance, a coordination phrase in (25a) has the denotation in (25b). Henceforth, I am going to use representations with world variables instead of once with classical modal-logic operators because it will allow to model a way that things might have been.

(25) a. Mary and John

⁴Thanks to Ezra Keshet for a hint at selectivity.



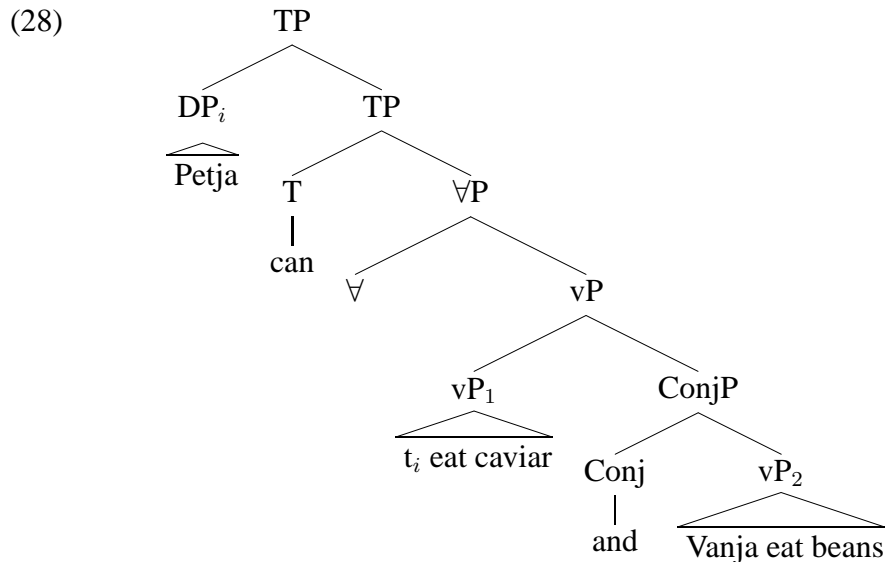
To distinguish between conjunction and disjunction, I claim that there might be closure operations with different quantificational force. Whereas the set of Hamblin alternatives formed by disjunction is closed by existential closure, the ‘conjunction’ set must be ‘universally’ closed. Existential closure operation has been introduced to account for quantificational variability of indefinites in different contexts (Kamp 1981; Heim 1982). On this view, indefinites are not existentially quantified inherently; rather indefinites introduce variables that have to be bound by some other operator in the sentence, such as an implicit existential quantifier. On this approach, existential closure operation applies at the sentence level or even at the text or discourse levels. In coordination, scope of disjunction is the point of existential closure (Alonso-Ovalle 2006; Hulsey 2008). I claim that, similar to disjunction, scope of conjunction is the point of universal closure operation realized as a universal closure phrase $\forall P$. In English, universal closure can be triggered under the scope of a modal verb resulting in a wide scope reading (26).



On a Hamblin semantics, each conjunct in (26) denotes the singleton set containing a proposition (27a). The conjunction takes the two singleton sets and returns a set with two members (27b). Next, the universal closure operation closes the set of Hamblin alternatives (27c). It gives a singleton set where every propositions is true. In the next step, the modal applies to the singleton set (27d).

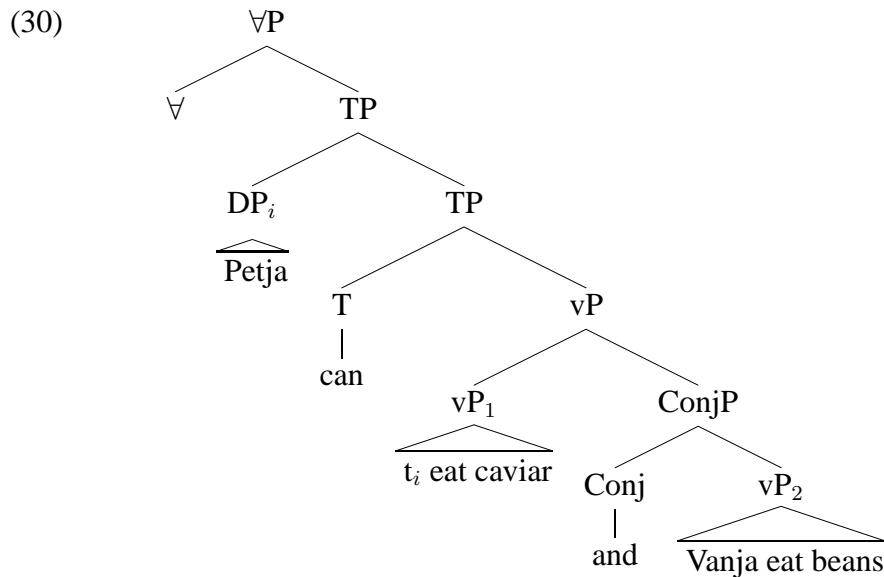
- (27) a. $\llbracket vP_1 \rrbracket = \{\text{Ward eat caviar}\}; \llbracket vP_2 \rrbracket = \{\text{Mary eat beans}\}$
 b. $\llbracket vP_1 \text{ and } vP_2 \rrbracket = \{\text{Ward eat caviar, Mary eat beans}\}$
 c. $\llbracket \forall (vP_1 \text{ and } vP_2) \rrbracket = \{\lambda w. \forall p [p \in \{\text{Ward eat caviar, Mary eat beans}\} \rightarrow p(w)]\}$
 d. $\llbracket \text{can } \forall (vP_1 \text{ and } vP_2) \rrbracket = \{\lambda w. \forall w' [w' \in D_w \rightarrow \{\lambda w''. \forall p [p \in \{vP_1, vP_2\} \rightarrow p(w'')]\}(w')]\}$
 = 1 iff it is possible that every proposition $\{\text{Ward eat caviar, Mary eat beans}\}$ is true.

We now can derive different scope readings of modal verbs in gapping in Russian. To derive a wide scope reading of the modal, universal closure operation should apply before the modal verb enters the derivation (28).



- (29) a. $\llbracket vP_1 \rrbracket = \{\text{Petja eat caviar}\}; \llbracket vP_2 \rrbracket = \{\text{Vanja eat beans}\}$
 b. $\llbracket vP_1 \text{ and } vP_2 \rrbracket = \{\text{Petja eat caviar, Vanja eat beans}\}$
 c. $\llbracket \forall (vP_1 \text{ and } vP_2) \rrbracket = \{\lambda w. \forall p [p \in \{\text{Petja eat caviar, Vanja eat beans}\} \rightarrow p(w)]\}$
 d. $\llbracket \text{can } \forall (vP_1 \text{ and } vP_2) \rrbracket = \{\lambda w. \forall w' [w' \in D_w \rightarrow \{\lambda w''. \forall p [p \in \{vP_1, vP_2\} \rightarrow p(w'')]\}(w')]\}$
 = 1 iff it is possible that every proposition $\{\text{Petja eat caviar, Vanja eat beans}\}$ is true.

We derive a narrow scope reading of the modal by applying the modal verb first and the universal closure operation afterwards (30).



- (31)
- $\llbracket vP_1 \rrbracket = \{\text{Petja eat caviar}\}; \llbracket vP_2 \rrbracket = \{\text{Vanja eat beans}\}$
 - $\llbracket vP_1 \text{ and } vP_2 \rrbracket = \{\text{Petja eat caviar, Vanja eat beans}\}$
 - $\llbracket \text{can } (vP_1 \text{ and } vP_2) \rrbracket = \{\lambda w. \forall w' [w' \in D_w \rightarrow vP_1(w')], \lambda w. \forall w' [w' \in D_w \rightarrow vP_2(w')]\}$
 - $\llbracket \forall (\text{can } (vP_1) \text{ and } \text{can } (vP_2)) \rrbracket = \{\lambda w''. \forall p [p \in \{\lambda w. \forall w' [w' \in D_w \rightarrow vP_1(w')], \lambda w. \forall w' [w' \in D_w \rightarrow vP_2(w')]\} \& p(w'')]\}$
 = 1 iff every propositions in the set (Petja can eat caviar, Vanja can eat beans) is true.

Now we can turn to the second puzzling question why there is narrow scope reading of modals in gapping with conjunction in Russian, but not in English. In the paper on indeterminate pronouns, Kratzer and Shimoyama (2002) attribute the difference in distribution between the Japanese and German indeterminate phrases to the selectivity property. In German, the indeterminate pronoun *irgendein* 'some-one' is selective. It carries an uninterpretable feature $[\exists]$ that has to be checked against its interpretable counterpart such as an existential operator. It cannot associate with the universal, question or inflectional negation operators, but only with the existential operator. For example, the sentence with *irgendein* in (32) has the readings in (32a) and (32b) but not in (32c).

- (32) **Irgendeins** von diesen Kindern kann sprechen.
 irgend-one of these children can talk
- One of those children can talk (the speaker doesn't know or care which one it is).
 - One of those children is allowed to talk (any one is a permissible option).

- c. * Any one of those children can talk (in the sense of ‘any one of those children has the ability to talk.’)

(32c) has a generic reading triggered by the presence of a universal operator, but *irgendein* cannot associate with it. Similarly, the indeterminate pronoun cannot associate with the inflectional negation ‘nicht’ (33a) or the question word ‘ob’ (33b).

- (33) a. * Ich hab’ **nicht irgendwas** gelesen.
I have not irgend-what read
‘I didn’t read anything.’
- b. Der Lehrer hat gefragt, **ob** Hans **irgendein** Buch gelesen hat.
the teacher has asked whether Hans irgend-one book read has
‘The teacher asked whether Hans read any book.’ Impossible reading:
The teacher asked whether {Hans read book a, Hans read book b, Hans read book c, . . . etc. for all books in the universe of discourse}

In Japanese, indeterminate pronouns do not have any uninterpretable features. They are not selective. A pronoun gets its interpretation depending on the operator it encounters on its way, as schematized in (34).

- (34) [indeterminate pronoun]-ka/-mo,
where -ka is a *wh*-question and -mo is a universal quantifier

On this approach, there is no need to provide different semantics for the English and Japanese indeterminate pronouns.

Following Kratzer and Shimoyama (2002), I attribute the cross-linguistic variation in coordination to the selectivity property of conjunctions. In English and Russian conjunctions are selective. In English, *and* selects for interpretable feature $[\forall]$ carried by a universal operator, triggered within the scope of a modal verb. In Russian, *a* selects for $[\forall]$ carried by a universal operator, triggered by an ‘inflectional category’, such as aspect. The way the features interact with corresponding operators determines the distribution. Let’s take a look at the English example first.

- (35) Ward can eat caviar and his guest eat dried beans.
a. Ward can \forall eat caviar and \forall his guest eat dried beans.
b. * \forall Ward can \forall eat caviar and \forall his guest eat dried beans.

The only possible reading of the sentence in (35) is the narrow scope reading of conjunction (35a), where *and* stays within the scope of the universal operator \forall triggered by the modal verb. The wide scope reading of conjunction (35b) is ruled out because expanding alternatives created by the conjunction are caught by the first universal operator \forall triggered within the scope of the modal verb. Similarly, we derive the readings in Russian.

- (36) Petja **možet est’** ikru, a Vanja **est’** boby.
Petja can eat caviar and Vanja eat beans
‘Petja can eat caviar and others eat beans.’

- a. Petja can_[+asp] \forall eat caviar and _{\forall} Vanja eat beans.
 b. \forall Petja can_[-asp] eat caviar and _{\forall} Vanja eat beans.

The narrow scope reading of conjunction (36a) is the result of *a* occurring within the scope of the universal operator \forall triggered by the modal verb, which has the feature [+asp]. In (36b), *a* takes wide scope over the modal, which has the feature [-asp], and which does not trigger the universal closure operator. In the latter case, the set of alternatives is closed by a default universal closure operation. The proposed analysis further supports “the no variation hypothesis” (Matthewson 2001), which claims that no crosslinguistic variation occurs in semantics; rather all languages share certain basic semantic structures.

6 Final Remarks

We started with addressing the interpretation puzzle in Russian gapping constructions. It emerged that gapping in Russian shares several properties with gapping in English. We have extended the small conjunct approach to gapping in Russian and argued for a unified analysis for gapping cross-linguistically. We have proposed a Hamblin semantics for conjunction and extended the proposal to coordination in Russian. To account for the difference between English and Russian, we proposed that conjunctions can be selective in a way that they carry uninterpretable features corresponding to the interpretable features on operators. In English, *and* has an uninterpretable feature [\forall] which has to be checked by its interpretable counterpart, such as a universal quantifier, triggered within the scope of a modal verb. In Russian, *a* has also an uninterpretable feature [\forall], but it has to be checked against an ‘inflectional category’ such as aspect. The interaction between the features and corresponding operators is subject to syntactic constraints. The latter explains why there is no wide scope conjunction reading in English. On the current proposal, the difference between disjunction and conjunction in English and cross-linguistically is determined by selectivity. It is interesting to see how the proposal can derive distribution facts in disjunction and conjunction outside of gapping. We address this question in the near future.

References

- Alonso-Ovalle, Luis. 2006. *Disjunction in alternative semantics*.
 Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. *Structures and Beyond: The Cartography of Syntactic Structures Volume 3*, 39–103.
 Coppock, Elizabeth. 2001. Gapping: In defense of deletion. In *Proceedings of the Chicago Linguistics Society 37*, 133–148.

- Hagstrom, Paul Alan, 1998. *Decomposing questions*.
- Hamblin, C. L. 1973. Questions in Montague English. *Foundations of Language*, 41–53.
- Hartmann, Katharina. 2000. *Right node raising and gapping: Interface conditions on prosodic deletion*. John Benjamins Publishing Company.
- Heim, Irene, 1982. *The semantics of definite and indefinite noun phrases*.
- Hudson, Richard. 1976. Conjunction reduction, gapping, and right-node raising. *Language*, 52.535–562.
- Hulsey, Sarah, 2008. *Focus sensitive coordination*.
- Jackendoff, Ray. 1971. Gapping and related rules. *Linguistic Inquiry*, 2.21–35.
- Johnson, Kyle. 1996. In search of the English middle field. *Ms., University of Massachusetts, Amherst*.
- . 2004. In search of the English middle field. *Ms., University of Massachusetts, Amherst*.
- . 2009. Gapping is not (vp-) ellipsis. *Linguistic Inquiry*, 40.289–328.
- Kamp, Hans. 1981. A theory of truth and semantic interpretation. *Formal methods in the study of language* 1.227–322.
- Kazenin, Konstantin. 2009. Russian gapping: against ATB. *FDSL 7.5*.
- Kratzer, Angelika, and Junko Shimoyama. 2002. Indeterminate pronouns: The view from Japanese. In *The 3rd Tokyo conference on psycholinguistics*.
- Lin, V, 2002. *Coordination and sharing at the interfaces*.
- Matthewson, Lisa. 2001. Quantification and the nature of crosslinguistic variation. *Natural Language Semantics*, 9.145–189.
- McCawley, James D. 1993. Gapping with shared operators. In *Berkley Linguistic Society*, volume 19, 245–253.
- Munn, Alan, 1993. *Topics in the syntax and semantics of coordinate structures*.
- Neijt, Anneke. 1979. *Gapping: a contribution to sentence grammar*. Dordrecht.
- Oehrle, R. 1987. Boolean properties in the analysis of gapping in discontinuous constituency. *Syntax and Semantics*, 20.201–240.
- Ramchand, G. C. 1997. Questions, polarity and alternative semantics. In *Proceedings of NELS 27*, 383–396.
- Ross, John Robert, 1967. *Constraints on variables in syntax*.
- . 1970. Gapping and the order of constituents. *Progress in linguistics*, 249–259.
- Shimoyama, Junko. 2006. Indeterminate phrase quantification in Japanese. *Natural Language Semantics*, 14.139–173.
- Siegel, Muffy. 1987. Compositionality, case, and the scope of auxiliaries. *Linguistics and Philosophy*, 10.53–75.
- Siegel, Muffy E. A. 1984. Gapping and interpretation. *Linguistic Inquiry*, 15.523–530.
- van Oirsouw, R. R. 1987. *The syntax of coordination*. Routledge Kegan & Paul.
- Wilder, Chris. 1994. Coordination, ATB and ellipsis. *Groninger Arbeiten zur Germanistischen Linguistik* 37.291–331.
- . 1997. Some properties of ellipsis in coordination. *Studies on universal grammar and typological variation* 59–107.
- Williams, Edwin. 1997. Blocking and anaphora. *Linguistic Inquiry*, 28.577–628.