Linearisation constraints on sentential negation in Russian Sign Language are prosodic

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Abstract

This short remark documents exceptions to the main strategy of expressing sentential negation in Russian Sign Language (RSL). The postverbal sentential negation particle in RSL inverts the basic SVO order characteristic of the language turning it into SOV (Pasalskaya 2018a). We show that this reversal requirement under negation is not absolute and does not apply to prosodically heavy object NPs. The resulting picture accords well with the view of RSL word order laid out by Kimmelman (2012) and supports a model of grammar where syntactic computation has access to phonological information (Kremers 2014; Bruening 2019).

Keywords: Russian Sign Language, negation, syntax, prosody

1 Word order and negation in Russian Sign Language

Sentential negation in RSL inverts the basic SVO order characteristic of the language (Kimmelman 2019). The basic SVO order is illustrated in (1), whereas its reversal in the presence of negation is shown in (2), both taken from Pasalskaya (2018b: 4).[1]

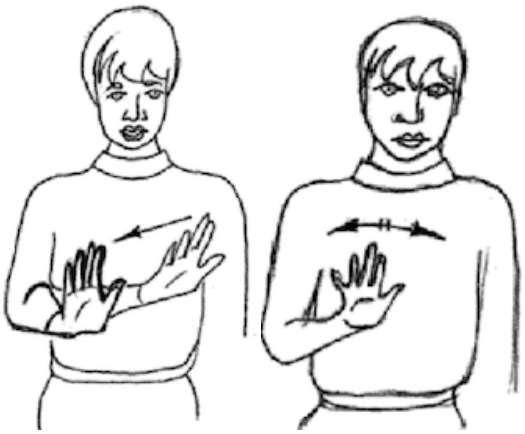
(1) BROTHER GET PRESENT
'My brother got a present.'

(2) BROTHER PRESENT $\overset{\text{hs}}{\overline{\text{GET NOT}}}$
'My brother didn't get a present.'

As shown in (2), sentential negation in RSL is realised as a combination of a manual sign, NOT, forming a prosodic unit with the lexical verb GET to yield GET NOT, that is

[1] All RSL examples follow the standard notational conventions for signed languages. All sign-language examples in this paper come from RSL and are therefore not labelled. We use the following abbreviations for non-manual markers: hn = head nod, hs = headshake, ll = left body lean, lr = right body lean.

accompanied by a non-manual marker in the form of a headshake. The manual negator is an individual sign formed with a flat, outwards-facing hand moving sideways in either a single movement, as in Fig. 1a, or a repeated movement, as in Fig. 1b. The manual negator is also frequently used on its own as a negative response particle. When used to express sentential negation, NOT must appear to the immediate right of the verb, in stark contrast to Russian and Signed Russian, where negators obligatorily precede the verbs being negated (Grenoble 1992: 331). Such V+Neg combinations are not the only strategy of expressing sentential negation, since several verbs express negation suppletively/non-compositionally — what Zeshan (2004) calls *irregular negation* (see also Kimmelman 2007 for an inventory of irregular negation markers in RSL). As for non-manual negation marking in RSL, it, like in many other sign languages, may be subject to spreading over multiple constituents within a clause and need not be restricted to the V+Neg complex (see Pfau 2016 for a representative overview and an analysis).



(a) Manual negator with single movement (b) Manual negator with repeated movement

Figure 1: Manual negator NOT (from Kimmelman 2007)

That the verb and the manual negator in RSL form a prosodic unit is evidenced by a degree of phonological assimilation that is observed when a verb involving repeated articulation is negated (Pasalskaya 2018a). More specifically, negating a repeated-movement verb suppresses the repetition so that the relevant syllable is only articulated once, followed immediately by the articulation of the manual negator.

As regards the place of RSL in Zeshan's (2006) taxonomy of ways of expressing negation across a variety of sign languages, further expanded and refined by Pfau (2016), RSL is manual dominant: to express negation, a manual marker is required whereas the non-manual marking is insufficient for the sentence to be interpreted as negative. An illustration is provided in (3), where the absence of the manual negator NOT renders the

clause unacceptable even though the non-manual marker is present.

(3) *BROTHER PRESENT $\overline{\text{GET}}^{\text{hs}}$
('My brother didn't get a present.')

The word order reversal requirement illustrated in (2) above is not absolute: in addition to the basic pattern above, whereby the negated verb must appear to the right of the direct object, Pasalskaya (2018b) also reports the non-inverted variant of the negated clause, shown in (4), as being marginally acceptable for a subset of her consultants.

(4) ??BROTHER $\overline{\text{GET NOT}}^{\text{hs}}$ PRESENT

The patterns in (2) and (4) illustrated above raise three questions pertaining to word order:

i. Why does sentential negation appear as head-final in an otherwise head-initial language?
ii. What mechanism is responsible for inverting the VO order in the presence of negation?
iii. Are the exceptions like (4) predictable?

We approach these questions in the sections to follow. Section 2 sketches an analysis of the NegP in RSL in terms of head movement, addressing question (i). Questions (ii) and (iii) are addressed in the remainder of the paper. In particular, Section 3 introduces exceptions to the word-order reversal pattern illustrated in (2). In Section 4, we formulate a preliminary analysis of the totality of the facts in terms of heavy constituent shift. Finally, Section 5 summarises our conclusions.

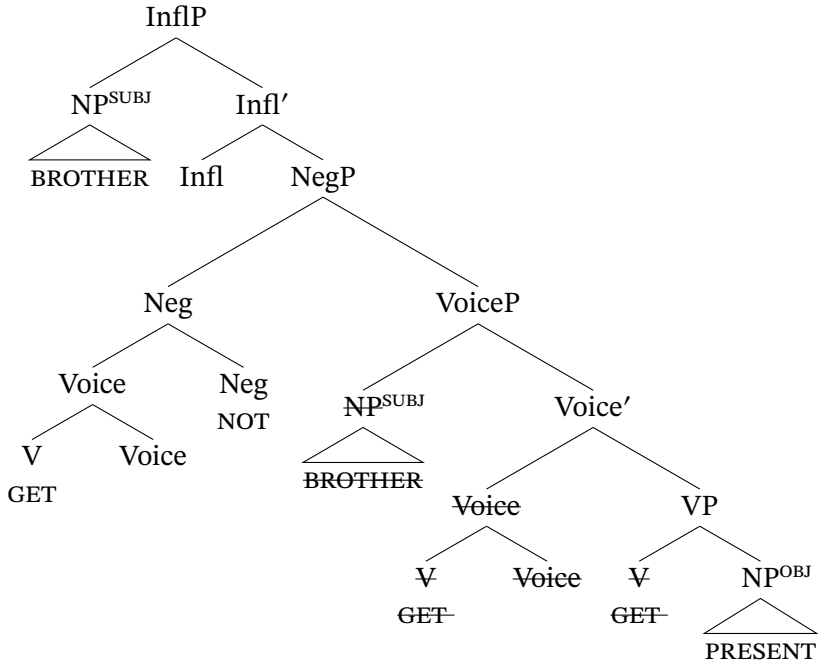
2 NegP and head movement

As regards the first question, we view the V-Neg order as a Mirror Principle effect resulting from head movement. In particular, we treat the lexical verb V as undergoing head movement to the negation head Neg and forming a complex head with it, as shown in (5), where strikethrough standardly indicates unpronounced copies of moved elements.[2] We follow the consensus view in contemporary literature on argument and event structure and treat the external argument as being introduced by a dedicated functional head, Voice (Kratzer 1996). As for the internal argument, it is generated as complement to

[2]We choose this conservative implementation for reasons of convenience but nothing crucial depends on it: as far as we can judge, everything we say is in principle compatible with other views of morphological word-building such as spanning (Svenonius 2012), affix hopping (Chomsky 1957), lowering or local dislocation (Embick & Noyer 2001), direct phonological mapping (Kremers 2015), derivational layering (Zwart 2009), morphological merger (Matushansky 2006) or morphological amalgamation (Harizanov & Gribanova 2018).

V.[3] Negation, in turn, is a functional head in the clausal spine. We further make the standard assumption that the functional head Infl is responsible for temporal anchoring and hosts the sentential subject in its specifier. Since we remain agnostic regarding the movement of the V+Voice+Neg complex to Infl, we do not represent it in our diagrams.

(5)



Before proposing a mechanism for deriving the OV order under sentential negation, we first present several exceptions to the OV linearisation requirement. These, we argue, are entirely predictable if the word order change is viewed as resulting from the application of a prosodic rule prohibiting prosodically heavier constituents from appearing to the immediate left of prosodically lighter ones. We demonstrate the validity of this prosodic rule by considering coordinated noun phrases in the direct object position of transitive verbs which are themselves embedded under sentential negation.

3 Coordinated NPs under sentential negation

The data for the present study were obtained from two deaf RSL signers during elicitation sessions in preparation of fillers and stimuli for a different study. A combination of RSL and written Russian was used to give instructions to the consultants, both of whom had had ample prior experience of being involved in elicitation and providing acceptability judgements on numerous occasions. The procedure was as follows: first,

[3] This is for simplicity only: see Kimmelman (2018) for an exhaustive discussion of RSL argument structure and Kimmelman et al. (2019) for an analysis in an event-decompositional framework.

pairs of affirmative and negative sentences containing coordinated NPs were elicited from signer 1 in a picture-description setting and recorded. The recorded sentences, both affirmative and negative, were subsequently presented to signer 2, whose task was to evaluate the availability of the conjunctive interpretation of coordination under negation. Signer 2 did not object to any of the sentences presented to them.

According to our data set, the object shift requirement formulated at the beginning of this paper consistently fails to apply if the object consists of coordinated NPs, as we illustrate in (6) and (7) below. Instead of the expected SOV+Neg order in (6), for instance, the subjects consistently produce the basic SV+NegO order in (7). The question-mark judgement in (6) has been extrapolated from the fact that the otherwise standard SOV+Neg order was never once volunteered by signer 1 during elicitation nor suggested by signer 2 when evaluating the availability of the conjunctive interpretation of disjunction under negation.

(6) ?CAT $\overline{\text{BANANA}}^{\text{ll}}$ $\overline{\text{CARROT}}^{\text{lr}}$ EAT NOT
('The cat isn't eating a banana or a carrot.')

(7) CAT EAT NOT $\overline{\text{BANANA}}^{\text{ll}}$ $\overline{\text{CARROT}}^{\text{lr}}$
'The cat isn't eating a banana or a carrot.'

The sentence in (7) involves a disjunction appearing in the scope of sentential negation. The disjunction is expressed non-manually by juxtaposing the two coordinated NPs, BANANA and CARROT, accompanied by a left body lean (notated as 'll') on the first disjunct and a right body lean, 'lr', on the second disjunct.[4] The coordinated object appears to the right of the negated verb rather than to its left. The disjunction is well-behaved with respect to De Morgan's laws, being interpreted conjunctively in the scope of negation. In contrast to negated sentences with OV orders, the V+Neg complex is not accompanied by any non-manual marking of negation. This is shown in Fig. 2.

A comment is in order on the bottom row of Fig. 2: the RSL signs for BANANA and CARROT are both multisyllabic. The sign for BANANA is iconic and involves multiple movements by the dominant hand signing the shape of individual bananas dangling off a banana bunch that is represented by the non-dominant hand in the shape of a fist, as in Fig. 2d. The CARROT sign, on the other hand, involves repeated striking movements by the index finger of the dominant hand against the index finger of the non-dominant hand, as in Fig. 2e and Fig. 2f above. In the example sentence at hand, the syllables of both BANANA and CARROT are signed twice. As regards the EAT sign, it also normally involves repetition but that repetition disappears in the presence of sentential negation, as described in Section 1 above.

[4] It is also possible that the left- and right body lean is not exclusive to expressing disjunction but is instead an all-purpose coordinator similar to COORD in ASL (Davidson 2013). As far as we can tell, this option does not affect our reasoning in any significant way, which is why we do not pursue it further.

(a) CAT (b) EAT (c) NOT

(d) BANANA (e) CARROT (f)

Figure 2: ‘The cat isn’t eating a banana or a carrot.’

The same verb-initial word order is observed in example (8) involving a different strategy of expressing coordination.

(8) HAMSTER EAT NOT $\overline{\text{BANANA}}^{\text{hn}}$ $\overline{\text{APPLE}}^{\text{hn}}$
‘The hamster is eating neither a banana nor an apple.’

The non-manual marking of coordination in (8) is distinct from that in (7) both formally and semantically: it is realised as a head nod accompanying each coordinand and, if sentential negation is absent, interpreted as conjunction rather than disjunction.

The emerging empirical generalisation, then, is as follows: when a single object NP appears in a negated sentence, its preferred position is before the V+Neg complex that is accompanied by non-manual marking of negation. When, on the other hand, the object is a coordinated NP, it follows the V+Neg complex, and no non-manual marking of negation is observable. With this—indubitably incomplete—picture in place, we now present a preliminary analysis of the facts.

4 Analysis: Heavy constituent shift

We propose, following numerous recent works on the syntax of coordination (see den Dikken 2006; Mitrović 2014 and the references therein), that coordinated objects involve phrasal coordination in the syntax and do not reduce to clausal coordination followed by ellipsis. Attempts to reduce phrasal conjunction to clausal conjunction such as Schein (2017), despite their appealing compositional uniformity, are therefore fundamentally incompatible with the present approach. This conclusion is supported by the conjunctive

interpretation of disjunction under negation in RSL in accordance with De Morgans's laws alluded to earlier (see Tang & Lau 2012: §2.2.3 for details): the negation of a disjunction is equivalent to the conjunction of negations, exactly the interpretation in (7).

Another reason to prefer the phrasal-coordination analysis is that the clausal-coordination analysis, together with its close relative the VP-coordination analysis (Ivlieva 2013; Hirsch 2016), makes a seemingly incorrect prediction regarding word order. Specifically, since it conjoins two independent clauses followed by ellipsis, the ellipsis operation can target both conjuncts individually, or parts of them simultaneously, resulting in multiple possible surface orders. Two of the manifold predicted orders are roughly schematised below.

(9) **Clausal coordination with deletion in the first conjunct**
[NP^{SUBJ} NP^{OBJ} ~~V+Neg~~] & [~~NP^{SUBJ}~~ NP^{OBJ} V+Neg]

(10) **Clausal coordination with deletion in the second conjunct**
[NP^{SUBJ} NP^{OBJ} V+Neg] & [~~NP^{SUBJ}~~ NP^{OBJ} ~~V+Neg~~]

In (9), the negated verb is deleted in the first conjunct, accompanied by the deletion of the external argument in the second conjunct; the result is the unattested verb-final order. The deletion of the negated verb in the second conjunct, as in (10), also yields an unattested order.

We further propose, in line with Jantunen (2006), that the presence of non-manual marking—be it that of negation, coordination etc.—necessarily imparts additional weight/strength to the constituent carrying this marking. For example, GET NOT, accompanied by a head shake, will be treated by the grammatical system as being heavier than the bare GET NOT without any non-manual marking. We view the negative headshake as a lexical feature of the manual negator NOT that can nevertheless be neutralised or assimilated by the non-manual marking of immediately adjacent constituents, as in examples (7) and (8) above.

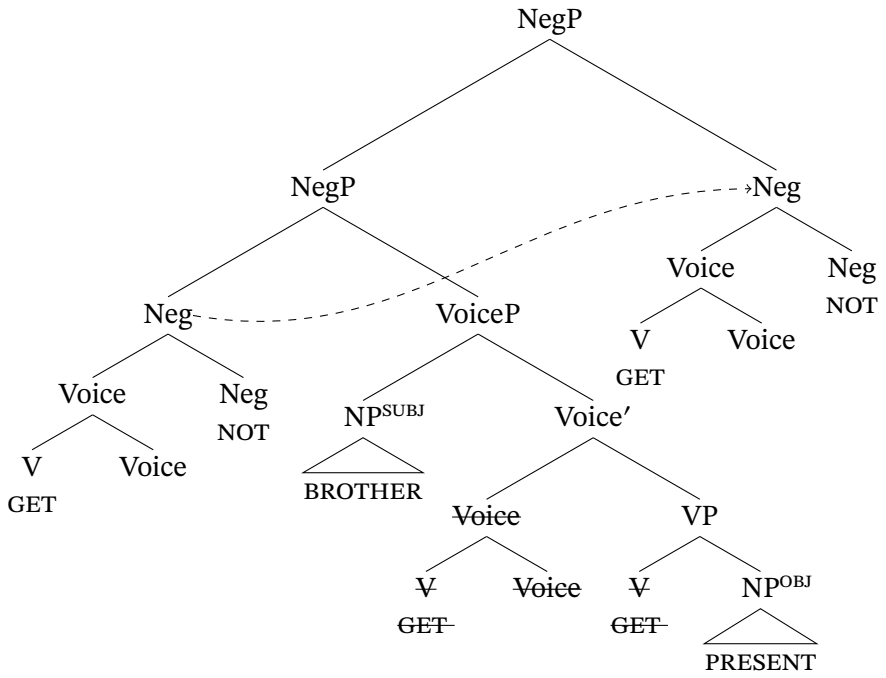
We propose that prosodically heavy constituents undergo rightwards movement and adjoin to the root of the tree, in line with traditional analyses of Heavy NP Shift and CP extraposition (Bruening 2018; see also Geraci & Cecchetto 2013 for arguments in favour of the availability and even ubiquity of rightwards movement in sign languages). This is consistent with the emerging consensus regarding the status of the sentence-final position in sign languages as hosting prosodically heavy elements (see Crasborn et al. 2012 and the references cited there for discussion). For the purposes of this paper, we adopt Kimmelman's (2012) definition of prosodical heaviness and apply it to non-nominal constituents: all syntactic objects containing more than one sign (e.g. NPs accompanied by adjectival modifiers or fingerspelling, Kimmelman 2012: 431) are heavy.

Let us first see how the basic case of word order reversal in (2), repeated here as (11), is to be derived given the current view.

(11) BROTHER PRESENT $\overset{\text{hs}}{\overline{\text{GET NOT}}}$
'My brother didn't get a present.'

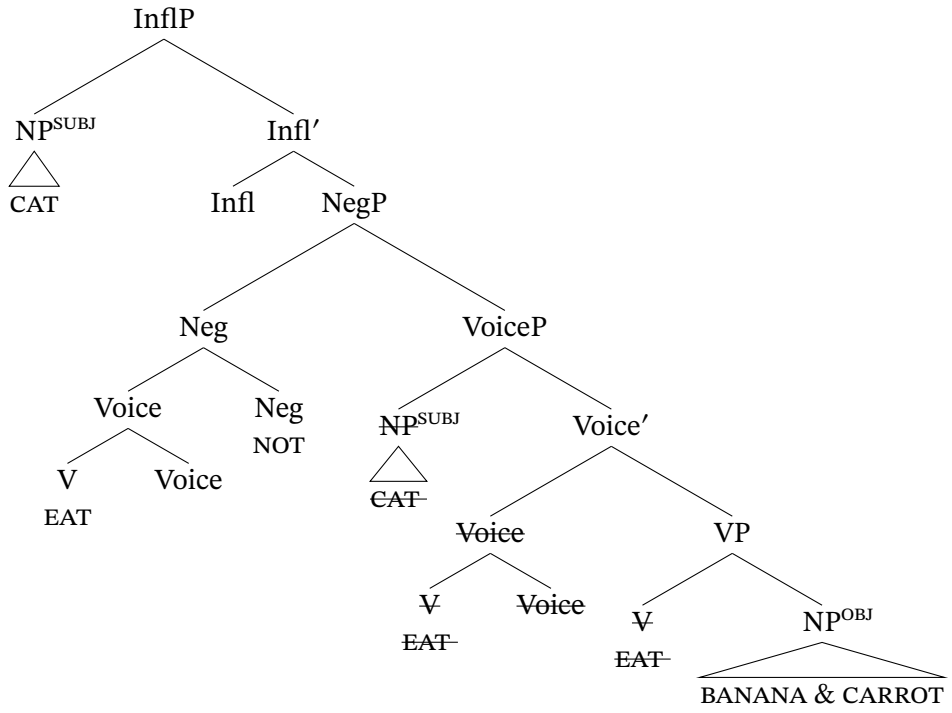
For the sake of simplicity, we restrict the illustration of our proposal to NegP, which we take to dominate VoiceP, and thus ignore the higher layers of syntactic structure as well the movement of the sentential subject, BROTHER, to Spec,InflP. Once the complex V+Voice+Neg head has been constructed via head movement, it is evaluated as being prosodically heavier than the verb's internal argument and is therefore right-adjoined to the root node, as illustrated in (12).

(12)



When it comes to coordinated NPs in (7) and (8), no prosodically conditioned rightwards movement of either the complex V+Voice+Neg head or the coordinated NP takes place. Because the coordinated NP is prosodically heavier than the negated verb by virtue of involving two NPs accompanied by the non-manual marking of coordination, the complex V+Voice+Neg head is less heavy and thus does not move.

(13)



Any analysis of RSL negation relying on the notion of prosodic heaviness predicts a degree of parallelism between heavy NPs, heavy verbs and heavy clauses: if prosodically heavy elements must appear on the right edge of the clause, clausal complements of negated verbs are also predicted to follow the V+Neg complex. The V+Neg complex in (14) and (15) below contains 'irregular negation' alluded to early on in the paper: it consists of two elements, one being a clearly identifiable KNOW, whereas the other signals negation but is distinct from the regular manual negator NOT. Because the V+Neg complex in question is still clearly a two-component sign, which we take to justify putting V+Neg complexes with 'irregular negation' in the same class as regular V+Neg complexes. Assuming that the embedded clause is heavier than the matrix verb, this prediction is borne out, as shown in (14) below.

(14) IX_1 NOT.KNOW [WHO SLEDGE]
'I do not know who is sledging.'

The complement clause must follow the negated verb even if the negated verb carries non-manual marking, as in (15) below, even though the non-manual marking in question is not that of negation. Here, too, we assume that the complement clause is heavier than the negated matrix verb. As regards the left body lean, it could be that it is signalling the lack of knowledge along the lines of Zorzi (2018), as suggested to us by an anonymous reviewer. This interpretation is consistent with the fact that the body lean expressing disjunction inside the embedded clause does not spread onto the remainder of the

embedded clause.

(15) $\overline{\text{IX}_1\ \text{NOT.KNOW}}^{\text{ll}}$ [COLD DOG $\overline{\text{WINTER}}^{\text{ll}}\ \overline{\text{AUTUMN}}^{\text{lr}}$]
'I do not know if the dog is cold in the winter or autumn.'

The present analysis also raises additional questions regarding the interaction of the various non-manual markers with each other as well as with other elements, such as agreeing verbs (Kimmelman 2012), which have also been argued to be prosodically heavy. To illustrate, it is unclear whether the grammatical system will treat negation being expressed both manually and non-manually as being heavier than manual coordination, resulting in an obligatory verb-final order. While we are unable to answer questions like this at present because the relevant data are unavailable, the analysis makes very clear and quantifiable predictions. We also have preliminary evidence showing that coordinated NPs accompanied by non-manual marking are treated as being heavier than the negated verb when negation is expressed both manually *and* non-manually. An illustration is given in (16).

(16) CAT $\overline{\text{EAT NOT}}^{\text{hs}}\ \overline{\text{BANANA}}^{\text{ll}}\ \overline{\text{CARROT}}^{\text{lr}}$
'The cat is not eating a banana or a carrot.'

Having provided an analysis of what we consider to be the core properties of sentential negation in RSL, we now turn to two additional properties of RSL negation that the existing analyses of sentential negation in RSL have taken to support an analysis in terms of secondary predication whereby the manual negator NOT forms a complex predicate of sorts with the verb and is featurally licensed by an abstract negative operator in the left periphery (see Pasalskaya 2018b for details). We show that the properties in question are fully compatible with our analysis in terms of prosodic heaviness and do not necessitate a more complicated secondary-predicate analysis.

4.1 Resultative secondary predicates

Pasalskaya (2018b) observes that the RSL manual negator NOT is in complementary distribution with resultative secondary predicates so that the resultative secondary predicate does not survive in the presence of the manual negator NOT. The relevant minimal pair is given in (17) and (18) below.

(17) BOY CL:GLASS.DRINK EMPTY
'A boy has drunk the whole glass to the bottom.' (Pasalskaya 2018b: 10)

(18) BOY CL:GLASS.DRINK $\overline{\text{NOT}}^{\text{hs}}$
'A boy has not drunk the glass.' [*ibid.*]

Whilst Pasalskaya (2018b) interprets the complementary distribution of the RSL manual negator NOT and resultative secondary predicates as NOT itself being a secondary pre-

dicate of sorts, other interpretations are possible. Acknowledging that further work is required before any definitive pronouncements can be made, we nevertheless observe that the same distribution is equally compatible with an independently available procedure of pragmatic strengthening. In particular, *The boy hasn't drunk the glass* is a stronger statement than *The boy hasn't drunk the glass to the bottom* in that the former necessarily entails the latter. Consequently, the existence of the stronger variant (i.e. the one without the resultative secondary predicate) could be viewed as a reason behind the degraded character of the weaker variant. We leave a detailed investigation of the two hypotheses for future work.

4.2 Mouthing

A second property of RSL sentential negation—mouthing—is entirely consistent with our analysis. For the purposing of mouthing (i.e. the production of visual syllables with the mouth simultaneously with signing), RSL treats the lexical verb and the manual negation marker NOT as a single unit. Whilst the marker of sentential negation in RSL follows the verb, its counterpart in spoken Russian, *ne* 'not', necessarily precedes the verb (Timberlake 2004). With these two orders superimposed, the result is the curious situation where mouthing over a signed lexical verb corresponds to *ne* whereas at the manual negator NOT is accompanied by mouthing the lexical verb. Again, Pasalskaya (2018b) interprets this property as meaning that the lexical verb and the manual negator form a complex predicate. It seems to us, however, that the only real conclusion is that the lexical verb and the manual negator form a prosodic unit, exactly as predicted by our analysis in terms of head movement (or an analogous word-forming process subject to clarification).

5 Conclusions

In this short note, we have argued that the apparent exceptions to the word-order reversal rule under sentential negation in RSL (Pasalskaya 2018a; Pasalskaya 2018b) correlate with the relative prosodic weight of particular constituents within a sentence. We have further argued that both the exceptions and the general rule of word-order reversal itself can be given a unified analysis in terms of the independently available operation of rightwards movement. We have proposed that, just as heavy NPs in spoken languages, prosodically heavy constituents, including negated verb forms, undergo rightwards movement and adjoin to the root of the tree (Ross 1967; Overfelt 2015; Bruening 2018). We have further proposed that, at least in RSL, non-manual marking counts towards an element's prosodic weight, thereby increasing the likelihood of that constituent undergoing rightwards movement. If the proposed unification is feasible, then syntactic operations such as movement/internal merge (Chomsky 2004), must be able to make

reference to both prosodic weight and linear order (Kremers 2014; 2015; Bruening 2019).

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