Null arguments in Russian Sign Language

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Abstract

Many spoken and signed languages use null arguments, that is, omission of subjects and sometimes objects (also known as pro-drop). Different languages have different conditions on when an argument can be left out. Pro-drop has been connected to both presence of rich agreement and absence of agreement altogether. There are various theories that account for the possibility of pro-drop in some or all languages. Some of these theories initially developed for spoken languages have been successfully applied to signed languages (Lillo-Martin 1986). In this paper I discuss some novel facts about pro-drop in Russian Sign Language (RSL) and suggest that pro-drop in sign languages might in fact be influenced by modality-specific factors.

Keywords: null arguments, pro-drop, role shift, classifiers, Russian Sign Language

1   Pro-drop in spoken languages

In many languages subjects, and, more rarely, objects, may have null expression in a sentence. Consider example (1) from Portuguese (Barbosa 2011a, p. 551): the subject 'they' is not expressed as an overt argument in the sentence. Unlike Portuguese, English is not a pro-drop language, so "*Arrived." is not a grammatical sentence in English.

(1)   *Chegaram*
      arrive.PST.3PL
      'They have arrived.'

There are several types of pro-drop languages that have different properties, and, according to some researchers, pro-drop in these languages might actually manifest several not necessarily related phenomena. The main types of pro-drop languages that have been identified so far (Barbosa 2011a; Barbosa 2011b) are: consistent/canonical/classical pro-drop languages, e.g. Italian, Portuguese; partial pro-drop languages, e.g. Russian, Finnish, Hebrew; semi pro-drop languages, e.g. Yiddish, German; and discourse pro-drop languages, e.g. Chinese, Japanese, Korean.

In consistent pro-drop languages, such as Italian and Portuguese, verbs have rich subject agreement, and subjects can be freely omitted, as illustrated by (1). In some languages with both subject and object agreement, both subjects and objects can be omitted (Biberauer et al. 2010). The important property of such languages is that the presence of pro-drop has been linked to the presence of rich agreement (Taraldsen 1978).

On the other hand, in partial pro-drop languages, such as Finnish, pro-drop is more constrained, and using a full pronoun is always grammatical and does not have to lead to an

emphatic interpretation. In semi pro-drop languages, such as German or Yiddish, only non-referential (typically, expletive) subjects can be omitted. Since sign languages completely lack expletives, I will not discuss this phenomenon further.

Finally, some languages, such as Chinese, Japanese, and Korean, are characterized as discourse or radical pro-drop languages. These languages lack subject or object agreement altogether, but they nevertheless allow pro-drop of both subjects and objects as long as the reference of the omitted argument can be identified (see further discussion below). For instance, in example (2) (Huang 1984, p. 533), both the subject and the object can be freely omitted.

(2)   *(ta) kanjian (ta) le.*
      he   see   he   ASP
      [Question: Did Zhangsan see Lisi?] 'He saw him.'

As mentioned above, there are various explanations of pro-drop which also vary for different types of pro-drop. One class of explanations developed specifically to account for consistent pro-drop connects it to agreement (Taraldsen 1978; Biberauer et al. 2010; Barbosa 2011a). It is quite clear that (rich) agreement is connected to pro-drop. This is confirmed not only by the observation that consistent pro-drop languages (Italian, Portuguese, etc.) have pro-drop, but also by some languages which have agreement in some contexts, and only those contexts license pro-drop. For instance, in Pashto, verbs agree with subjects in the present tense, and with direct objects in the past tense; subject pro-drop is only possible in the present tense and object pro-drop only in the past tense (Huang 1984, p. 536).

In general, the connection between rich agreement and pro-drop can be explained in two ways. On the one hand, one might argue that rich agreement licenses a null subject, for instance by valuing the ϕ-features of the deficient null pronoun,[1] or by allowing for a PF-deletion of a regular pronoun (Rizzi 1982; Holmberg 2005; Biberauer et al. 2010). On the other hand, one might argue that the rich agreement itself is a pronoun (Borer 1986), which is why no additional pronoun is needed; when a full noun phrase is used in a sentence instead of a null pronoun, this noun phrase is not the subject but a Clitic Left Dislocated constituent. The proponents of both analyses make good points, and the issue is far from being resolved.

If pro-drop is licensed by rich agreement, it is of course necessary to define what type of agreement counts as rich. Several approaches have been proposed. For instance, Speas (1995) argued that a language allows pro-drop if Agr is generated as a morpheme (and not when it is base-generated on the verb), and Agr is generated as a morpheme if in at least one number and one tense the person features for the first and second person are distinctively marked, and in at least one person and one tense the number feature [singular] is distinctively marked. Müller (2014) suggested that rich agreement is present when the agreement morphology has not undergone the operation of Impoverishment (in the Distributed Morphology sense). All these proposals thus try to formulate precise conditions on what type of agreement morphology is rich enough to allow pro-drop, but all have some empirical problems (see for instance Neeleman and Szendrői (2007)).

As for languages without agreement, Huang (1984) developed an analysis of pro-drop in Chinese and argued that the possibility of pro-drop was connected to the fact that this languages is discourse-prominent and allows zero topics. According to his analysis, null elements come in two different types: real pronouns (pronominals) and variables. All null elements have to be identified, but pronouns are identified by antecedents, while variables can

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[1]Within this approach, there is a discussion of whether the deficient null pronoun can get its ϕ-features valued by the T, because these features on T should be uninterpretable (Holmberg 2005).

be bound by (zero) topics, but only in discourse-oriented languages. Zero topics, in turn, are licensed by the discourse topics: in part of discourse with the same discourse topics, sentence topics referring back to the discourse topics can be freely omitted in discourse-oriented languages.

In Huang's account discourse pro-drop is connected to the discourse-oriented nature of such languages. An alternative direction of research tries to connect discourse pro-drop to the nature of arguments in such languages. Specifically, Tomioka (2003) argued that only languages which have robust bare NP arguments (e.g. Chinese, Japanese, Korean) have discourse pro-drop. In his analysis, discourse pro-drop is just an instance of NP-ellipsis. In languages that lack the DP layer, NP-ellipsis leads to null arguments (see also Saito (2007) for a related account).

Another analysis for discourse pro-drop languages has been proposed by Neeleman and Szendrői (2007). They formulate the following generalization: discourse pro-drop is only possible in languages with agglutinative nominal morphology. They argue that, in such languages, there is a competition between spelling out the inflected pronoun or the null pronoun, and neither option inherently wins, because the inflected pronoun is more specific, but the null spell-out rule targets a higher node. In languages without agglutinative morphology, both the null spell-out rule and the rule spelling out the pronoun target the same node, but the latter rule is more specific and thus should win the competition.

To sum up, the pro-drop phenomenon appears not to be homogeneous, and often different analyses are suggested for languages with consistent pro-drop and for languages with discourse pro-drop, although some attempts at a general theory are made as well. In general, there are three major classes of ideas about what can license pro-drop: (1) verbal agreement (in consistent pro-drop languages); (2) discourse topics (in discourse pro-drop languages); (3) some properties of arguments (e.g. bare NP arguments or agglutinative morphology). Some theories also combine some of these factors to account for pro-drop of different types. I now turn to the discussion of pro-drop in signed languages.

2   Pro-drop in signed languages

In an influential paper, Lillo-Martin (1986) claimed that American Sign Language (ASL) combines two types of null arguments: Italian-style pro-drop licensed by verbal agreement, and Chinese-style pro-drop licensed by discourse topics. Specifically, she observed the following facts: 1) arguments can be dropped with both agreeing and non-agreeing verbs; and 2) verbal agreement allows pro-drop to occur in contexts in which plain verbs do not allow it.

In the simplest case, both subject and object can be dropped with both plain and agreeing verbs (Lillo-Martin 1986, p. 421). This means that ASL indeed has Chinese-style pro-drop (Huang 1984) licensed by discourse topics. However, in some contexts, null arguments of plain verbs are not allowed, while null arguments of agreeing verbs are grammatical. For instance, in (3), the plain verb does not allow a null element in the original object position connected to the topic 'that cookie', while in (4), the agreeing verb licenses the null object (Lillo-Martin 1986, pp. 423-424).

(3) $\overline{\text{top}}$
        $\overline{\text{THAT }_a\text{COOKIE,}}$ $_1$INDEX HOPE $_b$SISTER SUCCEED $_b$PERSUADE$_c$ $_c$MOTHER EAT *($_a$INDEX)
        'That cookie, I hope my sister manages to persuade my mother to eat it.'

(4) $\overline{\text{top}}$ $\overline{\text{br}}$
        $_a$THAT $_a$MAN, $_b$JOHN SAY $_c$MARY FINISH $_c$GIVE$_a$ BOOK

'That man, John said Mary already gave a book to him.'

This means that verbal agreement in ASL, similarly to verbal agreement in consistent pro-drop languages (Barbosa 2011a), can license pro-drop. ASL is different from, for instance, Italian, in the fact that it has both subject and object agreement, so both subject and object pro-drop can be licensed by agreement.

Glück and Pfau (1998) replicated Lillo-Martin's finding for German Sign Language (DGS), where, they argued, agreeing but not plain verbs license pro-drop in certain contexts. Importantly, they also showed that classifier predicates license pro-drop as well. Specifically, whole-entity classifiers license subject pro-drop (5), while handling classifiers license object pro-drop (6), because the handshape refers to the object. They used this to argue that classifier morphemes are in fact agreement morphemes.

(5) $\overline{\text{PENCIL}_a,}$ $\overset{\text{top}}{}$ CHILD THINK, (IT$_a$) HILL$_b$ CL$_{we}$(PENCIL)-$_b$ROLL
        'This pencil, the child thinks, is rolling down the hill.'

(6) $\overline{\text{GLASS}_a,}$ $\overset{\text{top}}{}$ CHILD THINK, MAN (IT$_a$) TABLE$_b$ CL$_{hl}$(GLASS)-$_b$TAKE
        'This glass, the child thinks the man takes it off the table.'

van Gijn and Zwitserlood (2006) replicated Lillo-Martin's and Glück and Pfau's findings for Sign Language of the Netherlands (NGT). They analyze both location verbal agreement and classifier morphemes as instances of agreement, and demonstrate that both types of agreement can license pro-drop.

So far, the picture that emerged from ASL, DGS, and NGT, is as follows: sign languages allow discourse pro-drop; it can be licensed by agreement (both location-based and classifier-based), and pro-drop licensed by agreement can "save" otherwise ungrammatical structures where discourse pro-drop is prohibited.

Therefore, a combination of analyses for consistent pro-drop languages (in the style of Rizzi (1982)) and for discourse pro-drop languages (in the style of Huang (1984)) is able to handle pro-drop in signed languages as well. However, in a series of recent works, Koulidobrova (2010; 2012; 2017) argued that, in ASL, null arguments behave in a way not exactly in agreement with previous research. Specifically, in her 2017 paper, Koulidobrova demonstrates that null arguments in the context of topicalization (as in (3) and (4)), are actually grammatical in ASL, if the topicalized argument has not been assigned a location (7).[2]

(7) $\overline{\text{THAT COOKIE,}}$ $\overset{\text{top}}{}$ $_1$INDEX HOPE $_b$SISTER SUCCEED $_b$PERSUADE$_c$ $_c$MOTHER EAT
        'That cookie, I hope my sister manages to persuade my mother to eat it.'

Koulidobrova (2017) proceeds to discuss what type of null element such null objects in ASL in fact manifest. She argues that they cannot be instances of transitivity alternations, Deep Anaphora, VP-ellipsis, or an indefinite *pro*. She concludes that they are in fact produced by NP-ellipsis, partially based on proposals for Japanese by Tomioka (2003) and Saito (2007). This is further confirmed by the fact that ASL allows bare NP-arguments, and null arguments can have any of the interpretations that bare NP-arguments have.

To sum up, for signed languages, the most common approach was to connect some instances of pro-drop to verbal agreement, and some instances to discourse topics. However, recently pro-drop has been connected to some properties of the arguments, namely the availability of bare NP-arguments and NP-ellipsis in ASL.

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[2]There are other criticisms of Lillo-Martin analyses discussed in Koulidobrova's papers and elsewhere.

3   RSL data

I tested the relation between null arguments and verbal agreement (for agreeing verbs and classifier predicates) in Russian Sign Language (RSL). Based on the previous research, my expectation was that discourse pro-drop should be available with any verbs in RSL, but that agreeing verbs and classifier predicates should be able to license pro-drop in the cases where binding of the null element by a topic is not available. I was also especially interested in the possibilities of pro-drop with different types of classifier predicates, including handling classifier predicates describing a touching action. I will return to the issue why this context is especially important later.

3.1   Data collection

Looking at corpus data (Burkova 2015), it is clear that both subjects and objects in RSL can be null with plain and agreeing verbs, and with classifier predicates. However, it is necessary to test whether this would also hold in embedded contexts where identification of the referent by the discourse topic might be problematic.

In order to investigate this further, I created a questionnaire in Russian, with the following sentence types: plain verb + subject pro-drop; plain verb + object pro-drop; agreeing verb + subject pro-drop; agreeing verb + object pro-drop; whole-entity classifier predicate + subject pro-drop; handling classifier predicate (holding) + object pro-drop; handling classifier predicate (touching) + object pro-drop.

For all contexts, I created sentences with topicalization where the potentially zero element would be in an embedded sentence. For instance, the following sentence was used to test object pro-drop with plain verbs, as BUY is a plain verb in RSL:

(8)   This book, the boy thinks that the man bought (it).

For each context, I created five items, which resulted in 35 test items. I then asked a native signer to translate these sentences into RSL (which I recorded) and also to provide grammaticality judgments for these sentences replayed as video recordings on a separate day. In addition, I asked two more native signers to provide grammaticality judgments for these recorded sentences. Their judgments were highly consistent and strongly indicate the (un)grammaticality as discussed below.

3.2   Results

In the context of topicalization from an embedded sentence, plain verbs do not allow pro-drop of either the subject or the object, as examples (9) and (10) show. Both examples are grammatical if an overt pronoun is used instead.

(9)   *$\overline{\text{MAN IX}_a}^{\text{top}}$, BOY THINK BUY BOOK
        'This man, the boy thinks he bought a book.'

(10)   *$\overline{\text{BOOK IX}_a}^{\text{top}}$, BOY THINK GIRL$_b$ BUY DONE
        'This book, the boy thinks that the girl bought it.'

It is not exactly clear what grammatical principle prevents the null subject in (9) to be linked to the over topic of the sentences. The generalization seems to be that the null pronoun cannot be bound by a topic, if there is another intervening potential antecedent available (even though this intervening antecedent is not topical). So in (9) the null pronoun cannot refer to the topic (the man) because of the intervening potential antecedent (the boy).[3] In (10) there are two intervening NPs between the null pronoun and the topic. It is crucial that these sentences are perceived as ungrammatical in contrast to parallel structures with classifier predicates, discussed below.

Surprisingly, agreeing verbs reveal the same pattern: neither subjects (11) nor objects (12) can be dropped, despite the presence of agreement.

(11) $*\overline{\text{GIRL IX}_a}^{\text{top}}$, FATHER THINK $_a$LIE$_b$ BOY$_b$
      'This girl, the father thinks she lies to the boy.'

(12) $*\overline{\text{GIRL IX}_a}^{\text{top}}$, FATHER THINK BOY$_b$ $_b$LIE$_a$
      'This girl, the father thinks that the boy lies to her.'

However, classifier predicates do allow pro-drop in the same contexts. Whole-entity classifier predicates allow subject pro-drop (13), and handling classifier predicates allow object pro-drop, for both holding (14) and touching (15) scenarios.

(13) $\overline{\text{GIRL IX}_a}^{\text{top}}$, FATHER THINK FUTURE CL$_{we}$(PERSON)-MOVE$_1$
      'This girl, the father thinks she will come towards us.'

(14) $\overline{\text{CAR SMALL IX}_a}^{\text{top}}$, GIRL THINK $\overline{\text{IX}_b \text{ BOY IX}_b}^{\text{top}}$ TABLE CL$_{hl}$(CAR)-MOVE+CL$_{we}$(TABLE)-BE
      'This toy car, the girl thinks that the boy moved it to the table.'

(15) $\overline{\text{CAR SMALL IX}_a}^{\text{top}}$, GIRL THINK $\overline{\text{IX}_b \text{ BOY}}^{\text{top}}$ TABLE CL$_{hl}$(HAND)-MOVE+CL$_{we}$(TABLE)-BE
      'This toy car, the girl thinks that the boy pushed it from the table with the back of his hand.'

That pro-drop is grammatical even in the touching scenario in (15) is important because, in such cases, the handshape does not unambiguously identify the shape of the object that is being dropped.

4   Problems for previous analyses

It appears that RSL data is different from the signed languages described before (namely ASL, DGS, and NGT) cannot be accounted by any theory of pro-drop proposed for signed languages previously (Lillo-Martin 1986; Glück and Pfau 1998; van Gijn and Zwitserlood 2006; Koulidobrova 2017). In all other sign languages verbal agreement licenses pro-drop where plain verbs do not allow it. However, in RSL, agreeing verbs do not license pro-drop in the contexts with topicalization, while classifier predicates do. Since in ASL, DGS, and NGT

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[3]The interpretation where the null subject refers to the boy is possible, but then the topic is not connected to the sentence in any meaningful way, so the whole structure is still ungrammatical.

agreeing verbs do allow pro-drop, any account developed for them that connects pro-drop to agreement (Lillo-Martin 1986; Glück and Pfau 1998; van Gijn and Zwitserlood 2006) does not apply to RSL. Even more problematically, classifier predicates in RSL license pro-drop, which means that it is not feasible to analyze classifiers as agreement markers in RSL, contrary to the common position in the literature (Glück and Pfau 1998; van Gijn and Zwitserlood 2006).

Koulidobrova (2017) developed an account of ASL where agreement does not play a role. In her approach, pro-drop is available because bare NP-arguments and NP-ellipsis is available. Although this is more compatible with the RSL data, where verbal agreement does not license pro-drop, it does not explain the behavior of classifier predicates.

If we turn to analyses developed for spoken languages, it might be possible to apply the idea of meager agreement (Speas 1995; Müller 2014) to the RSL data. One might suppose that agreement in RSL is somehow deficient, while agreement in ASL, DGS, and NGT is not. Furthermore, classifier agreement in RSL is rich, while agreement in agreeing verbs is meager. However, several problems arise.

Firstly, although I have not investigated this issue in detail, agreement in RSL seems to have the same general properties as in other signed languages described so far: verbs in RSL can be inflected for both subject and object agreement.

Secondly, it is not exactly clear what meager or impoverished agreement would look like in a signed language. Specifically, Speas (1995) defines meager agreement as agreement which is stored together with the verb in the lexicon, while rich agreement constitutes a separate morpheme. However, it is clear that inflected verbal forms are not stored in the lexicon, because there are potentially infinitely many such forms. For Müller (2014), meager agreement emerges when some person or number features are systematically neutralized in agreement morphemes. However, it is questionable that person or number features are expressed in verbal agreement in sign languages at all. Nevertheless, it might be interesting to study the agreement "paradigms" in various sign languages in order to check whether some variation in agreement correlates with variation in pro-drop licensing.[4]

It is also clear that an approach in terms of discourse prominence (Huang 1984) could not account for all the data. Examples discussed in the previous section have identical structures, and all of them involve an overt clearly marked topic which in principle should be able to license pro-drop, but pro-drop is only licensed for classifier predicates.

A different set of approaches (Tomioka 2003; Saito 2007; Neeleman and Szendrői 2007) involves looking for the explanation in the properties of arguments: whether NP-ellipsis is available, or whether pronouns have agglutinative morphology. Again, these accounts are problematic for the simple reason that they do not predict a difference in pro-drop possibilities for different types of predicates. An additional complication for an account like Neeleman and Szendrői (2007) would be to determine whether pronouns in sign languages have agglutinative morphology, given the fact that it is also questionable whether pronouns express such features as person or number (van Gijn and Zwitserlood 2006).

5   Another datum: role shift

A fact that might be revealing of the nature of the relation between pro-drop and classifier predicates is that role shift licenses pro-drop as well, and in contexts where topic licensing

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[4]Studying agreement restrictions has been done for ASL, DGS, British SL, Australian SL, and Spanish SL (Mathur and Rathmann 2001; Mathur and Rathmann 2006; Costello 2015), and in all of those language phonological restrictions on realizations of some agreement forms have been found. It is, however, questionable, whether such phonological restrictions would qualify as morphological impoverishment.

for plain or agreeing verbs is not expected. The crucial pattern is illustrated by (16).

(16) e_i $\overline{\text{U-R-G-E-N-T-L-Y}}^{\text{rs-a}}$. e_j $\overline{\text{CALM}}^{\text{rs-b}}$.
        '[I say]: do it urgently! They are calm.' (example from the corpus)

In this example, the arguments whose words or actions are marked with role shifts are left unexpressed. In other words, the person whose role the narrator takes is not overtly specified before the role is taken. Importantly, this happens even when two role shifts into two different persons follow each other, so in the contexts of topic shift. This contrasts the behavior of pro-drop in the context of role shift to pro-drop with plain or agreeing verbs. As discussed above, pro-drop is allowed when the dropped referent has been mentioned in the previous clause, but it is not allowed when there are other intervening potential antecedents for the pronoun (9-12). However, in (16), the reference of e_j is not identified by the reference of e_i: the e_i intervenes between the e_j and its antecedent, but it does not lead to ungrammaticality.

Role shift has been analyzed in many different ways. One common way to analyze the shift itself as a predicate, and the person whose role is taken by the signer as the subject of this predicate (Lillo-Martin 1995). An alternative is a mono-clausal analysis (Davidson 2015), where role shift is a marking associated with the "embedded" predicate. Whatever the analysis, it is crucial that the 'controller' of the role shift is the subject of either the point-of-view predicate or of the verb itself. And it appears that either this point-of-view predicate, or regular verbs in combination with role shift, behave differently from plain and agreeing verbs, but similarly to classifier predicates with respect to pro-drop.

6   The role of demonstration

What is the common ground between classifier predicates and role shift? Both types of constructions are highly iconic. Recently, Davidson (2015) developed an analysis of the iconic components of both classifier predicates and role shift constructions by involving the notion of demonstration.

A demonstration, informally, is some act performed by the speaker/signer, which reproduces some properties of the event that is being described. For instance, in spoken languages demonstration is involved in contexts of quotation. Similarly, for CLPs in ASL, Davidson (2015, p. 495) suggests that, in addition to the linguistic elements (the classifier morpheme, the verbal root, etc.), the movement of the sign is a demonstration.[5] For instance, the meaning of (17) is (18). In her analysis, the classifier morpheme has a meaning (the *flatobject* part of the semantics), and the verbal root has the meaning (moving(e)), but, additionally, there is a demonstration, which means that the movement of the hand in some relevant aspects resembles the movement of the book. The meaning of demonstration is given in (19).

(17)   BOOK CL_{we}(BOOK)-MOVE
        'A book moves.'

(18) $\exists e.[\textit{theme}(e,book) \wedge \textit{flatobject}(x) \wedge \textit{moving}(e) \wedge \textit{demonstration}(d_1,e)]$

(19)   [[the gestural movement of the hand]]=d_1

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[5] Specifically, for Davidson (2015), the demonstration is an argument of the classifier predicate, together with the other arguments.

For action-report type role-shift, a very similar analysis is developed (Davidson 2015, p. 505). In (20), action-report role shift is present (on the verbal sign SHOW). The meaning that Davidson derives for in (21) contains a demonstration argument (22), which means that the actions of the signer under role-shift are interpreted iconically in some relevant respects.

(20) $\overline{}$
                         rs
       IX$_b$ IPHONE $\overline{\text{SHOW}}$
       '[The wolf] showed an iPhone [like this].'

(21) $\exists e.[\mathit{agent}(e,\text{wolf}) \land \mathit{theme}(e,\text{iphone}) \land \mathit{showing}(e) \land \mathit{demonstration}(d_1,e)]$

(22)   [[gesturally appropriate handhsape and movement]]=d$_1$

Returning to pro-drop in RSL, the following generalization can be formulated: for plain and agreeing verbs, null arguments are allowed only when their reference can be identified by the nearest antecedent, but for classifier predicates and predicates marked with role shift, the restriction does not apply.

    My theory is that the second part of this generalization is connected to the presence of demonstration. Informally, when the signer enters demonstration mode, restrictions on identification of referents are relaxed. This happens because demonstration itself is not completely linguistic, so the language-specific rules are not obeyed. This intuition is supported by the well-known fact that classifier predicates also violate some phonological restrictions, such as Battison's symmetry condition (Battison 1978).

    The question is how to formalize this intuition, for instance in Davidson's framework. One way is to say that, in the presence of demonstration, argument structure of the predicate can be adjusted by removing arguments. This is formalized in (23). This means that a verb that expresses an event with a particular set of arguments might also express the same event without arguments in the presence of demonstration.

(23)   Argument structure adjustment by demonstration:
       $[[\text{Verb}]] = \lambda d.\lambda e.\lambda x.[\mathit{theme}(e,x) \land \mathit{event}(e) \land \mathit{demonstration}(d,e)] \Rightarrow$
       $\lambda d.\lambda e.[\ \mathit{event(e)} \land \mathit{demonstration}(d,e)\ ]$

Let's apply this to an example with a whole-entity classifier, repeated here as (24). The full meaning of the embedded clause is 'there will be a moving event, and the theme of the moving event is the girl, and there is a person who is the girl, and there is a demonstration of the movement' (25). However, due to the argument structure adjustment, the clause is interpreted as 'there will a moving event, and there is a person, and there is a demonstration of the moving event' (26).

(24) $\overline{}$
              top
       $\overline{\text{GIRL IX}_a}$, FATHER THINK FUTURE CL$_{we}$(PERSON)-MOVE$_1$
       'This girl, the father thinks she will come towards us.'

(25) $\exists e.[\mathit{theme}(e,\text{girl}) \land \mathit{person}(\text{girl}) \land \mathit{moving}(e) \land \mathit{demonstration}(d_1,e)]$

(26) $\exists e.[\mathit{moving}(e) \land \mathit{demonstration}(d_1,e)]$

Similarly, for the action-report example, repeated here as (27), the full meaning of the second clause is 'there is a calm state, and they are the experiencers of the calm state, and there is a demonstration of this state' (28), but due to the argument structure adjustment, the meaning is 'there is a calm state, and there is a demonstration of this state' (29).

(27) e$_i$ $\overline{\text{U-R-G-E-N-T-L-Y.}}^{\text{rs-a}}$ e$_j$ $\overline{\text{CALM.}}^{\text{rs-b}}$

'[I say]: do it urgently! They are calm.'

(28) $\exists$e.[$experiencer$(e,they)$\wedge calm$(e)$\wedge demonstration$(d$_1$,e)]

(29) $\exists$e.[$calm$(e)$\wedge demonstration$(d$_1$,e)]

Since in the presence of demonstration the argument disappears in the argument structure, there is also no null argument in syntax that needs to be licensed. This directly explains the apparent inconsistencies in the data. Is it reasonable that the interpretation of classifier predicates and predicates under role shift is deficient in the sense that arguments do not have to be semantically present? I think that it makes sense, because the data shows that such predicates are acceptable even in contexts where they do not provide enough information about the referents to disambiguate, e.g. in (13-15). Of course, the events in (27) still involve someone who says the first clause, and someone who is calm, but the connection between the events and referents is a matter of pragmatics.

An alternative theory is that demonstration does not remove the arguments of the verb, but provides existential binding of these arguments:

(30) Existential closure by demonstration:
      [[Verb]] = λd.λe.λx.[$theme$(e,x)$\wedge event$(e)$\wedge demonstration$(d,e)] $\Rightarrow$
      λd.λe.$\exists$x.[$theme$(e,x)$\wedge event$(e)$\wedge demonstration$(d,e)]

Again, if this is the semantic representation of classifier predicates and predicates under role shift, these predicates do not combine with null arguments in syntax, as there is not valency to be filled. This analysis might be less far-fetched than the former one as it does not involve argument-deficient events.

It is not clear how to distinguish between the two alternative formalizations. One direction is to think about the way the base-generated topic in examples like (13-15) combines with the rest of the sentence. In neither scenario does it bind an empty element in the sentence, because the argument is either absent or already existentially bound. Probably, the connection between the base-generated topic and the embedded clause is purely pragmatic, but it might be more plausible in one of the two interpretations.

7   Conclusions

In this paper, I presented novel facts concerning null argument licensing in Russian Sign Language. The crucial data point is that classifier predicates and predicates marked with role-shift license pro-drop in contexts where neither plain nor agreeing verbs do. This casts doubt on all existing theories of null arguments in other sign languages, and it is also challenging to account for in terms of theories of pro-drop developed for spoken languages.

I suggested a tentative analysis connecting this flexibility of classifier predicates and role shift towards pro-drop to the fact that both types of constructions involve demonstration. I also developed a partial formalization where the argument structure of a verb can be adjusted in the presence of demonstration by a special rule. Given that demonstration also relaxes phonological rules, this theory seems plausible.

Acknowledgments

References

Barbosa, Pilar (2011a). "Pro-Drop and Theories of pro in the Minimalist Program Part 1: Consistent Null Subject Languages and the Pronominal-Agr Hypothesis: Null Subject Languages and the Pronominal-Agr Hypothesis". In: *Language and Linguistics Compass* 5.8, pp. 551–570. DOI: 10.1111/j.1749-818X.2011.00293.x.

— (2011b). "Pro-Drop and Theories of pro in the Minimalist Program Part 2: Pronoun Deletion Analyses of Null Subjects and Partial, Discourse and Semi pro-Drop: Analyses of Null Subjects and Partial, Discourse and Semi pro-Drop". In: *Language and Linguistics Compass* 5.8, pp. 571–587. DOI: 10.1111/j.1749-818X.2011.00292.x.

Battison, Robbin (1978). *Lexical borrowing in American Sign Language.* Maryland: Linstok Press.

Biberauer, Theresa et al., eds. (2010). *Parametric Variation: Null Subjects in Minimalist Theory*. Cambridge: Cambridge University Press.

Borer, Hagit (1986). "I-subjects". In: *Linguistic Inquiry*, pp. 375–416.

Burkova, Svetlana (2015). *Russian Sign Language Corpus*. Novosibirk, Russia. URL: http://rsl.nstu.ru/.

Costello, Brendan (2015). "Language and modality: effects of the use of space in the agreement system of Lengua de Singos Española (Spanish Sign Language)". PhD thesis. University of Amsterdam.

Davidson, Kathryn (2015). "Quotation, demonstration, and iconicity". In: *Linguistics and philosophy* 38.6, pp. 477–520.

Glück, Susanne and Roland Pfau (1998). "On Classifying Classification as a Class of Inflection in German Sign Language." In: *"Console VI" Proceedings. Sixth Annual Conference of the Student Organization of Linguistics in Europe*. Ed. by Tina Cambier-Langeveld, Anikó Lipták, and Miachael Redford. Leiden: SOLE, pp. 59–74.

Holmberg, Anders (2005). "Is There a Little Pro? Evidence from Finnish". In: *Linguistic Inquiry* 36.4, pp. 533–564. DOI: 10.1162/002438905774464322.

Huang, James (1984). "On the Distribution and Reference of Empty Pronouns". In: *Linguistic Inquiry* 15.4, pp. 531–574.

Koulidobrova, Elena (2010). "Pro and Lack Thereof: What ASL Reveals about Spanish... or, What Spanish Reveals about ASL." In: *Penn Linguistics Colloquium*. Vol. 34.

— (2012). "Parallelism Revisited: The Nature of the Null Argument in ASL as Compared to the Romance-Style *Pro*". In: *Sign Language & Linguistics* 15.2, pp. 259–270. DOI: 10.1075/sll.15.2.07kou.

— (2017). "Elide Me Bare: Null Arguments in American Sign Language". In: *Natural Language & Linguistic Theory* 35.2, pp. 397–446. DOI: 10.1007/s11049-016-9349-5.

Lillo-Martin, Diane (1986). "Two Kinds of Null Arguments in American Sign Language". en. In: *Natural Language and Linguistic Theory* 4.4, pp. 415–444. DOI: 10.1007/BF00134469.

— (1995). "The point of view predicate in American Sign Language". In: *Language, gesture, and space*. Ed. by Karen Emmorey and Judy Reilly. Hillsdale, NJ: Lawrence Erlbaum Associates, pp. 155–170.

Mathur, Gaurav and Christian Rathmann (2001). "Why not GIVE-USE: An articulatory constraint in signed languages". In: *Signed languages: discoveries from international research.* Ed. by Valerie Dively et al. Washington: Gallaudet University Press, pp. 1–25.

— (2006). "Variability in verbal agreement forms across four signed languages". In: *Laboratory Phonology 8.* Ed. by Louise Goldstein, D.H. Whalen, and Catherine Best. Berlin: Mouton de Gruyter, pp. 289-316–25.

Müller, Gereon (2014). "Pro-Drop and Impoverishment". In: *A Festschrift Presented to Günther Grewendorf on Occasion of His 60th Birthday.* Ed. by Patrick Brandt and Eric Fuss. Berlin: Akademie Verlag, pp. 93–116.

Neeleman, Ad and Kriszta Szendrői (2007). "Radical Pro Drop and the Morphology of Pronouns". en. In: *Linguistic Inquiry* 38.4, pp. 671–714. DOI: 10.1162/ling.2007.38.4. 671.

Rizzi, Luigi (1982). *Issues in Italian Syntax.* Studies in generative grammar. Foris Publications.

Saito, Mamoru (2007). "Notes on East Asian Argument Ellipsis". In: *Langauge Research* 43, pp. 203–227.

Speas, Margaret (1995). "Economy, Agreement and the Representation of Null Arguments". University of Massachusetts.

Taraldsen, Knut (1978). "On the NIC, vacuous application and the that-trace filter". MIT.

Tomioka, Satoshi (2003). "The Semantics of Japanese Null Pronouns and Its Cross-Linguistic Implications". en. In: *Linguistik Aktuell/Linguistics Today.* Ed. by Kerstin Schwabe and Susanne Winkler. Amsterdam: John Benjamins Publishing Company, pp. 321–339. DOI: 10.1075/la.61.16tom.

van Gijn, Ingeborg and Inge Zwitserlood (2006). "Agreement Phenomena in Sign Language of the Netherlands". In: *Agruments and Agreement.* Ed. by Peter Ackema et al. Oxford: Oxford University Press, pp. 195–229.