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22 Number in Russian Sign Language

Abstract: In this chapter, we describe how plural meaning is expressed in Russian Sign Language (RSL) as compared to other signed and spoken languages. The chapter is structured around the questionnaire developed for this volume. We demonstrate that RSL has means of expressing pronominal, nominal and verbal plurality. Moreover, RSL has a set of tools to distinguish various semantic subtypes of plurality. The main means used to express plurality are, in morphology, reduplication, incorporation, and modification of movement, as well as various lexical means such as quantifiers. Importantly, plurality is almost never obligatorily expressed. Some marker of plurality in a sentence is necessary to obtain the plural interpretation, but once one such marker is present, further plural marking on nouns and verbs is optional. Furthermore, no obligatory plural agreement in RSL is attested: multiple exponence of the plural meaning is possible and, in some cases, common, but never obligatory. While not much research has been done, plural markers in RSL seem to behave semantically and pragmatically in typologically expected ways. Finally, we observe that most morphological means of expressing plurality in RSL are highly iconic.

1 Overview

1.1 Plurality in sign languages

Number marking has been described for a few sign languages. Some sign language descriptions mention plurality albeit briefly (Sutton-Spence & Woll 1999; Valli & Lucas 2000; Zeshan 2000; Johnston & Schembri 2007; Bauer 2014) but a majority of sign languages, have not been described in this respect at all. At the same time, most studies devoted specifically to the category of number are focused on a single issue, such as nominal plurality (Miljan 2003), morphological marking of plurality (e.g. Pfau & Steinbach (2006)), reduplication and classifiers as markers of plurality (Nijhof & Zwitserlood 1999; Pfau & Steinbach 2006) and so on. Therefore, this topic clearly warrants further research.

Existing research shows that all known sign languages have some means of expressing the singular vs. non-singular opposition, while some sign languages show more differentiated oppositions, such as singular, dual, trial, quadruple, quintuple, paucal, and plural, as well as differentiate additive, collective, and distributive plurality. At the same time, at this stage it is not possible to talk about an obligatory grammatical category of plurality as applied to any word class (pronouns, nouns, verbs, classifier predicates). At least one sign language has been

claimed to have obligatory nominal number marking (Miljan (2003) for Estonian Sign Language, ESL), most sign languages appear to express plurality optionally (Pfau & Steinbach 2021), and for some sign languages the lack of regular marking of plurality has been argued for (e.g. Zeshan (2000) for Indo-Pakistani Sign Language, IPSL).

Several overviews of the expression of plurality across different sign languages exist (Pfau & Steinbach 2006; Pfau & Steinbach 2021). Therefore, the purpose of this chapter is not to provide another such overview. Instead, we focus on describing expressions of plurality in one sign language, namely Russian Sign Language (RSL), which has not been described before in such detail. We follow the questionnaire created for this volume to make sure that RSL can be compared to other languages and language families discussed here, although we do not have data for all questions. Wherever possible, we also place RSL in the typological perspective by comparing it to existing research on other sign languages. Note, however, that such comparison is often complicated by the inconsistent use of terminology and different methodologies applied across various studies.

The data reported in this chapter sometimes come from previous research (mostly by one or several of the authors of the chapter); in such cases, we refer to the source. In addition, we have conducted small-scale data collection in order to address some of the issues not previously investigated for RSL; whenever a source is not provided for an example, it means that it comes from data collection by the authors.

Before diving into the topic of number marking in RSL, we will describe some basic properties of sign languages, all of which are shared by RSL.

1.2 Basic properties of sign languages

Sign languages are natural languages existing in the visual modality (Sandler & Lillo-Martin 2006). In many respects, they are fundamentally similar to spoken languages. However, some features of sign languages are influenced by the visual modality, which is also the case for RSL. We only discuss some features relevant for the rest of the chapter.

Signs in sign languages have internal structure. Usually they are described as consisting of the handshape, orientation, location, and movement. Notably these components are combined simultaneously, although sequential structure might be present as well (if, for instance, there is a handshape, location, or orientation change in the sign). Hence morphological operations in sign languages are most commonly non-sequential: reduplication and stem modification are common, while affixation is extremely rare (Aronoff, Meir & Sandler 2005). This is also true for RSL.

Another level of simultaneity is added by the fact that sign languages including RSL use several articulators. The two main articulators are the two hands, which

are partially independent (Vermeerbergen, Leeson & Crasborn 2007). Some RSL signs are one-handed, in which case the second hand can be added for morphological purposes (such as expressing plurality), as we will show in the following sections.

In addition to the manual articulators, non-manual articulators (the body, the head, the mouth, the eyebrows, etc.) are used to express lexical and grammatical information (Pfau & Quer 2010). RSL uses these articulators to express negation, modality, to mark sentence types and information structure, among other things. As we show below, plurality can also be expressed non-manually.

Another important feature of sign languages is their use of space in front of the signer (the signing space). Referents (especially when they are absent) can be assigned to arbitrary locations in the signing space by adding a pointing sign or localizing a nominal or verbal sign in this location.[1] Thereafter these locations can be targeted to refer back to these referents by pointing signs used as pronouns and by verbal agreement. As we will show, the signing space plays a crucial role in expressing plurality in RSL.

Finally, sign languages have been shown to be highly iconic, both in the lexicon and in the grammar (Perniss, Thompson & Vigliocco 2010). As will become clear from discussion below, many of the means of expressing plurality in RSL are iconic, as there is a clear relation between the form of the sign/sentence and the meaning expressed.

2 Pronominal, nominal, and verbal number

2.1 Generalities

It is hardly possible to talk about a category of number in RSL (and apparently in a number of other sign languages) as an obligatory grammatical category. None of the values that belong to the semantic domain of number are included in RSL into any set of obligatory and mutually exclusive values. But some of them, e. g. those that indicate distributive plurality in nouns and verbs, can be regarded as quasigrammemes in terms of Mel'čuk (1993: 302–303), i.e. grammatical values expressed as regularly as grammemes without being obligatory. Plungian (2003: 133) assumes that, from a diachronic point of view, quasigrammemes present a stage immediately preceding a formation of a grammatical category. Sign languages are comparably young languages,[2] and the idea that they have precursors of full grammemes seems plausible.

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1 Assignment of absent referents to arbitrary locations is not universal in sign languages, see e.g. De Vos & Pfau (2015).

2 See, for example, Brentari (2010) for an overview on history and transmission of sign languages.

Below we will discuss that morphological expression of plurality in RSL is almost always optional; most unmarked nouns and verbs can freely occur in plural contexts. However, in order for the semantic feature of plurality to be conveyed in a sentence, some marker of plurality is required. So, for instance, the sentence in (1) where neither the subject nor the verb are marked for plurality only has the singular interpretation.[3] In order to obtain the plural interpretation for the sentence, the signers can pluralize the noun, add a quantifier, or use a different verb that would encode number.

(1) BOY DANCE
    'A boy dances'. NOT 'Boys dance'.

In this section, we discuss number marking in RSL pronouns, nouns, and verbs. Personal pronouns distinguish between the singular, dual, trial, quadruple and plural number expressed morphologically by means of reduplication and/or modification of a sign. Nouns are a heterogeneous class. There is a rather rich inventory of morphological and lexical means for marking number in nouns; their choice, as well as a set of values that can be marked in a certain noun, depends on phonological or morphological features of the sign, its lexical semantics, its origin, etc. Verbal number is also expressed by a variety of strategies partially dependent on the phonological and morphological features of the signs, as well as other factors.

2.2 Pronominal number

Unlike pronominal systems of spoken languages, pronominal systems of sign languages are fundamentally uniform (McBurney, 2002). Pronominal reference in these languages is highly associated with space, so personal pronouns are most often pointing signs directed towards to present referents or to locations in space associated with non-present referents (see McBurney 2002; Cormier 2012; Cormier et al. 2013).

The existing descriptions show that sign languages typically have rather rich systems of marking number in their pronouns. For example, American (ASL), Australian (Auslan), Danish (DSL), New Zealand (NZSL), and British Sign Language (BSL) have marking for the singular, dual, triple, quadruple, and plural number in their personal pronouns (McBurney 2002; Sutton-Spence & Woll 2007; Wallingford 2008). ASL and BSL are reported to have also quintuple forms (McBurney 2002: 336; Sutton-Spence & Woll 2007: 42–43).

Pronouns in RSL, similar to other sign languages, are pointing signs. The pointing sign in RSL has two variants: the first one is pointing with the extended index

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3 See the end of the chapter for the Glossing conventions.

finger (the "1" handshape; palm downward or sideward, Figure 1a), and the second one is pointing with the tips of adjoining extended fingers of an open palm (the "B" handshape; palm upward, Figure 1b). The distribution of these two variants is not quite clear as of yet. In case of the 1st person both forms occur, although in the 1st singular the variant with the "1" handshape is more often preferred, while in the 1st plural – the variant with the "B" handshape. Non-first person pronouns also use both handshapes, but the variant with the "B" handshape apparently functions as a more polite form.

Marking number in RSL pronouns is very similar to that found in NZSL, Auslan and a number of other sign languages. There are forms for the singular, dual, triple, quadruple and plural derived morphologically from a pointing sign by means of reduplication or/and modification of a sign.

The reference to the 1st person[4] singular, as in many other sign languages, is most typically performed by pointing to the signer's chest, and the reference to the non-first singular – by pointing to a locus associated with the referent.

The form for the dual involves modification of handshape, palm orientation and movement: the hand with the palm located vertically moves forth and back between two loci associated with the referents. The hand can have two shapes: either "2" (extended index and middle fingers), or "L" (extended thumb and index finger),[5] both denoting 'two', see Figure 2. Note that the dual form is compatible with all possible persons: 'you and me', 'you and him', 'he and me', etc. In some contexts, the signers just use double pointing (with the "1" or "B" handshape) to the two loci associated with referents. However, it is not clear yet whether this should rather be considered as a phrase ('you and me', 'you and he/she', etc.), or as a single sign derived by reduplication accompanied by change in location at each repetition.

There are two forms of personal pronouns for the plural. The first one has an arc-shaped or sweeping movement (i.e. it involves modification of movement). This form is per se a collective pronoun and has the meaning 'we/you/they together'. The movement used in it iconically expresses the meaning of collectivity, when a group of referents is considered as a non-discrete homogeneous set. The same arc-shaped or sweeping movement is also a rather standard way of marking collective plurality in nouns, see Section 2.3; it is also used in the adverbial sign TOGETHER, verb sign GATHER, and the determiner ALL.

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4 The analysis of person in sign language linguistics remains unsettled. Some earlier works assumed three-person systems of personal pronouns similar to those found in spoken languages (Friedman 1975; Padden 1988); McBurney (2002; 2004) and Liddell (2000) have argued for an analysis of pronominal systems that make no person distinctions; many researchers adopt the first / non-first model (Meier 1990; Lillo-Martin 2002). For further details see, e.g., Cormier et al. (2013). In this chapter, we follow the latter approach and distinguish between first and non-first person.

5 The choice between these two handshapes is unclear yet. It may either be due to idiolect variations or depend on the form of the adjacent signs.
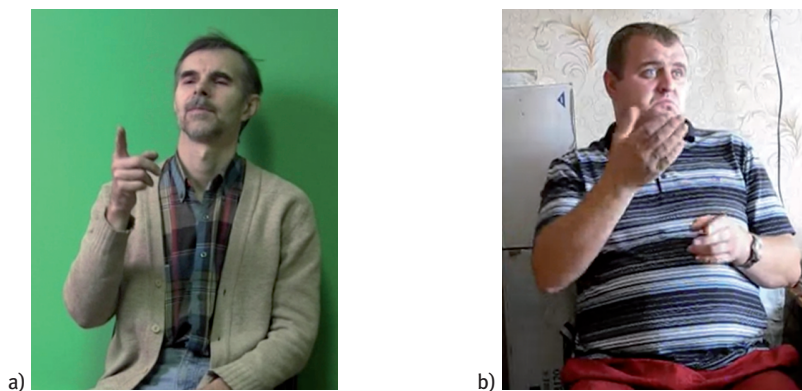
Fig. 1: Pointing signs in RSL a) with "1" handshape, b) with "B" handshape.

Fig. 2: Personal pronouns for the dual in RSL a) with "2" handshape, b) with "L" handshape.

The second form involves reduplication of a pointing sign accompanied by a change in location of the hand at each repetition. This form is per se a distributive pronoun and has a meaning 'each of us/you/them'. Reduplication accompanied by change in location is a standard way in RSL of marking distributive nominal and verbal plurality, when each referent (or situation) of a homogeneous set is considered distinct in space (or time), see also Sections 2.3 and 2.4.

The forms of personal pronouns for the triple and quadruple are similar in their movement to the form for the collective plural, but involve numeral incorporation: the handshape of a pointing sign ("1" or "B") is replaced with a numeral handshape "3" (Figure 3) or "4" respectively. We can assume that the forms for the triple and quadruple containing an arc-shaped or sweeping movement, similarly to that for the plural, express collectivity. However, they seem not to have distributive counterparts. In our observations, personal pronouns for the triple and quadruple in RSL,

Fig. 3: Personal pronoun for the triple in RSL.

as well as in a number of other sign languages, are optional. They are used when it is necessary to clarify that there are exactly three or four referents. Otherwise the form for the plural will be used.

We can see that the values that have overt and standard marking in the system of RSL personal pronouns (and, as may be expected, in a number of other sign languages), are the values of collective and distributive plurality.[6]

2.3 Nominal number

Nominal number marking has been described for many sign languages (see Pfau & Steinbach 2021 for an overview). The following strategies are commonly mentioned [1] morphological: reduplication, the use of the two hands, numeral incorporation, suppletion; and [2] lexical: the use of quantifiers or other lexical markers of plurality. Note that no systematic discussion of the different semantic types of nominal plurality (additive, collective, distributive, similative) in other sign languages exists.

In RSL, number in nouns is marked morphologically, by means of reduplication, modification of the sign, numeral incorporation, and suppletion, or lexically, by quantifiers and classifiers. The choice of exponence for a certain nominal sign mainly depends on the type of plurality being expressed, phonological and/or morphological structure of the sign, and its lexical semantics (Burkova 2015). The relevant phonological features include handedness (whether the sign is produced with one or two hands) and body-anchoredness (whether the sign is bound to some body part).

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6 It is not clear yet what kind of plurality is expressed by the forms for the dual. However, a connecting movement between two locations used in these forms suggests that they are more likely to express a collective value 'we/you/they two together' than just a value of additive number.

The patterns of marking are quite distinctly distributed across different semantic domains of plurality: additive, collective, distributive, and similative plurality. Regularity and constraints on marking also correlate with different types of plurality.

2.3.1 Additive plurality

Additive plurality, that is, the meaning 'more than one X', in which "every referent of the plural form is also referent of the stem" (Daniel & Moravcsik 2013), is typically expressed morphologically, by means of simple or two-handed simultaneous reduplication. In the case of simple reduplication a sign is repeated without changes in its handshape, orientation, location or direction of movement. In case of two-handed simultaneous reduplication, an originally one-handed sign is produced with both hands moving simultaneously. The choice between the two types of reduplication is determined by phonological constraints. Simple reduplication is employed in case of one-handed body-anchored signs (e.g. DOCTOR in (2)) or two-handed signs in which the hands touch each other (e.g. FACT in (3)).

(2) KNOW PERSON TREAT DOCTOR+(r/s) THE.BEST / USELESS TREAT IMPOSSIBLE THE.SAME
   'Even if the person had been treated by the best doctors, it wouldn't have helped anyway, [the disease is] incurable.'
   (Burkova 2015: 176)

(3) IX₁ ALWAYS INTERNET INSIDE INTERESTING(r/dbl/sm) FACT+(r/s) TOPIC NAME INTERESTING FACT+(r/s) LOOK.AT SEARCH INTERESTING
   'I am always online searching and looking for the most interesting news.'
   (Burkova 2015: 176)

Two-handed reduplication is employed in case of one-handed non-body-anchored signs (e.g. PERSON and DOG in (4) or in case of two-handed non-body anchored signs in which non-dominant hand can be omitted without losing any important information (e.g. MOUSE in (5)).

(4) PAST+(r/s) PERSON(r/dbl/sm)   EVIL GOOD AND INCLUDING DOG(r/dbl/sm) / EVIL GOOD PAST+(r/s)
   'There are evil and good people, the same with the dogs: there are evil and good ones.'
   Source: http://rsl.nstu.ru/data/view/id/224/t/502160/d/510830[7]

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[7] This and a number of other examples contain direct links to the source in the on-line corpus of RSL. Note that free registration is required to access the data.

(5) ONLY PERIMETER LITTLE DROP++++(r/s:m/arc) / DONE / MORE SMELL
MORE MOUSE(r/dbl/sm) WON'T.BE / GO.AWAY OFF GOOD.BYE DONE
'Just drop [the diesel fuel] along the perimeter. And that's it, say goodbye to
mice, they will flee because of the smell.'
Source: http://rsl.nstu.ru/data/view/id/12/t/59910/d/72120

However, both simple and two-handed reduplication are not specified for marking
nominal additive plurality; they can be used in other functions (see e.g. Section
2.4). Moreover, additive plurality does not necessarily have to be expressed by redu-
plication. Other means of expression can be also used.

One strategy for expressing pluralities with few members without resorting to
reduplication involves numeral incorporation. Sign languages use fingers as the ba-
sis for building numerals – this is a natural effect of the fact that hands are the
primary articulators. In addition, many sign languages use the handshapes repre-
senting numerals in combination with various movements and locations in order to
express other concepts related to quantity, see for instance Zeshan et al. (2013). For
example, the RSL sign HOUR contains a circular movement with a fist handshape,
but the sign can also be produced with a handshape with the thumb and index
outstretched to convey 'two ours', or with the thumb, index and middle fingers for
'three hours', etc.

This is usually called numeral incorporation, as it is often possible to find a
lexical sign which in isolation means some concept (for instance, *hour* or *week*), but
which can incorporate the numerical handshape in order to express quantity (Meir
2012). However, this way of expression additive number values is restricted to cer-
tain lexical domains (their list appears to be almost universal in different sign lan-
guages), and also has constraints related to the anatomical structure of the hand.

Thus, numeral incorporation is employed in RSL in the following domains: time
(minutes, seconds, hours (both duration and the time of the day), days (+ over *n*
days), weeks, months, years (+ *n* years back)), nominal classifiers (pieces, persons,
times), money (roubles), and also kilograms and places (that is, medals in sports).
Moreover, expressions like "with the *n* of them" can be analysed as numeral incor-
poration as well.

Incorporation is partially determined by the phonological form of the RSL nu-
merals. Numerals from ONE to FIVE are one-handed (and thus can be easily incorpo-
rated), numerals from SIX to TEN are two-handed, and all the numerals above TEN
contain lexical movement (and thus are almost impossible to combine with another
sign). The general rule is therefore that numerals from ONE to FIVE are incorporated,
while no other numerals are. This is the case for instance with the sign DAY: there
are signs ONEDAY, TWODAY, THREE$DAY, FOUR$DAY, and FIVE$DAY, and if the
quantity of days is larger, then a combination of a numeral and a lexical sign DAY
is used. However, there are some exceptions to this general pattern. For instance,
the noun HOUR (referring to duration) can incorporate numerals up to TEN, and

there are also archaic forms with ELEVEN and TWELVE incorporated, and the noun MONTH can incorporate numerals up to TEN.

Some nouns have a suppletive plural form, that is, a sign that expresses the plural meaning but that is not phonologically related to the sign expressing the singular meaning, e.g. CHILD – CHILDREN, HAIR – HAIR.PL, TOOTH – TEETH.

2.3.2 Collective plurality

Collective plurality, in which all referents of a plural form are conceptualized as a non-discrete homogeneous unit, is regularly expressed by smooth arc-shaped or sweeping movement, typically produced horizontally. Non-body-anchored signs are produced with the arc encompassing movement by themselves, e.g. TREE(m/arc) 'forest', BUSH(m/arc) 'shrubbery', THREE(m/arc) 'all three', FIVE(m/arc) 'all five', etc. In case of body-anchored signs which do not allow change in location, a periphrastic construction should be used instead: a lexical sign produced in a citation form is followed by the pointing sign IX produced with the arc movement, e.g. PROFESSOR IX(m/arc) 'professorate', AGENT IX(m/arc) 'agents', see also (6), where the body-anchored sign MAN is not modified morphologically, but followed by the pointing sign with arc movement.

(6) C-Ш-А[8]   MAN IX(m/arc)   ARMY SERVE MUST FREE
    'The men in the USA are not obliged to serve in the army'.
    (Burkova 2015: 179)

2.3.3 Distributive plurality

Distributive plurality indicates a set of spatially distributed objects. In case of non-body-anchored signs, it is typically marked by simple or two-handed successive[9] reduplication both accompanied by change in location at each repetition along arc-shaped path. This combination of reduplication with change in location at each repetition appears to be specialized for distributivity. Apart from distributive plurality in nouns, it is also used to express the distributive aspect in verbs, see Section 2.4. The choice between the two structural types of reduplication (simple vs. two-handed) is determined by the sign's phonological structure. Simple reduplication is mainly employed in two-handed signs (as ROOM in (7)), whereas two-handed successive reduplication is mainly used in case of one-handed signs (as PUDDLE in (8)).

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8 A fingerspelled Russian abbreviation *США* 'USA'.
9 In case of two-handed successive reduplication, an originally one-handed sign is produced with both hands moving successively.

(7) DOCTOR ROOM SMALL ROOM++(r/s:m/arc)
   'There is a small hospital with several wards.'
   Source: http://rsl.nstu.ru/data/view/id/220/t/41410/d/43030

(8) STREET ALL L-U-ZH-A PUDDLE+++(r/dbl/alt:m/arc)
   'There are puddles in the street.'
   (Burkova 2015: 181)

In body-anchored signs that do not allow change in location, the two-handed successive reduplication is used, as in (9). The same structural type of reduplication is also employed in case of "large" non-body-anchored signs. For example, the non-body-anchored sign MOUNTAIN in (10) has a rather large path of movement taking the most part of signing space, so to change the location of this sign is not easy.

(9) LOOK FIELD FLOWER++(r/dbl/alt)
   'He saw a field, all in flowers.'
   Source: http://rsl.nstu.ru/data/view/id/39/t/28740/d/31510

(10) MOUNTAIN+(r/dbl/alt) PAST IX
   'Have you ever been to the mountains?'
   (Burkova 2015: 181)

It is important to note that plurality marking, and especially distributive plurality marking, is often combined with, or is part of the expression of locative information about the objects referred to. For instance, a signer might describe chairs standing in a circle, or in two lines opposite each other, or on top of each other, using reduplication and spatial modification of the sign for CHAIR in an iconic way. Various analyses of such marking and the interaction between plurality and iconic spatial information have been proposed in the literature; some researchers arguing that even simple reduplication expressing additive plurality has an iconic component (Schlenker & Lamberton 2019). Clearly more cross-linguistic research of this issue is necessary.

2.3.4 Similative plurality

Some languages express associative plurality, that is, the meaning 'X and X's associates', in contrast to other types of nominal plurality, indicates a heterogeneous set of objects, see, for example, Daniel & Moravcsik (2013) for further details. RSL does not have a strategy of expressing associative plurality, but it does have a strategy expressing a related heterogenous plurality type, namely similative plurality: 'X and things similar to X'. This type of plurality is expressed in RSL periphrastically: a

lexical sign or several lexical signs that denote one or several heterogeneous referents of a set are followed by the sign DIFFERENT, e.g. BUS TROLLEYBUS DIFFERENT 'public transport facilities', DEAF DIFFERENT 'deaf and hard-of-hearing people', TOMATO CUCUMBER DIFFERENT 'vegetables', CHAIR BED DIFFERENT 'furniture', PLATE DIFFERENT 'tableware'.

It is important to note that this way of expressing similative plurality in RSL is not productive: only a few concepts are expressed this way, and, by Burkova's (2015) observations, it is more typical of older signers, whereas younger signers prefer to express the concepts like 'furniture', 'vegetables', etc. by fingerspelling the corresponding Russian words. There is also variation in acceptability of different variants of the same concept: for 'vegetables' some signers accept TOMATO CUCUMBER DIFFERENT, some only TOMATO DIFFERENT, and a few also accept CUCUMBER DIFFERENT.

2.3.5 Summary

As one can see, morphological means used to express different kinds of nominal plurality in RSL are highly iconic. It seems rather natural to associate reduplication of a sign with a discrete set of objects, whereas smooth arc movement seems to be naturally associated with non-discrete set of objects, as well as change in location at each repetition of a reduplicated sign seems to be naturally associated with the distributive localization of the objects of a set. For further discussion of the role of iconicity in plural marking see for instance Schlenker & Lamberton (2019).

2.4 Verbal number

In many sign languages, verbs can be modified to express plurality of different types, as first described for ASL by Klima & Bellugi (1979). Almost universally, the following possibilities exist: (1) simple reduplication is used to express plurality of events (e.g. iterative), as for instance in ASL and French Sign Language (Kuhn & Aristodemo 2017). (2) Arc-shaped movement is used to express plurality of arguments, as in Spanish Sign Language (Costello 2016). (3) Arc-shaped movement combined with reduplication is used to express distribution over arguments (Klima & Bellugi 1979; Tsay & Myers 2009; Kimmelman 2015; Filimonova 2012; Filimonova 2016). (4) Some information about the plurality of arguments can be encoded in classifier predicates, that is, predicates of movement in which the handshape refers to the class of an argument, while location and movement components are used iconically to encode location and/or motion of this argument (Zwitserlood 2012).

Partially based on the similarities between different sign languages in this domain, Wilbur (2010) has argued for the Event Visibility Hypothesis stating that certain properties of events are iconically encoded in sign languages. Below we demon-

strate that all of this also holds for RSL. However, our research shows that the patterns of expressing verbal plurality are quite intricate and complicated, and one should not expect to find the exact same patterns across different sign languages even if iconic mechanisms are involved.

2.4.1 Number in lexical verbs

Number marking on verbal signs in RSL is not obligatory. Example (11) below shows that while the subject is plural (more specifically, dual), no marking on the verb is present.

(11) **COME** FIRST.AID.STATION **COME**
      '[Me and my friend] came to first-aid station'.

However, in RSL, special verb forms exist to express distributive and collective plurality (of subject/object), iterative (plurality of time periods in which an action is performed) and the reciprocal meaning (plurality of participants who are subjects and objects of the same situation).

2.4.1.1 Distributive and collective plurality>

As discussed in the previous section for nominal signs, distributive plurality in verbal signs in RSL is expressed by different types of reduplication and modification of the sign. The choice of reduplication type and modification first of all depends on whether the subject or object of the situation is plural (Filimonova 2016: 238–241).

Plurality of the subject can be conveyed by simultaneous or successive reduplication. Simultaneous reduplication is used when participants of the situation perform action simultaneously (12) and successive reduplication is used when they do it one by one or in different periods of time (13).

(12) VISIT$_1$ (r/dbl/sm)
      'Guests came to us [at the same time]'.
      (Filimonova 2016: 249)

(13) IX$_1$ BIRTHDAY ANNOUNCE GUESTS EIGHTEEN NULL NULL / IX TRAFFIC.JAM
      IX BUSY IX DO.SOMETHING VISIT$_1$ (r/dbl/alt)
      'I invited friends to come to celebrate my birthday at 18.00, but one of them got stuck in traffic jam, the other one is busy, the third has got something else, so they came one by one'.
      (Filimonova 2016: 249)

Furthermore, arc movement can be used to convey non-distributive (collective) plurality of the subject, as in (14):

(14) WHITE(m/ar)
      'Everything is white.'
      (Filimonova 2016: 251)

Plurality of the direct object is conveyed by arc movement or reduplication combined with change in location with each repetition. The latter is much more common in RSL. We suppose that the difference between these two marking strategies depends on whether the participants of situation are individuated (15) or seen as a collective participant (16).

(15) PERSON INDX PAST LONG.AGO PERSON:PL KILL++(m/arc) /
      PERSON:PL GUILTY NOT IX KILL++ (r/s:m/arc) PAST
      'This person killed many people long time ago. These people were innocent and he killed them one by one'.

(16) MULTIPLE.SUBJECT.MOVE KILL(m/arc) // KILL(m/arc) SAVE COULD /
      CAPTAIN GIVE.ORDER MAKE.MISTAKE
      'Many people were killed. They could have been saved but captain gave the wrong order'.

These modifications of the sign have some phonological restrictions. Body-anchored signs cannot undergo simultaneous, successive reduplication, arc movement or change in location because they are 'attached' to a certain place of signer's body. Double reduplication is possible only for one-handed signs or two-handed signs that can be reduced to one-handed ones. Successive reduplication is impossible for the signs that already have alternating movement in their structure.

As we mentioned above, other sign languages use the same means to express distributive and collective plurality: two-handed successive reduplication[10] (ASL), arc movement (ASL, Taiwan Sign Language: TSL), and a combination of reduplication with a change in location with each repetition (ASL, TSL, IPSL, ESL). However, some cross-linguistic variation can be observed.

For instance, a combination of reduplication with a change in location in ASL is used to express both subject and object plurality (Klima & Bellugi 1979), while in TSL and RSL it conveys only object plurality (Tsay & Myers 2009: 90). Furthermore, in ASL and BSL, arc movement is used to indicate collective meaning, and two-handed successive reduplication is used to express distributive meaning (Klima &

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10 Also known in the literature as alternating reduplication.

Bellugi 1979; Sutton-Spence & Woll 1999). In TSL, the two forms are differentiated based on the period of time in which the actions are performed: if they occur simultaneously, arc movement is used; otherwise two-handed successive reduplication is used (Tsay & Myers 2009: 90).

2.4.1.2 Iterative

In all sign languages where the iterative has been studied so far (ASL, Swedish Sign Language, IPSL, Israeli Sign Language: ISL, Auslan) researchers have found that the basic means of expressing iterative meaning is simple reduplication without change of location (Klima & Bellugi 1979; Bergman & Dahl 1994; Zeshan 2000; Maroney 2004; Reagan 2007; Johnston & Schembri 2007; Meir & Sandler 2008). Also, for some sign languages it has been noted that some additional means can specify iterative meaning: movement modifications, speed and number of repetitions, and non-manual markers.

Iterative meaning in RSL is expressed by simple reduplication of the verb or the reduplicated form of the sign PAST. Reduplication is used only on non-stative predicates. Our data show that most of these reduplicated forms have one repetition. We suppose that two or more repetitions are used to emphasize plurality of situations (Filimonova 2016: 229–231).

(17) MY CLASSMATE+(r/s) OFTEN CINEMA **COME+**(r/s) TOGETHER
  'Me and my classmates often go to the cinema'.
  (Filimonova 2016: 230).

(18) **INJECT++**(r/s) DAY MANY
  '[I was in hospital three months]. I got injected many times'.
  (Filimonova 2016: 231)

Reduplicated sign PAST is a special iterative marker that has no limitation on the situation type. The initial form of the sign can serve as existential verb or auxiliary verb. The reduplicated form has the meaning 'it happens' or 'it happened from time to time'.

(19) **PAST+**(>r/s) **HEAD.HURT PAST+**(r/s)
  'My head hurts sometimes'.
  (Filimonova 2016: 232)

2.4.1.3 Reciprocals

Reciprocal meaning in RSL is expressed by special modifications of the verbal sign, which can differ depending on the number of participants. If there are only two participants in a reciprocal situation, a specific type of reduplication is used. (20)

illustrates a simultaneous two-handed mirror reduplication: both hands are specified for the same handshape and are situated in the signing space symmetrically and mirroring each other.

(20) FIRST TIME SEE-REC(r/dbl/sm:mirr) PLACE CONTEST DANCE
      'We saw each other for the first time at dance contest'.

In (21) backward reduplication is used. Both hands move back and forth with each repetition.

(21) WORK CAN TOGETHER HELP-REC(r/s:inv)
      'We can help each other in work'.

If there are more than two participants in the situation, we can see another modification of the sign: circular movement (22).

(22) IX$_{1PL}$ INDX(r/dbl/alt:m/crcl) INDX(r/dbl/alt:m/crcl) CAN HELP-REC(m/crcl)
      EACH.OTHER INDX(r/dbl/alt:m/crcl) WORK
      'All of us can help each other at work'.

The same differentiation of reciprocal forms with respect to number of participants has been found in German Sign Language (DGS). Pfau and Steinbach state that for reciprocal situations with more than two participants "randomized" (not directed towards specific locations in the signing space) movement is used (Pfau & Steinbach 2003).

2.4.2 Classifier predicates

Another way to express plurality on the predicate as described for many sign languages is to use a classifier predicate (Zwitserlood 2012). These are predicates of movement in which the handshape refers to the class of an argument, while location and movement components are used iconically to encode location and/or motion of this argument. For example, the sign with the "1" handshape (index finger) can refer to a person moving, while using the same sign with the "5bent" handshape (all fingers slightly bent) can refer to a round object, e.g. a ball, moving.

In addition to conveying information about the type of subject/object, the handshape can also convey information about the number of entities involved. In RSL, there are at least two ways of expressing plurality in classifier predicates. First, for human beings, as well as long-shaped objects, the "1"-handshape classifier can be used; to express multiple people or objects moving or located somewhere, the hand-

shape can change to include the corresponding number of fingers: 2–5 (similar to what happens in numeral incorporation), as illustrated by (23):

(23) THREE STREET CL:PERSON.THREE-MOVE
 'The three people are walking down the street.'
 Source: http://rsl.nstu.ru/data/view/id/31/t/40600/d/42810

Secondly, RSL has a classifier handshape reserved specifically for plural entities, namely the classifier MASS (made with two hands palms downwards, handshape "5"). It indicates a plural argument of many kinds: groups of people (25)–(27), flight of birds (24), as well as quantities of materials like flour or sugar (28).

  This sign can be modified in various ways by movement and orientation. In (26) circular movement is used to describe a situation where a group of people are walking around the building. In (27) the hands move from different directions to one place to indicate the movement of participants, and in (28) the hands move from one place to different directions.

(24) C-R-O-W MANY CL:MASS-MOVE BEAK EAT TASTY BEAK
 'Many crows flew [to the tree] and beaked [berries]'.
 http://rsl.nstu.ru/data/view/id/47/t/11190/d/11720

(25) IX$_1$ WHEN IX$_1$ TIE.SHOELACES IX$_1$ SIT TIE.SHOELACES HAPPEN
 GUN.SHOOT CL:MASS-MOVE IX$_1$ CAN BE.LATE RUN
 'When I was tying my shoelaces, [someone] shot starter gun and everyone ran, I could be late so I started to run too'.
 http://rsl.nstu.ru/data/view/id/231/t/493800/d/494280

(26) CL:MASS-MOVE.AROUND
 'Crowd walked around the building'.
 http://rsl.nstu.ru/data/view/id/218/t/218930/d/221840

(27) DIFFERENT MANY ABROAD CL:MASS-MOVE.TO.ONE.PLACE MOSCOW
 'A lot of people came to Moscow from different countries'.
 http://rsl.nstu.ru/data/view/id/198/t/425190/d/425440

(28) MOTHER F-L-O-U-R TAKE CL:MASS-MOVE.IN.DIFFERENT.DIRECTIONS
 'Mother took a bag of flour and flour scattered'.
 (Filimonova 2016: 248)

2.4.3 Number vs. aspect

The domain of aspect in RSL is very rich, as many subtle aspectual meanings can be expressed by morphological and lexical means. It is important to note that, ap-

parently, there is no perfective/imperfective opposition in RSL and perfective/imperfective interpretation is generally determined by the class of predicate: states are always seen as imperfective, achievements are always perfective, and processes and accomplishments are interpreted in the context (Filimonova 2016: 270). There are special markers to express habitual meaning and duration. There is no regular marker for durative situations although a few verbs referring to achievement or accomplishments can derive signs referring to processes by deceleration of movement.

Simple reduplication is used to express the iterative, habitual and durative, but in case of latter two it is combined with other lexical markers, such as the sign ALWAYS. Furthermore, there is a special marker for expressing longer than expected duration of a situation – non-manual reduplication (head shaking or rocking of the body). It can be combined either with simple reduplication (29) or with hand perseveration (30) (Filimonova 2016: 157–160). In the latter case a hand performing the sign stays fixed and does not move while non-manual reduplication is used.

(29)   ____bodyrocking
      BOY   CRY+
      'Boy was crying for a long time'.

(30)   ____headshaking
      BOY   THINK /   ASK
      'Boy was thinking (lit.: thinking, thinking) for a long time and then asked [the girl]'.

2.4.4 Interim conclusions

As discussed in sections 2.2–2.3, nominal and pronominal number, like verbal number, make use of different types of reduplication and modifications of a sign. They are very similar in expressing distributive meaning. Double successive reduplication is used to express distribution of some entities. Arc movement is used in to express collective plurality in both nouns and verbs; a combination of change in location and reduplication is used to express distributive plurality. Importantly, in all sign classes the phonological shape of the signs partially determines what types of reduplication can occur. It may seem at first glance that verbal and nominal number differ in the use of simple reduplication: while reduplicated verbs have iterative meaning, reduplicated nouns have the meaning of additive plurality. One could however argue that the iterative meaning in the verbal domain is the direct semantic parallel of additive plurality in the nominal domain.

3 Agreement and the syntax of number

It is probably safe to claim that no sign language demonstrates true obligatory agreement in number either within the NP domain, or between the verb and its arguments (see also Pfau & Steinbach 2021). RSL is no exception. For some sign languages it has even been claimed that certain configurations with multiple exponence of plural (e.g. reduplication used on the subject and plural marking on the verb in DGS (Pfau & Steinbach 2006)) are prohibited. RSL does not appear to prohibit multiple exponence of the plural number, but it also clearly does not systematically demand such multiple exponence.

We start with agreement within the NP, specifically, with plural marking on adjectives. For some sign languages, it has been claimed that adjectives cannot agree in number with the head noun; moreover, they cannot show plural marking at all (DGS, Pfau & Steinbach (2006)). In other sign languages, adjectives can express plural, also when the head noun is marked with plural, but not obligatorily (e.g. ESL, Miljan (2003), VGT, Heyerick et al. (2011)). In RSL adjectives are sometimes reduplicated (31), but, according to Burkova & Filimonova (2014), reduplication of adjectives is used not to mark plurality, but intensive instantiation of the characteristics as is clear from context in corpus examples, and from discussion with native signers. Thus, this cannot be analyzed as agreement.

(31) INTERESTING + FACT-PL
      'very interesting facts'
      (Burkova & Filimonova 2014: 230)

Further, the plural meaning in most sign languages can be expressed by quantifiers, including numerals, and the head noun would then be either optionally marked with morphological plural marking (as in ISL (Stavans 1996), Hausa Sign Language (Schmaling 2000)), or obligatorily unmarked for plural (as in DGS and ASL (Pfau & Steinbach 2006)). In RSL, plural marking on the noun in the presence of quantifiers is possible, albeit not obligatory (Kimmelman 2017), as shown by example (32).

(32) MANY QUESTION / MANY QUESTION-PL
      'many questions'
      (Kimmelman 2017: 824)

Kimmelman (2017) has argued that for some nouns, such as TOOTH and RIB, plural marking to express plural meaning is not optional (probably because it is expressed by a suppletive strategy). Such nouns must be marked morphologically as plural also when combined with quantifiers (33).

(33) *SOME TOOTH / SOME TEETH
      'some teeth'
      (Kimmelman 2017: 824)

However, if the noun is left-dislocated and clearly marked as a topic, the restrictions do not apply (34)–(35). Compare this to English "As for children, I only have one". The same pattern can be observed with regular nouns marked for plural: while in noun phrases, they cannot combine with the numeral ONE (36), if the noun is topicalized, no conflict occurs (37).

(34)   <u>top</u>
RIB   SOME
'some ribs'
(Kimmelman 2017: 824)

(35)   <u>_____top</u>
CHILDREN   ONE
'one child'
(Kimmelman 2017: 824)

(36)   *ROOM EXIST ONE CHAIR-**PL**

(37)   <u>_____top</u>
CHAIR-PL   ROOM EXIST ONE
'There is one chair in the room.'

Moving beyond the NP, some sign languages, such as VGT, NGT, and Turkish Sign Language (Heyerick et al. 2011; Nijhof & Zwitserlood 1999; Zwitserlood, Perniss & Özyürek 2012) have been argued to allow multiple exponence of plurality in the clause, such as for instance marking on the subject and on the verb, while others, such as DGS (Pfau & Steinbach 2006) seem to prohibit it. RSL again clearly allows marking plurality on arguments (either morphologically or by a quantifier) and the verb simultaneously, as demonstrated in (38), but this is clearly optional, as demonstrated in (39). Reduplication expressing reciprocal meaning, can also optionally occur on both the verb and the argument (40).

(38)   EARLIER SICK TUBERCULOSIS PERSON-PL DIE-DISTR MANY
'Earlier, many people died of tuberculosis.'
(Burkova & Filimonova 2014: 236)

(39)   LATER BEGIN PERSON COME-DISTR LIVE
'Later people started moving in.'
(Burkova & Filimonova 2014: 236)

(40)   IX$_1$ PROMISE-REC IX-REC MORE SAME LOSE FUT.NEG
'We promised each other not to give up.'
(Burkova & Filimonova 2014: 242)

Multiple exponence of plurality is especially visible in distributive plural contexts. Kimmelman (2017) discusses example (41) where the subject NP is marked as plural by a lexical quantifier EVERY, as well as by a plural pointing sign IX-PL, and the verb is also marked by the morphological distributive marker. Morphological distributive marking can also occur on numerals (42), and even on the quantifier EVERY itself. However, multiple exponence of distributive plural marking is optional (42).

(41) EVERY BOY IX-PL DISTR-GIVE.PRESENT$_1$
  'Every boy gave me a present.'
  (Kimmelman 2017: 818)

(42) MAN BUY BEER ONE-DISTR
  'Every man bought a beer.'
  (Kimmelman 2017: 820)

Finally, a very interesting case of multiple exponence concerns non-manual marking of plurality (recall examples (29)–(30) above). Burkova & Filimonova (2014) demonstrate that in some cases non-manual markers of plurality (head or body movements) co-occur with manual morphological marking of plurality (reduplication) of the sign (43). However, non-manual marker of plurality can also occur on its own (44).

(43)   <u> bht+ </u>
  HANDICAPPED WHEELCHAIR BAG-PL HOLD-PL
  'I am in the wheelchair, holding the bags.'
  (Burkova & Filimonova 2014: 238)

(44) <u>bht+</u>
  WAIT NEG.EXIST
  'They waited and waited, but he was not there.'
  (Burkova & Filimonova 2014: 238)

To sum up, while RSL (and some other sign languages) allows multiple exponence of the plural meaning both inside the NP, and at the clause-level, this is always optional, and thus would not qualify as prototypical agreement. Interestingly, some other sign languages, most notably DGS, have been claimed to disallow multiple exponence of plurality.

4 Semantics and discourse

Very little research has been done on the semantics and pragmatics of plural marking in sign languages (see Kuhn & Aristodemo (2017) for some discussion of the

semantics of verbal plural marking, and some references below). For RSL, almost no research has been done. However, some aspects which have been studied are discussed in this section.

While many spoken languages use plural forms of pronouns as honorifics, as far as we know, no sign language does so. For NGT and ASL it has been found that a different handshape in pointing sign is used in polite contexts, namely the flat hand handshape instead of the index finger (Baker & van den Bogaerde 2012; Neidle & Nash 2012). The same is true for RSL: normally, pointing signs use the index finger, but the flat hand is used for politeness, as discussed in Section 2, see also Figure 1. Note that this handshape is not used to express the plural meaning as such, and also that the use of this handshape is optional.

Another common function of plural marking in spoken languages is to express generic reference. This is also attested in some sign languages (see Barberà and Cabredo Hofherr 2018 for an overview of impersonal reference in sign languages). Kimmelman (2018) found that plural pronouns can also be used in universal generic contexts in RSL, as in (45). However, the most common way to express generic (and, more broadly, impersonal) reference in RSL is to omit the subject (46).

(45)   <u>   br   </u>
      CHINA,   IX-PL LAST WEEK NEW YEAR IX-PL CELEBRATE
      'In China, they celebrated New Year last week.'
      (Kimmelman 2018: 220)

(46) GERMANY, EIGHT HOUR START WORK
      'In Germany, they start working at 8 o'clock.'

Plural marking on nouns in generic contexts is also possible, as in example (47) where the generic subject PERSON is marked both morphologically, by a lexical plural marker MASS, and by the universal quantifier ALL.

(47) PITY ALL SEE PERSON-PL MASS OLD
      'It's a pity to see that all people become old.'
      Source: http://rsl.nstu.ru/data/view/id/231/t/1602730/d/1606320

For nouns with suppletive plural, the plural form is required to obtain the relevant interpretation in generic contexts: compare (48) and (49).

(48) IF MANY CANDY EAT, TOOTH FUT HURT
      'If you eat too much candy, your tooth will hurt.'

(49) IF MANY CANDY EAT, TEETH FUT HURT
      'If you eat too much candy, your teeth will hurt.'

In some languages, such as Russian, plural marking on verbs can be used in generic contexts. While some generic contexts in RSL also use plural marking on the verb, Kimmelman (2018) argued that this marking is not related to genericity; it simply marks the fact that the event takes place multiple times, as in (50).

(50) NEIGHBORHOOD BIKE STEAL-ITER OFTEN
      'They often steal bikes in the neighborhood.'
      (Kimmelman, 2018: 213)

In discourse, when plurality is marked (by a lexically plural noun, or morphologically, or by a pointing sign or another lexical marker of plurality), the plural noun phrase can still admit singular reference in questions, as in (51)–(52).

(51) A: CHILDREN EXIST?   B: YES, ONE
      'A: Do you have children? B: Yes, I have one.'

(52) A: ROOM PERSON-PL EXIST?   B: YES, ONE PERSON
      'A: Are there people in the room? B: Yes, there is one person.'

Finally, with respect to the question of whether plural marking is used for reference tracking in discourse very little can be said. It is clear that, in RSL, plural pronouns can be used to disambiguate discourse referents, as in example (53). Another device clearly used to track referents are classifier handshapes, and sometimes these handshapes also include number marking. For instance, in (23) repeated here as (54), the referents (three men) were introduced in the previous sentence, and they are referred to again by a numeral and the classifier handshape, so number marking is (indirectly, and in combination with other markers) used to track referents.

(53) PERSON-PL KIND SAME IX-PL ATTENTION
      'If people are kind, it (the dog) is kind (lit. attentive) towards them.'
      Source: http://rsl.nstu.ru/data/view/id/224/t/522220/d/524810

(54) THREE STREET CL:PERSON.THREE-MOVE
      'The three people are walking down the street.'
      Source: http://rsl.nstu.ru/data/view/id/31/t/40600/d/42810

We are not aware of any in-depth discussion of discourse-related use of number in other sign languages.

5 Conclusions

In this chapter, we described how plural meaning is expressed in RSL – and, by comparison, how it is expressed in some other sign languages. We can make the following main conclusions.

First, RSL has means of expressing pronominal, nominal and verbal plurality. Moreover, RSL has a set of tools to distinguish various semantic subtypes of plurality, namely additive, collective, distributive, and similative plurality. The main means used to express plurality are, in morphology, reduplication, incorporation, modification of movement, as well as various lexical means such as quantifiers.

Second, plurality is almost never obligatorily expressed. Some marker of plurality in a sentence is necessary to obtain the plural interpretation, but once one such marker is present (e.g. a quantifier), further plural marking on nouns and verbs is optional. The exception to this pattern are signs with suppletive plural forms which have to be plural in plural contexts. However, even those signs can be realized as singular when they are topicalized and thus are not a part of the noun phrase with a plural quantifier.

Third, no obligatory plural agreement in RSL (or most if not all other sign languages) is attested. Multiple exponence of the plural meaning is possible and, in some cases, common, but never obligatory.

Fourth, while not much research has been done, plural markers in RSL seem to behave semantically and pragmatically in typologically expected ways.

Finally, we have observed that most morphological means of expressing plurality in RSL are highly iconic, which might be the reason why RSL strongly resembles other sign languages in this domain. However, we argue that the specific details of plural marking show clear cross-linguistic variation, and thus more research on different sign languages is necessary.

Glossing conventions

Signs are glossed in small caps; fingerspelled sequences are separated by dashes. The . is used when a single sign is glossed with more than one word; ^ connects components of compounds; $ marks numeral incorporation. IX stands for index (pointing signs). CL stands for classifier, followed by : and the meaning of the classifier handshape. / marks a prosodic boundary. Personal marking on pronouns and verbs is expressed by subscripts. In section 2, reduplication types are glossed in detail. The number of +'s reflects the number of repetitions.

Abbreviations

Abbreviations in section 2

r	reduplication
m	movement modification; these symbols are followed by a / and further specifications:
s	simple
dbl	two-handed
sm	simultaneous
alt	successive
arc	arc-shaped movement
mirr	mirroring
inv	inverse (back and forth movement)
crcl	circular

Abbreviations in section 3 and 4

PL	plural meaning
DISTR	distributive plural
ITER	iterative
REC	reciprocal

Non-manual markers (glossed above the main glosses)

br	brow raise
bht	backward head tilt

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