Standard negation: the curious case of South America

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For Pieter Muysken (1950–2021)

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Abstract: This study compares standard negation in the indigenous languages of South America to the rest of the world. We show that South American languages not only prefer postverbal negation to preverbal negation and negative morphology to syntax, but postverbal morphological negation to any other negation strategy. The predominance of this strategy makes South America distinct from other macro-areas. The study also considers the areal distribution of negation on the South American continent. It shows that negation strategies each have their own concentration area. Postverbal morphological negation, which is the dominant strategy, turns out to be concentrated in the northwest of the continent, with the highest density around the boundaries between Colombia, Peru and Brazil. We suggest that the preference for postverbal morphological negation in South America is likely to be the result of language-internal mechanisms of negation renewal, coupled with language contact.

Keywords: areality of negation; morphological negation; postverbal negation; South American languages; standard negation; syntactic negation

1 Introduction

Negation is a universal feature of human language, i.e., in every language there is the linguistic means to express the denial of a proposition. *She hugs me – She doesn't hug me*. It was suggested as early as Jespersen (1917: 5) and has been confirmed by a number of typological studies (e.g. Dahl 1979: 91, 2010; Dryer 1988:

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102, 2013b; Vossen 2016) that languages prefer to express negation as early as possible in the sentence, and specifically, before the verbal predicate. The general principle behind this tendency has been captured by such terms as 'Neg Early' (cf. Dahl 1979: 93; van der Auwera et al. forthcoming a, forthcoming b), 'Negative-Before-Verb' (Dryer 1988: 102), and 'Neg First' (Horn 1989). The tendency of languages to place the negative marker early in the sentence can be explained functionally. A negator constitutes a crucial part of the message, since it changes the value of a proposition to the opposite. As a hearer, we process the sentence in a linear way, as it comes in. It is more efficient for language processing and communication purposes to have a negative marker placed early in a sentence or, at least, before the verbal predicate (Dryer 1988: 102). A pseudo-English sentence *Hug me not!* demonstrates a postverbal negation pattern, which is functionally dispreferred, as it requires a reanalysis. Nevertheless, there are languages worldwide which put the negative marker late in the sentence. (1) and (2) are examples.

(1) Qawasqar[1] (Kawesqar) (qawa1238)[2]
Fčakiáns *sa* *čo* *jéksor* ***k'élok***
type.of.bird TOP 1SG see NEG
'I don't see a bird.'
(Aguilera and Tonko 2006: 34)

(2) Chibcha (Chibchan) (chib1270)
muysca *atabie* *abgu-**za***
person some 3kill.ERG.PST-NEG
'He has not killed anybody.'
(Quesada Pacheco 2012: 54)

What is also intriguing is that languages with postverbal negation are not distributed completely randomly, but seem to cluster in certain areas. Three earlier cross-linguistic studies have hinted that the South American indigenous languages are particularly special. First, in a chapter on negation by Dryer (2013a) in the *World Atlas of Language Structures (WALS)* we find a one-line observation that '[t]he largest concentration of languages with negative suffixes is in the northern half of South America'. Second, Muysken et al. (2014: 305–306) use data from *WALS* to explore the prominence of some typological features in South America in comparison to the rest of the world. It emerges from their analysis that among all grammatical features in

1 Thanks are due to Rodrigo Gonzalo Becerra Parra (Alberta) for providing glosses.
2 In all examples, a language name is followed by a genealogical affiliation and a glottocode (Hammarström et al. 2021).

WALS, the top three features that turn out to be overrepresented in South America concern the postverbal position of the negator and its morphological (bound) nature. Muysken et al. (2014: 305) explicitly state that their goal was merely to affirm the existence of features that are overrepresented in South America, and that they refrain from further commenting on the nature of the grammatical features in *WALS*. The third study which singles out South American languages with respect to negation is Vossen (2016: 307, 321), who notes that "only in South America, the frequency of postverbal single negation is higher than preverbal single negation". However, Vossen's dataset represents only part of the world.[3]

Thus the observations found in Dryer (2013a) and Muysken et al. (2014) involve a comparison of a particular phenomenon, viz. postverbal negation, across different geographical areas. As such, its overrepresentation in South America does not preclude that this type is still less numerous than other types in this part of the world, as these claims do not refer to the relative frequencies of the different types of negation in South America. Different from Dryer (2013a) and Muysken et al. (2014), the claim in Vossen (2016) compares postverbal and preverbal negation, but does not single out the morphological type of negation.

Another intriguing question concerns the areal distribution of negation within South America. The fact that Dryer (2013a) singles out its northern half from the rest of the world merits further exploration. Of course, Dryer's phrasing 'the northern half of South America' is vague. How far south does this northern half stretch? How big and/or how dense does an area have to be in order to compete for being considered to have the largest concentration of postverbal morphological negators? In Muysken et al. (2014) the overrepresentation of the postverbal pattern and its morphological nature is noted in the context of South America as a whole, not specifically its northern part. The South American continent is known for its impressive genealogical as well as typological

3 Here we mention briefly on which data the three relevant studies are based. Dryer (2013a) considers data from 1,325 languages, including 121 South American languages. Muysken et al. (2014) use data from *WALS*, which means that their conclusions related to negation are based on the data by Dryer. It should be noted that the two relevant chapters used for their analysis, i.e., Dryer (2013a, 2013b), consist of two somewhat different datasets. While the dataset in the former comprises 1,325 languages (of which 121 are from South America), the dataset in the latter comprises 1,157 languages (of which 113 are South American). It is also not the case that the bigger dataset includes all languages of the smaller one. Vossen's (2016) study is based on 1,715 languages, comprising Austronesian languages, Sino-Tibetan, Australian, and languages of the Americas, 264 of which are South American. Thus the full dataset is large but it represents only part of the world and includes as many related languages as possible, which was a strategic choice for the purpose of her study. For this reason, a comparison with Vossen's (2016) results are problematic, and we do not include it in the further comparison.

diversity (Adelaar 2012: 24; Campbell 2012: 59; Crevels 2012a: 168–169);[4] one would not expect to see this much convergence at the level of a continent or a large part of it.

All-in-all, the fact that the three mentioned studies, each with a different focus and scope, independently single out South American languages with respect to negation, and the fact that all observations are basically brief side-observations pointing in the same direction but saying somewhat different things, call for a focused study of the topic.

Thus the goal of the paper is two-fold. First, we examine the way negation is marked in South America compared to languages in the rest of the world. We investigate three parameters of variation: the position of negation in the clause, the morpho-syntactic status of negators, and the relation between the position and the morpho-syntactic status. Second, we study the areal distribution of the negation patterns in South America with the aim of finding out whether negation patterns show any areal concentration. In this way we contribute to the knowledge on areal patterns within South America, which can be indications of language contact.

The paper is structured as follows. In the next section (2), the data and methodology used in the study are presented. In Section 3 we introduce the categories and parameters in negation that are relevant for our study. In Section 4 we present our results. First, we compare negation patterns in South America to the rest of the world, and we then consider areal distribution of negation patterns within South America. In Section 5 we discuss our findings in a more general context. In Section 6 we consider the factors that can help explaining postverbal morphological negation in South America. Section 7 contains the conclusions.

2 Data and methodology

2.1 Data

In order to assess the characteristics and areality of negation in South America, we compiled an extensive dataset covering different parameters of negation for 221 South America languages across 77 families, with 40 families having more than one member and 37 isolates. Thus our sample covers 59% of the isolates in South

4 South America is home to the highest number of one-member families (or isolates) in the world, accounting for about 35% of the world's total (Campbell 2017: 9, 11), with about 60% of the lineages having a single living member. There are also more two-member or three-member families, and fewer large families, compared to the other continents (Campbell 2017: 9, 11). Among the 44 top-level families, only eight are relatively large (with e.g. Arawakan up to 77 languages, Hammarström et al. 2021), another five are 'mid-sized', and all the other families are small, with up to six members (see also Campbell 2012: 59).

America and 90% of the families. The number of families and isolates in our sample is close to the maximum for which relevant information is available to date. Unclassifiable languages are not part of the sample, since we lack information on negation for these languages. Unavoidably, some families are better represented than others, for the simple reason that some families are better described than others. To that extent our sample is still a 'convenience sample', a reminder aptly stressed by a reviewer. Also, unavoidably, the branching of the various families will have happened at various and usually unknown time depths. A factor – relevant for all datasets used in studies on negation – is that we do not know whether the expression and specifically the placement of negation is diachronically stable or variable and, if variable, what determines the (in)stability.[5] Nevertheless, our South American dataset differs favorably from the one in Dryer (2013a) in three ways. First, our dataset is almost twice as big as the South American dataset in Dryer (2013a). Second, a good number of high-quality grammars have become available since 2013, and today we can make use of around 40 good-quality descriptions unavailable to Dryer at the time of his study.[6] Third, our dataset constitutes a variety sample, i.e., serving the purpose of discovering linguistic diversity (Rijkhoff et al. 1993: 171; Miestamo 2005: 29, 2016). Like Miestamo (2005), we aim at genealogical stratification. Thus we choose languages as representatives from the lowermost node of a genealogical tree. For genealogy, as well as glossonyms, we mostly follow *Glottolog* (Hammarström et al. 2021), which represents a fair degree of consensus, but sometimes we follow the advice of experts where it differs from *Glottolog*. Like Miestamo (2005) we also pay attention to geography: whenever possible, we select representatives from different regions. Like Dryer (2013a), we take South America to begin at the Panama-Colombia border. Our entire dataset with negation strategies for 221 South American languages can be found in Appendix 1.

For the rest of the world (i.e., the world minus South America), we use the best available dataset, viz. the *WALS* dataset of Dryer (2013a).[7] We can make use of 1,190 languages for which both spatial reference and data on negation are available.

5 To illustrate this point with Indo-European, the inherited form and position in Indo-European is a preverbal negator starting with a nasal. It is widespread in the modern daughter languages. But at least in some languages, there is a high amount of renewal, as is shown by dialectal variation in contemporary Dutch (van der Auwera 2009: 49–53), Italian (Vossen 2016: 49–86), and Swedish (Rosenkvist 2021).

6 In fact, the most recent grammars used in Dryer (2013a) are from 2009.

7 Another potential dataset would have been Miestamo (2005), which is a variety sample of 297 world's languages, 48 of which are spoken in South America. However, since the study does not directly deal with the issues that are of concern to us and since the number of South American languages is relatively small, we cannot use it. Neither do we use Dahl (1979), which is based on a dataset of approximately 240 languages, only eight of which are spoken in South America.

Dryer (2013a) provides no information as to how languages in the dataset have been selected.[8]

2.2 Methodology

To be able to compare negation strategies in South America to the rest of the world, we first had to join our dataset for South America with data from *WALS* (Dryer 2013a). To do so, we recoded the values in *WALS* to have a uniform set of variables. For accessing *WALS*, merging both datasets, and for the spatial analysis and visualization of negation patterns, we mainly relied on the glottospace R package (Norder et al. 2022). To assess whether the spatial patterns of each negation strategy in South America differs from a homogenous Poisson process (Complete Spatial Randomness, CSR) we applied one-sided chi-squared goodness-of-fit tests for spatial clustering, using the quadrat.test function of the spatstat R package (Baddeley et al. 2015). With this approach we tested which quadrats are significantly larger than expected values, given a Poisson distribution. We applied chi-squared tests for varying numbers of quadrats. To reflect the shape of South America, we varied the number of quadrats in the East-West direction between 1 and 5, and multiplied those by 1.5 to obtain the number of quadrats in the North-South direction (rounded upwards to whole numbers). To identify possible hotspots where particular negation strategies are clustered, we generated kernel density maps for each of the four negation strategies in South America. The density in each cell was estimated using a Gaussian kernel function. To assess the sensitivity of our findings to the chosen function, we also fitted a quartic kernel function. This was implemented using the density.ppp function from the spatstat R package (Baddeley et al. 2015). Rather than setting a fixed bandwidth, the smoothing bandwidth (sigma) for kernel estimation was selected using likelihood cross-validation, as implemented in the bw.ppl function in spatstat (Baddeley et al. 2015). Additional spatial data were obtained from Natural Earth (South 2017), and visualization was further enabled by the following R (R Core Team 2021) packages: glottospace (Norder et al. 2022), ggplot2 (Wickham 2016), sf (Pebesma 2018), and tmap (Tennekes 2018).

8 Inspecting the dataset that represents South America we can conclude that it is a good approximation of a variety sample; however, inclusion of some languages over others is problematic. For example, Barbacoan is represented in Dryer (2013a) with Tsafiki, Awa Pit and Cha'palaa. The latter is closely related to Tsafiki, being in the same branch, whereas another branch remains unrepresented. In our own dataset Barbacoan is represented by Tsafiki, Awa Pit and Guambiano, all three from different branches.

3 Negation: categories and parameters

This paper focuses on standard negation, i.e., the negation of an overt verbal predicate in a main clause declarative sentence (Miestamo 2005; Payne 1985). Other kinds of negation are not considered, unless otherwise noted, and thus the term 'negation' will be used for 'standard negation', and the term 'negator' for 'standard negator'.

3.1 Exponence

Languages world-wide tend to express semantically simple negation with a single negator. We see this in the worldwide sample of 179 languages by Van Alsenoy (2014: 190): 149 languages (83%) have a single exponence strategy only. A 'single negation' strategy can be seen in examples (1) and (2) above. Some of the world's languages, however, may or must use two negators, and these may or may not 'embrace' the verb. A pattern where two negators are either possible or obligatory will be considered as 'double negation', illustrated in (3).

(3) Yucuna (Arawakan) (yucu1253)
unka *pi=amá-**la**-je* *o'wé*
NEG 2SG=see-NEG-FUT brother
'You will not see (my) brother.'
(Lemus Serrano 2020: 13)

There are also languages that may use three negators, and some – even four and five (see Doornenbal 2009: 271; Vossen 2016: 35), but the latter categories are marginal.

Figure 1 demonstrates the distribution of single versus double negation in the world's languages. There are no languages in South America that use three or more negators for standard negation. For this reason and for the reason that triple negation occurs in only six languages out of 1,325 languages in Dryer (2013a) (three of which are in Africa and three in Oceania), triple negation is removed from the dataset.

Double negation will be considered only in the comparison of the position of negators. For the other analyses, we leave languages with double (and triple) negation aside. The main reason is that Dryer's (2013a) data on double negation are difficult to assess and compare in a straightforward way. This is not an issue, however, given that the great majority of the world's languages use a single negator.

It should also be mentioned that the numbers for single negation include such a rare strategy as *optional* single negation. Dryer (2013a) reports it only for one

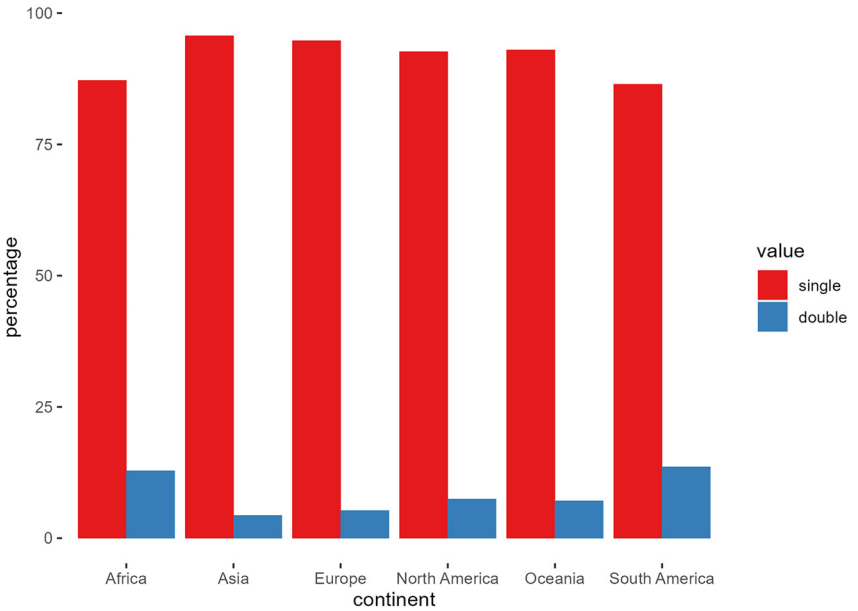

Figure 1: Distribution of single versus double negation. Data for South America were compiled specifically for this study (Appendix 1); data for the rest of the world were obtained from Dryer (2013a).

language in his dataset (Wyandot). In our South American sample two languages are found with this strategy: Karitiana (Tupian) and Movima (isolate).[9]

3.2 Position

Languages that use a single negator force a choice between the preverbal and the postverbal positioning of the negator. The terms 'preverbal' and 'postverbal' will here

9 The zero exponence of Karitiana has made it into the typological literature (e.g. Miestamo 2010; van der Auwera and Krasnoukhova 2020a), but that of Movima has not. The latter is, in fact, the more interesting type. Both languages do have a dedicated standard negator, which they often drop. In Karitiana negation is 'marked' by the absence of something else, viz. an affirmative or declarative mood marker (Landin 1984; Storto 1999, 2018). In Movima, however, there is no such additional covert marking. The standard negator, when present, combines with the lexical verb in a nominalized form (Haude 2006: 90, 316, 132, 2018: 232), and in spontaneous speech, it is the nominalized lexical verb by itself that can express negation (Haude 2006: 440, 443). The fact that a non-finite verb which normally accompanies a standard negator can express negation all by itself is documented elsewhere: we see it in dialectal Finnish and Estonian (van der Auwera et al. forthcoming a, forthcoming b), but in these languages the non-finite from is strongly associated with negation. In the Uralic tradition this form is called 'connegative'. The non-finite form in Movima, however, is not associated with negation.

be used in the wide sense that encompasses the placement of a negator before or, respectively, after the verb, whether the negator is a syntactic (free) element or a morphological (bound) one, i.e., an affix. The use of these terms in the wide sense is not controversial, but Dryer (2013a) and Muysken et al. (2014) use the wide sense too. There is more to be said, however. First, standard negation may require the use of a positive auxiliary.[10] For example, in our South American sample, 27 languages use such auxiliaries. In studies on negation, there are two approaches as to what type of verb is taken as the reference point, i.e., the lexical verb (e.g. in Dryer 2013a) or the auxiliary, when there is one (e.g. in Dahl 1979, 2010; Miestamo 2005; Vossen 2016). In this study, we take the lexical verb as the reference point.[11] In (4) below the negator is thus postverbal, for it follows the lexical verb.

(4) Amarakaeri (Harakmbut) (amar1274)
Wettone?-mey *mba-tiaway-**we*** *õn-mã-**ẽ**-mẽ-tẽ*
woman-COLL VPL-see-NEG 3PL.IND-VPL-be-REC.PST-NVIS
wa-mationka-eri-ta
NMLZ-hunt-AN-ACC
'The (group of) women didn't find the hunters.'
(Van linden forthcoming)

The same is true in (5) and (6). In (5) the negator follows the auxiliary, and in (6) the order is reversed, but in both, the negator follows the lexical verb. The two languages are thus classified in the same way.

(5) Culina (Arawan) (culi1244)
ethe *khi* *o-**na**-**hara**-pa*
dog see 1SG-AUX-NEG.M-PST
'I didn't see the (male) dog.'
(Dienst 2014: 83)

(6) Kanoê (isolate) (kano1245)
aj *ja* *õ-**k**-e-**re***
1SG want 1-NEG-DECL-AUX
'I don't want.'
(Bacelar 2004: 216)

10 In most languages, it is the copular 'be' verb, which is also used with nominal predicates. We follow Hengeveld (1992) in regarding copulas as a subtype of auxiliaries. There are also negative auxiliaries; they are briefly discussed in Section 3.3.

11 The choice of a reference point – auxiliary or lexical verb – is not too important for the general picture (cf. Van Olmen 2021). This is also confirmed by the fact that results of the different approaches agree on the preference for preverbal negation worldwide.

There are languages, however, that have more than one pattern. If one pattern involves a single negator in the preverbal position, and another pattern – a single negator in the postverbal position, as in (7) – we call it 'asymmetric dual patterning'. This parameter is relevant for the analysis in Section 4.1.1.

(7) Paumarí (Arawan) (paum1247)

a. *iniani, o-noki-**ri**-hi ida*
no 1SG-see-NEG-THEME DEM.F
'No, I haven't seen it.'
(Chapman and Derbyshire 1991: 202)

b. *iniani, **ni**=o-noki-ki ida*
no NEG=1SG-see-NTHEME DEM.F
'No, I haven't seen it.'
(Chapman and Derbyshire 1991: 202)

There are also languages which have more than one pattern, but the difference lies in the types of negators involved, independent of their position. This is illustrated with Sirionó, where one pattern involves a morphological negator and the other pattern a syntactic negator. Such cases are treated as 'mixed' negation. This parameter is relevant for the analysis in Section 4.1.2.

(8) Sirionó (Tupian) (siri1273)

a. *a-mae-**ä**-te e-rese*
1SG-see-NEG-INTNS 3-OBL
'I haven't seen it.'
(Priest and Priest 1980 in Dahl 2014: 122)

b. *papa ke se-mbu-tiarö **eä** nda*
father DK 1SG-CAUS-grow NEG FM
'My father didn't raise me.'
(Dahl 2014: 122)

3.3 Morpho-syntactic status

Negation can be overtly expressed by morphological or syntactic negators, or by a combination of these. There is a rarer strategy involving a combination of morphological negators and tone, and a very rare case where only tone functions as a negator (see Dryer 2013a).[12] In the South American sample there is one

12 Dryer (2013a) lists only one language out of 1,325 where tone is the only means to signal negation, and six languages where tone on the verb combines with a morphological negation, all in Africa (see Dryer 2013a).

language where tone combines with a morphological negator (viz. Mamaindê (Nambiquaran), Eberhard 2009: 437). We categorized this language as having double negation following Dryer (2013a) for similar cases.

Morphological negators are realized as affixes. These are either postverbal (suffixal), as in Mapudungun (9), or preverbal (prefixal), as in Sanapaná (10).

(9) Mapudungun (Araucanian) (mapu1245)
kuyfi *kütu* *pe-**la**-eyu*
long.ago since see-NEG-1SG>2SG
'I have not seen you$_{sg}$ in a long time.'
(Zúñiga 2000: 56)

(10) Sanapaná (Lengua-Mascoy) (sana1298)
***m**-o-vet'-o* *mokham* *meyva*
NEG-1-see-IRR still lion
'I haven't seen a lion yet.'
(Van Gysel in preparation, p.c.)

There is a single case of a language, Itonama, where monosyllabic verbs use the negative prefix (11a), while disyllabic and polysyllabic verbs use the negative infix (11b), in both cases formally realized as a glottal stop (Crevels 2012b: 257). The differences between the affirmative and negative sentences are the insertion of the negator before the last syllable of the verb stem, the addition of a relativizer *mi-/ni-*, which creates a nominalized form, and the addition of a dependent verb stem marker instead of the independent marker in the affirmative form. Finally, a dependent Subject or Agent cross-reference marker is used instead of the independent markers in the affirmative forms (M. Crevels, p.c.). Note, however, that monosyllabic verbs are rare in Itonama (M. Crevels, p.c.), and thus the corresponding strategy is found only marginally.

(11) Itonama (isolate) (iton1250)

a. *dih-ni-ka-'-mo'-na-mo*
2PL-REL-face-NEG-hit-NEUT-1
'You guys don't hit me (in the face).'
(M. Crevels, p.c.)

b. *wase'wa* *a'-mi-ya<'>ka-na* *machiriri*
yesterday 2SG-REL-sing/read<NEG>sing/read-NEUT paper
'Yesterday you were not reading the book.'
(Crevels 2012b: 258)

Clitics are an in-between category. Following Dryer (2013a) we treat clitics as syntactic elements. Particles are a second type of syntactic negators. Both clitics and particles can be either postverbal or preverbal. Finally, there are negative

verbs. In Payne (1985) two types of negative verbs are distinguished, viz. higher negative verbs and negative auxiliaries. The former subordinates a lexical verb, which occurs in a complement clause, and the clausal boundary is clear. We may see this in Nivaclé (12). Though the negator has no inflection, it has future semantics and there is a subordinator.

(12) Nivaclé (Matacoan) (niva1238)
tan *ca* *ja-vo-'a-ch'e*
NEG.FUT SUB 1S-follow-2-long
'I will not go with you.'
(Fabre 2016: 370)

We assume that many, if not all, languages can resort to periphrasis with negative verbs (see also Dahl 1979: 80–81). Therefore we count the negative verb strategy only when it is the main or the only strategy available for expressing negation, as far we can judge from the grammar. Example (13) from the Ecuadorian variety of Siona illustrates a negative auxiliary.[13] In the Ecuadorian variety (as opposed to the Colombian variety) the pragmatically unmarked strategy, i.e. standard negation, involves the use of a negative auxiliary *bã* 'not.be' (M. Bruil, p.c). Verbal inflections occur on the auxiliary and the lexical verb takes the general classifier *-je/-e,* functioning here as an event nominalizer (Bruil 2019: 396). A literal translation of (13) would be 'your meat making is not' – with 'meat making' expressing the idea of hunting.

(13) Siona, Ecuadorian variety (Tucanoan) (sion1247)
mɨ'ɨ wa'i ne-je ***bã-kɨ-na*** *mɨ'=dɨ̃hõ*
2SG meat make-CLF:GEN NEG.COP-SG.M.PRS-DS 2SG=wife
bɨ̃-i-o-na *mɨ'ɨ* *jo'-doha-i-kɨ?*
be.angry-IPFV-SG.F.PRS-DS 2SG do-wander-IPFV-2/3SG.M.PRS.NASSRT
'You are walking around here, because your wife got mad, because you don't hunt anything?'
(Bruil 2014: 204, p.c.)

As Payne (1985: 207) notes, there is no sharp boundary between negative verbs and negative auxiliaries due to a natural diachronic connection between them.

Not only is the distinction between negative verbs and negative auxiliaries often not clear, it may also be difficult to separate them from negative particles (see also Dryer 2013a). However, this is not an issue for us, for, like Dryer (2013a), we

13 The same construction is also found in the Ecuadorian variety of Secoya (Anne Schwarz, p.c.). In the Colombian variety of Siona, standard negation is encoded with the negative suffix *– ma(ʔi)* on the main verb (see Wheeler 1970: 93–94).

treat negative verbs, negative auxiliaries, negative particles and negative clitics all in the same category, that of the 'syntactic negator'.

4 Results

In this section we present results of a comparison between negation in South America and in the rest of the world (Section 4.1). We focus on three parameters: i) the position of the negator in the clause, ii) the morpho-syntactic status of the negator, and iii) the relation between the position and the morpho-syntactic status. Then we offer the results of the areal distribution of negation patterns in South America (Section 4.2).

4.1 Negative marking in South America versus the rest of the world

4.1.1 The position of the negator

Languages of all continents except South America favor *preverbal* single negation (Figure 2). The preference is particularly strong in North America, Oceania, Europe,

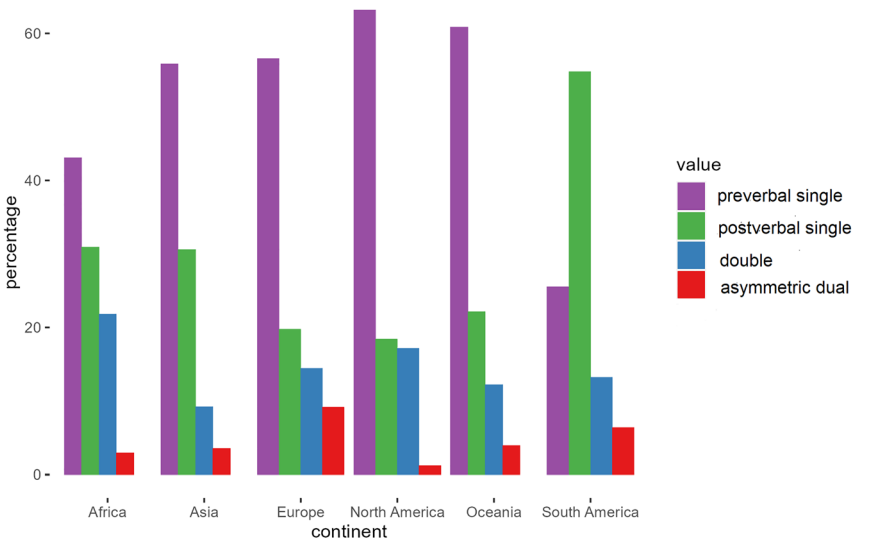

Figure 2: Distribution of preverbal single, postverbal single, double, and asymmetric dual negation. Data for South America were compiled specifically for this study (Appendix 1); data for the rest of the world were obtained from Dryer (2013a).

and Asia. In South America, preverbal single negation is not the preferred strategy, occurring only in 26% of the sample.

A pattern which is second in frequency on all continents except South America is *postverbal* single negation. It is almost two times less frequent in Asia (56 vs. 31%) and almost three times less frequent in Europe (57 vs. 20%), North America (63 vs. 18%), and Oceania (61 vs. 22%). In Africa the difference in frequency is less strong (43 vs. 31%), but it is present nevertheless. In South America, however, postverbal single negation is the dominant pattern, found in 55% of the sample. Thus the preverbal versus postverbal single patterns show an almost opposite distribution in South America versus the rest of the world.

The frequency of double negation in South America (13%) is not much different from the rest of the world; although some continents, like Africa (22%), show more of this pattern than others (e.g. Asia, 9%).

The frequency of the asymmetric dual strategy is highest in Europe (9%), followed by South America (6%). For the other continents, the numbers hover between 3 and 4%.

4.1.2 The morpho-syntactic status of the negator

Languages of all continents except South America prefer syntactic negators (Figure 3). The highest number is found in Oceania (75%), followed by Europe (72%), North America (71%), Asia (63%), and Africa (59%). In South America, syntactic negators account for only 38% of cases. Morphological negators, on the other hand, constitute the most frequent strategy in South America, found in 54% of cases. In the rest of the world, morphological negators are less common: they account for 38% of cases in Africa, 35% in Asia, 27% in North America, 26% in Europe, and only 20% in Oceania. We can also notice that the difference between the preferred and dispreferred strategies is highest in Oceania, but least so in South America. Languages with mixed single negation are generally infrequent. However, it is noteworthy that such languages turn out to be relatively more frequent in South America (8%), followed by Oceania (5%), Africa (3%), and Asia (2%), Europe (2%) and North America (2%).

4.1.3 Position and morpho-syntactic status

In previous sections we dealt separately with the position of the negators and their morpho-syntactic status; we now combine them (Figure 4).

The first thing to notice is that languages of most continents clearly prefer preverbal syntactic negation to the other means: North America (69%), Oceania

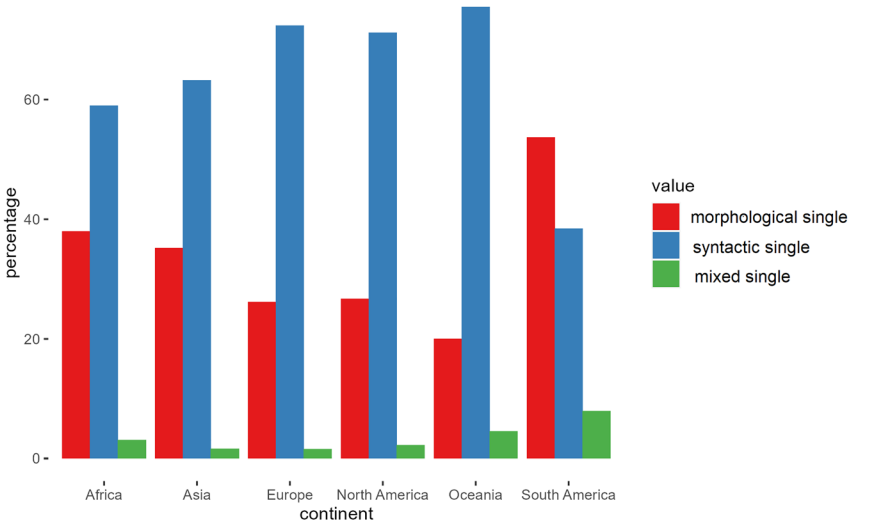

Figure 3: Distribution of morphological versus syntactic versus mixed negation strategies among languages with single negation. Data for South America were compiled specifically for this study (Appendix 1); data for the rest of the world were obtained from Dryer (2013a).

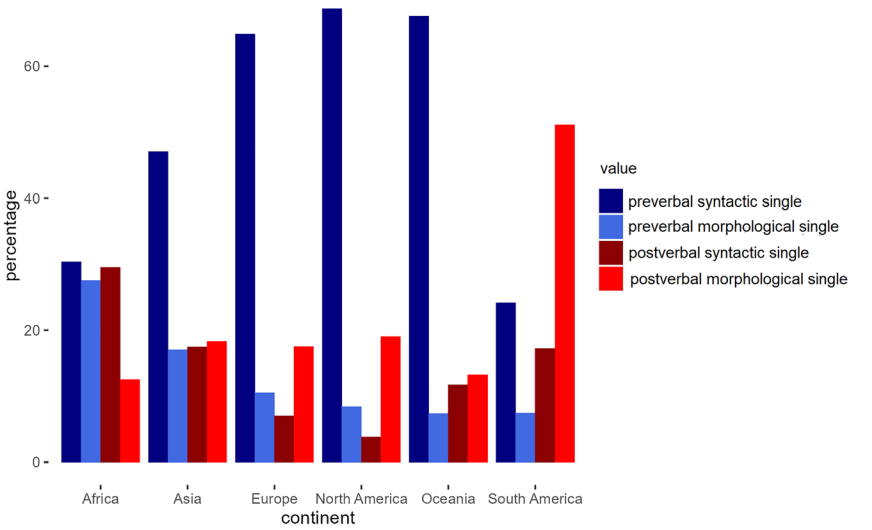

Figure 4: Distribution of preverbal syntactic, preverbal morphological, postverbal syntactic and postverbal morphological patterns among languages with single negation. Data for South America were compiled specifically for this study (Appendix 1); data for the rest of the world were obtained from Dryer (2013a).

(68%), Europe (65%), and Asia (47%). The preference is particularly strong in the first three macro-areas, as the frequency of preverbal syntactic negation lies there around 69–65%. In Africa, preverbal syntactic is most frequent too, but its occurrence is not much higher than the occurrence of either postverbal syntactic or preverbal morphological pattern. The lowest occurrence of preverbal syntactic negation in the world is found in South America (24%).

Second, it becomes evident that postverbal morphological negation is the preferred strategy in South America. In that part of the world, postverbal morphological negation accounts for 51% of cases, whereas in the rest of the world its occurrence hovers between 19% (in North America, Asia, and Europe) and 13% (in Africa and Oceania). In South America, postverbal morphological negation is almost twice as frequent as the preverbal syntactic negation (the second most frequent strategy on the continent).

Third, while South America clearly prefers morphological negators as shown in Figure 3, this only concerns negators in the postverbal position. It becomes evident from Figure 4 that morphological negators in the preverbal position constitute the least frequent negation strategy in South America. Morphological negation accounts for only 7% of cases. The occurrence of preverbal morphological negators is similarly low in Oceania (7%), North America (8%), and Europe (11%). However, it is more frequent in Asia (17%) and even more so in Africa (28%) (see also Dryer 2013a).[14]

Fourth, it can be noticed that postverbal syntactic negation shows quite different distributions across the continents. While it is most present in Africa, as also stated in Dryer (2013a), accounting for about 30% of cases in Africa, it is least common in North America, found in only 4% of cases. In South America, it is the third most frequent strategy, found in 17% of cases.

Finally, the type of the least frequent strategy is quite different per continent. In South America, as well as in Oceania, it is preverbal morphological negation. In North America and Europe, it is postverbal syntactic. In Africa, postverbal morphological is least frequent. In Asia, all three patterns other than preverbal syntactic are equally infrequent.

4.2 Areal distribution of negation strategies in South America

In this section we zoom in on South America and present our findings regarding the areal patterns of negation marking. The distribution of the four main negation strategies (viz. preverbal syntactic, preverbal morphological, postverbal syntactic, and postverbal morphological) is shown in Figure 5.

14 Dryer (2013a) specifies, however, that languages with negative prefixes are centered around east Africa and constitute mostly Bantu languages.

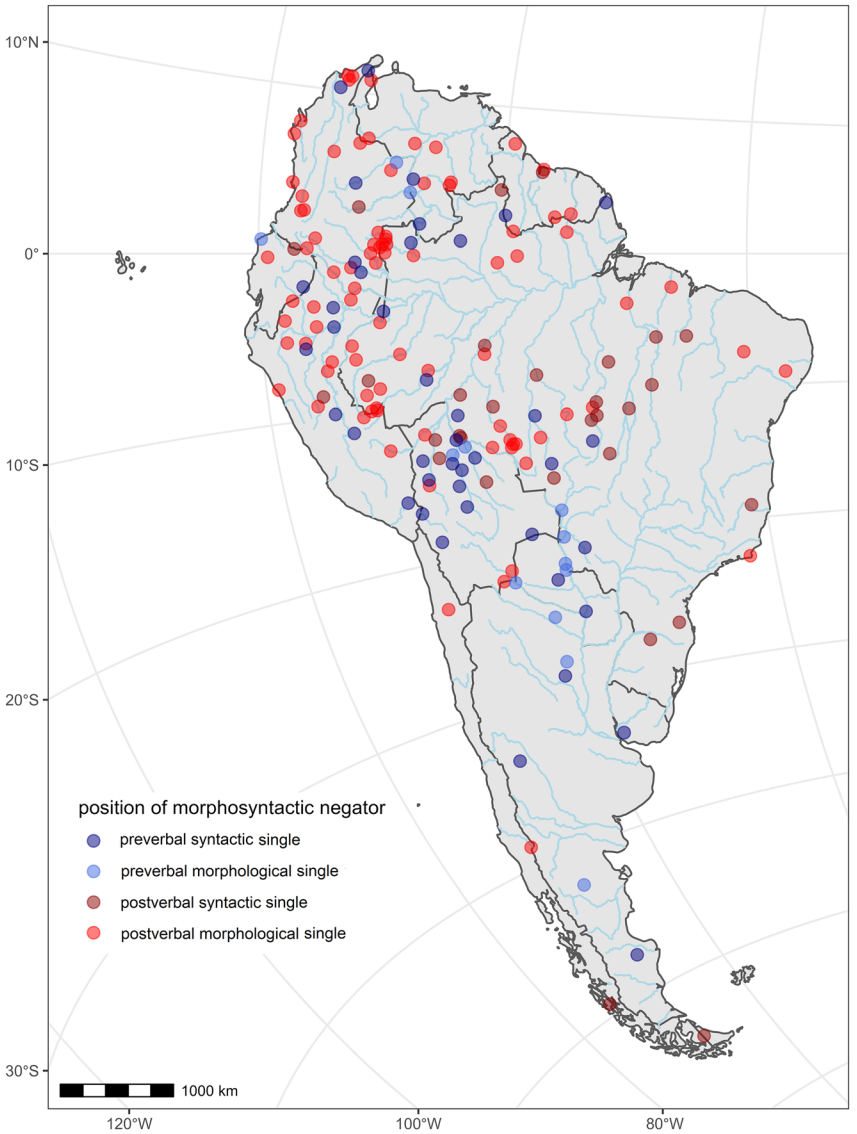

Figure 5: Distribution of four major negation strategies in South America (Azimuthal Equidistant projection). Note that this map only includes languages with single negation that have only one negation strategy, thus leaving aside languages with asymmetric dual patterning and those with mixed negation. The number of languages included on the map amounts to 174, distributed as follows: postverbal morphological negation (89 languages), preverbal syntactic (42), postverbal syntactic (30), and preverbal morphological (13).

Table 1: Results of one-sided chi-squared goodness-of-fit tests for spatial clustering.

Negation strategy	(nx1, ny2)	(nx2, ny3)	(nx3, ny5)	(nx4, ny6)	(nx5, ny8)
Preverbal syntactic	n.s.	*	**	**	***
Preverbal morphological	n.s.	n.s.	**	n.s.	n.s.
Postverbal syntactic	*	n.s.	n.s.	*	n.s.
Postverbal morphological	***	***	***	***	***

Significance levels: n.s. = $p > 0.05$; * = $p \leq 0.05$; ** = $p \leq 0.01$; *** = $p \leq 0.001$.

Figure 5 obviously does not show whether particular negative strategies are spatially clustered. But we can do better. The chi-squared goodness-of-fit tests for spatial clustering (Table 1) indicate that for the number of quadrats tested, postverbal morphological and preverbal syntactic patterns differed significantly from the null hypothesis in 5/5 and 4/5 cases, showing that their distribution is non-random for the majority of cases. In contrast, postverbal syntactic and preverbal morphological differed from the null hypothesis in only 2 and 1 out of 5 cases, respectively. Those negation strategies that differ from a random pattern least often are also the negation strategies for which few data are available. Consequently, the expected counts in some quadrats will be small, suggesting care should be taken when interpreting chi-squared test statistics for these negation strategies.

As a logical consequence of the number of languages that use a particular negation strategy, the intensity (λ, the number of points per unit area, in this case South America) is highest for postverbal morphological negation, intermediate for preverbal syntactic and postverbal syntactic, and lowest for preverbal morphological. Kernel density maps (Figures 6–9) show, for each negation strategy, the density of languages on a smooth surface. For each of the four negation strategies, we fit models using two different kernel functions. Overall, the patterns derived from the Gaussian function (Figures 6–9) and the quartic function were highly similar. The latter can be found in Appendix 3.

As can be seen from the maps, postverbal morphological single negation (Figure 6) has the highest density in the northwest of the continent, with the highest concentration around the boundaries between Colombia, Peru and Brazil. Postverbal syntactic single negation (Figure 7) is concentrated mainly in the central part of Brazil up to the border with Bolivia. Preverbal syntactic single negation (Figure 8) shows the highest density in the northern part of Bolivia; a relatively high concentration is also found in the area stretching up northwards along the eastern part of Brazil and the western part of Peru. Preverbal morphological negation (Figure 9) is primarily concentrated around the northern part of Paraguay, northeast Argentina and the southeast of Bolivia, which approximately corresponds to the geographical region known as ‘Grand Chaco’.

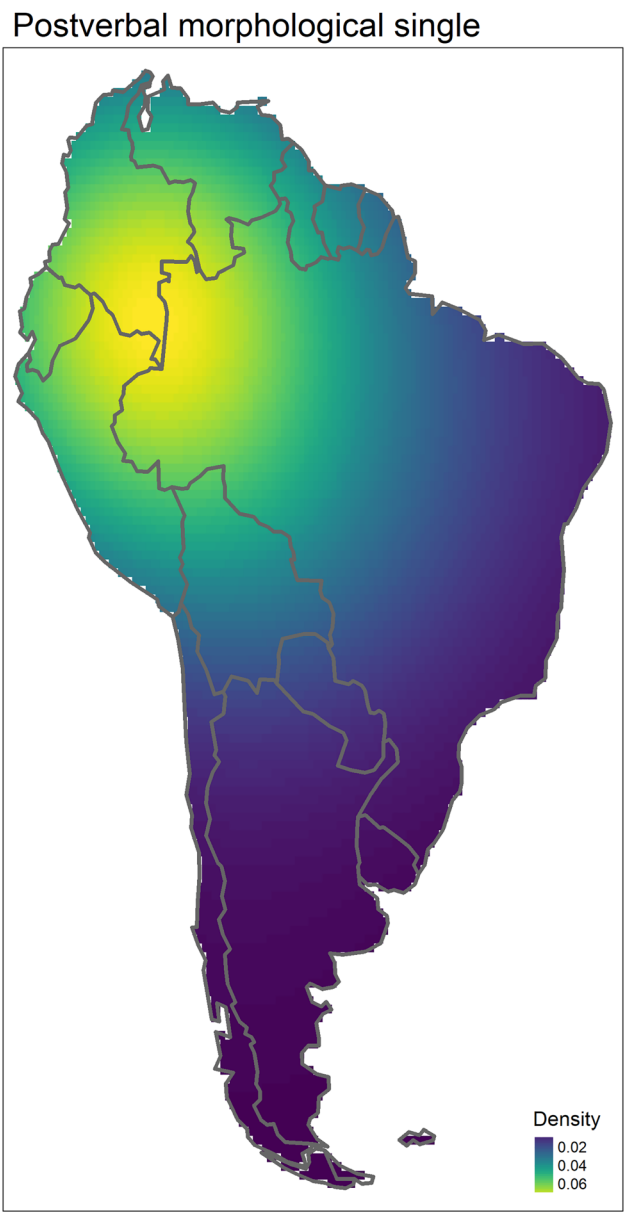

Figure 6: Kernel density map for the postverbal morphological single pattern. Yellow color indicates the highest density and blue color indicates the lowest density. Densities are given in number of points per square kilometer, multiplied by 10^4 to increase readability. The map is in Eckert IV global equal area projection (cell size ~2200 km^2). Models were fitted using a Gaussian kernel function (for maps created using a quartic kernel function, see Appendix 3).

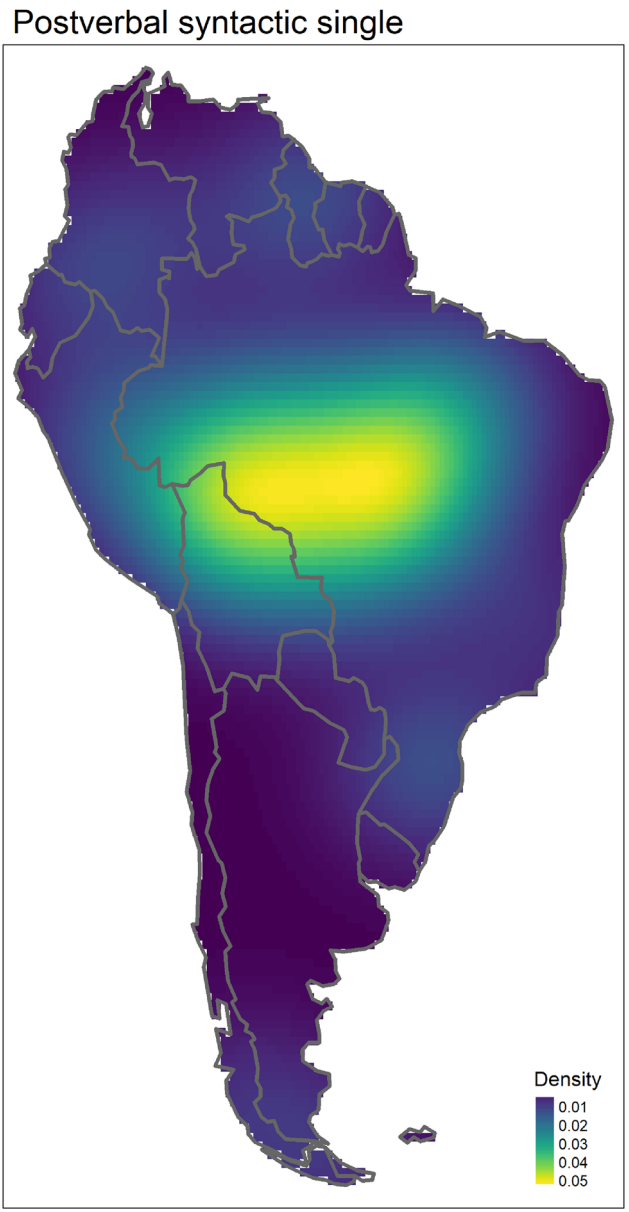

Figure 7: Kernel density map for the postverbal syntactic single pattern. Yellow color indicates the highest density and blue color indicates the lowest density. Densities are given in number of points per square kilometer, multiplied by 10^4 to increase readability. The map is in Eckert IV global equal area projection (cell size ~2200 km^2). Models were fitted using a Gaussian kernel function (for maps created using a quartic kernel function, see Appendix 3).

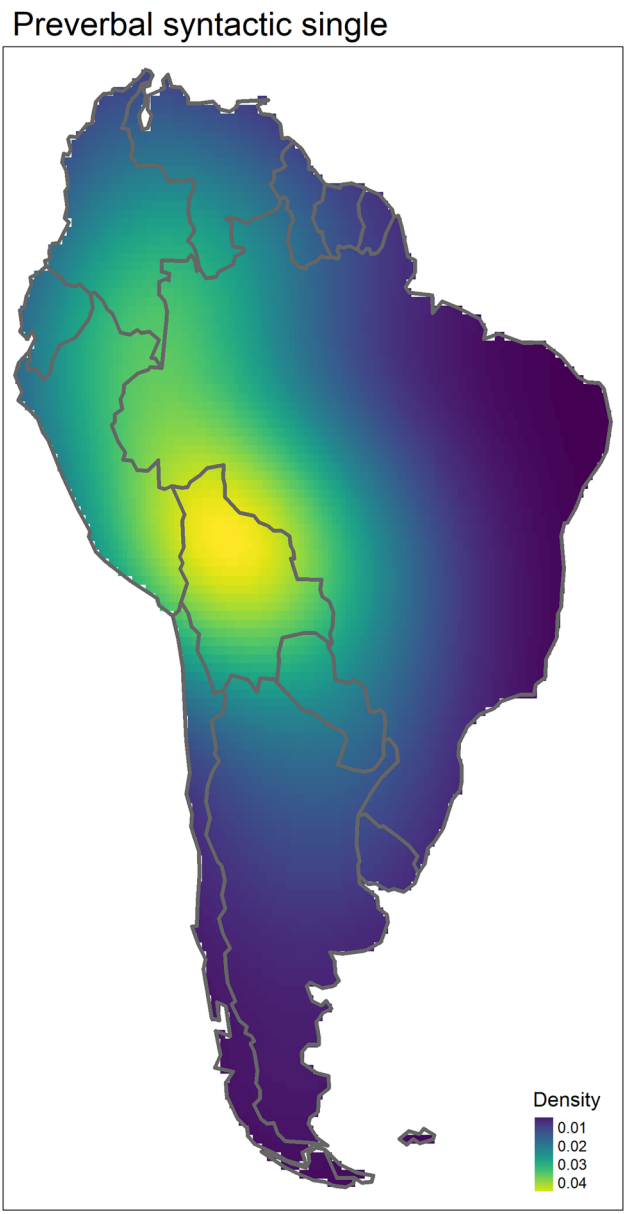

Figure 8: Kernel density map for the preverbal syntactic single pattern. Yellow color indicates the highest density and blue color indicates the lowest density. Densities are given in number of points per square kilometer, multiplied by 10^4 to increase readability. The map is in Eckert IV global equal area projection (cell size ~2200 km^2). Models were fitted using a Gaussian kernel function (for maps created using a quartic kernel function, see Appendix 3).

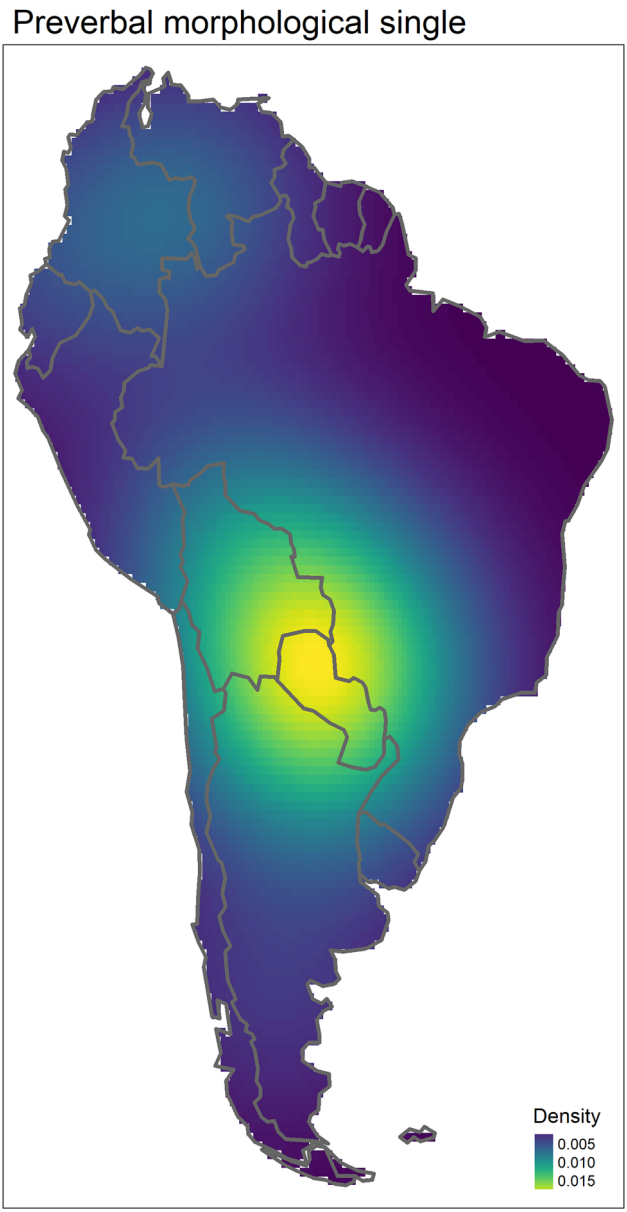

Figure 9: Kernel density map for the preverbal morphological single pattern. Yellow color indicates the highest density and blue color indicates the lowest density. Densities are given in number of points per square kilometer, multiplied by 10^4 to increase readability. The map is in Eckert IV global equal area projection (cell size ~2200 km^2). Models were fitted using a Gaussian kernel function (for maps created using a quartic kernel function, see Appendix 3).

5 Discussion

If we compare negation strategies in South America to those of the rest of the world, we can note at least three things.

First, we can confirm and substantiate the earlier observation of Vossen (2016), which was based on data from only part of the world: as compared to the other macro-areas, South America prefers postverbal negation over preverbal negation (see Figure 2).

Second, we can confirm that South America overrepresents morphological negators (Muysken et al. 2014: 306), as compared to the rest of the world. The distribution of morphological versus syntactic negation (if we abstract from its position) in South America is almost the opposite of what we find in the rest of the world (see Figure 3). However, the preference for morphological negators in South America concerns only the negators in the postverbal position (see Figure 4). In this respect it is interesting that, if all continents are taken together, Dryer (2013a) finds no "significant difference between the frequency of negative prefixes and negative suffixes". He attributes this to "the general crosslinguistic suffixing preference, which competes with the preference for preverbal negative morphemes, thus resulting in roughly equal numbers of the two types of languages with negative affixes" (Dryer 2013a). We do not object to the idea of a competition between the Neg Early principle and the cross-linguistic preference for suffixes. However, as one can see in Figure 4, negative prefixes are frequent mainly in Africa, and to some degree in Asia, but they are infrequent elsewhere; negative suffixes are frequent only in South America, and are infrequent elsewhere. Thus there is a clear geographical skewing in the distribution of languages with negative prefixes and with negative suffixes. Therefore conclusions on the worldwide lack of a significant difference between the frequency of negative prefixes and negative suffixes need to be taken with care.

Third, we can state that South American languages clearly prefer the postverbal morphological negation strategy to any other strategy. The predominance of this negation pattern sets the South American continent apart from the rest of the world, as this is among the least common strategies in the non-South America part of the world (Figure 4).

With regard to the areal distribution of negation patterns in South America, we can note the following.

First, the most common negation strategy in South America, i.e. postverbal morphological single negation, shows a high density in the whole northwestern part of the continent, with the highest density around the boundaries between Colombia, Peru and Brazil (Figure 6). Among 77 language families (including 37

isolates) represented in our sample, postverbal morphological negation is found in 45 families (including 20 isolates), which corresponds to 58% of the genealogies in the sample. The fact that more than half of the South American language families have postverbal morphological negation calls for a consideration of the role of language contact in this spread. Appendix 2 offers an overview of genealogies with postverbal morphological negation. At least in the following language families (having more than one member and represented in the sample with more than one language), postverbal morphological negation is the dominant strategy and seems to be genealogically anchored: Pano-Tacanan, Tucanoan, Cariban, Chibchan (spoken in South America), Nambiquaran, Arawan, Barbacoan, Chicham, Chocoan, Saliban, Naduhup, Yanomaman, Boran and Huitotoan.

Second, postverbal syntactic single negation is concentrated in the central part of Brazil up to the border with Bolivia (Figure 7). The languages spoken in this area are primarily Macro-Je languages, but we also see the Tupian languages Gavião,[15] Karitiana, Karo, Mundurukú and Sirionó, the Chapacuran languages Napeka and Toró, the Bororoan language Umotína and the isolates Kanoê and Trumai. Among the above-mentioned Tupian languages, only Sirionó belongs to the Tupí-Guaraní branch, whereas the other languages represent different branches of the Tupí linguistic stock. The similarity between negation patterns (although not the actual negation forms) between the Macro-Je and the above-mentioned Tupian languages deserves a further exploration in the light of various instances of grammatical congruence between these families (see e.g. Rodrigues 2009). The same remark pertains to the relationship between the Macro-Je and Bororoan (see Camargos 2013).

Third, preverbal syntactic single negation (Figure 8) shows the highest density in the northern part of Bolivia. One can also observe a relatively high occurrence of the pattern in the area stretching up northward along the eastern part of Brazil and the western part of Peru. Languages accounting for this areal pattern are genealogically diverse; many of these represent small families. For example, the area of the highest concentration of the pattern involves languages of the Southern Maipuran branch of Arawakan, Tacana (Tacanan), Eastern Bolivian Guaraní (Tupian), Wari' and Itene (Chapacuran), Uru and Chipaya, Mosetén-Chimané, Puquina, Yurakaré, Movima, and Canichana.

Finally, preverbal morphological negation (Figure 9) is concentrated primarily in the northern part of Paraguay, the northeast of Argentina and the southeast of Bolivia. This corresponds approximately to the Grand Chaco geographical region. Languages with preverbal morphological negation found in this area are mainly languages of the Guaicuruan, Matacoan and Lengua-Mascoy language families,

15 Gavião also has a preverbal syntactic negation pattern (Moore 2016).

and the isolates Cayubaba and, to some extent, Itonama[16] spoken in Bolivia. It should be noted, however, that the number of data points for preverbal morphological negation is small. Nevertheless, this concentration is interesting. The Chaco area is known to form a cultural area, although its status as a linguistic area is less strong (Campbell and Grondona 2012: 626, 657). Campbell and Grondona (2012: 657) mention that very few structural characteristics are common to the majority of Chaco languages, and none of them is unique to the area. Preverbal negation is not mentioned, however.[17] While we remain neutral to the overall question of Chaco as a linguistic area, it does look as if preverbal morphological marking of standard negation is characteristic of most languages spoken in this area.

To conclude, our maps show each of the four negation patterns with an area of concentration. While the kernel density maps for preverbal morphological and postverbal syntactic patterns suffer from a low number of data points, postverbal morphological and preverbal syntactic patterns are much more common in South America, and therefore the kernel maps give a more accurate representation of the density of these negation strategies. Recall that Dryer (2013a) observed the largest concentration of languages with postverbal morphological negators in the northern half of South America (as compared to the rest of the world). While we can confirm it, our results show that the concentration of postverbal morphological negation is, in fact, geographically more specific: the languages with this pattern are concentrated in the northwest of the continent, with the highest density around the boundaries between Colombia, Peru and Brazil.

6 Explanations?

As discussed in Krasnoukhova et al. (2021: 501), there are generally two ways in which languages can come to use postverbal morphological negation. One encompasses purely language-internal processes. The other one involves a contact-driven change, which would typically comprise language-internal processes, too. In the case of South America, where the occurrence of postverbal morphological negation is found in 58% of the language families, we suggest that both language-internal and language contact accounts are relevant.

For some individual South American languages there do exist explanations (or well-argued hypotheses) as to how their postverbal negation pattern has emerged. For most languages there aren't any. However, we can assume that some of the

16 See the discussion of example (11).

17 One of the traits related to negation is that languages of the Chaco have some adjectives formed as polar negatives (e.g. 'not tall' for 'short') (Campbell and Grondona 2012: 653).

existing explanations do apply to some of the other languages too. Importantly, the diversity of the existing explanations shows that the dominant postverbal (morphological) pattern has not come about in just one particular way. As of now, we can only address diachronic mechanisms and sketch a few processes relevant for South American languages.

One of the relevant diachronic processes is known as the 'Jespersen Cycle' (the term is due to Dahl 1979: 88). It comes in different versions, but in the typical case a language starts with a single preverbal negator, develops this into an 'embracing' double negator, and retains only the postverbal negator (Dahl 1979; Jespersen 1917; van der Auwera 2009; van der Auwera and Krasnoukhova 2020a). This mechanism is best described for European languages, with French being a textbook example. A sentence in modern written French, such as *Il ne peut pas venir ce soir* 'He can't come tonight', illustrates the element *pas*, which functions as a negator synchronically, but originates in a lexical item *pas* 'step', initially used after the verb for emphasis (Payne 1985: 224 referring to Price 1962, 1971: 252; van der Auwera 2009). This process is documented all over the globe, also in South America (Vossen 2016: 255–337). For instance, the Arawakan languages are predominantly preverbal (Michael 2014), but some Arawakan languages spoken in the Northern part of South America have double negation (with one negator preceding and another negator following the verb) and a few have a postverbal single pattern, some of which can be plausibly accounted for by a Jespersen Cycle (van der Auwera and Vossen 2016: 210–211). The relevance of a Jespersen Cycle has been also addressed for other South American languages, for example, the Tacanan language Tacana (Guillaume forthcoming) and the Barbacoan language Awa Pit (Krasnoukhova and van der Auwera 2019), among others. Of course, interpreting single postverbal negation as the result of a Jespersen Cycle is often hazardous in the absence of sufficient diachronic materials and comparative synchronic evidence.[18]

Another line of thought starts from the observation that South American languages are predominantly verb-final at the clause level, typically with SOV order for transitive clauses and SV for intransitives (see also Birchall 2014; Dryer 2013c). When these clause-final (or, at least, 'clause-late') verbs have negative

18 For example, the postverbal single negator *khoro* in Guianese Lokono is suggested by Patte (2014: 52) to have a possible origin in the diminutive particle *khan*, meaning 'a little' or a 'small quantity'. This would be a typical case of an emphasizing element turning into a negator. However, while Guianese Lokono also has a preverbal single privative negator *ma-* (see Patte 2014; Rybka and Michael 2019), there seems to be no evidence that the postverbal *khan* has been part of a doubling negation construction and was first used as an emphasizer. Also, as pointed to us by a reviewer, this origin seems to be very unlikely, as it does not conform to what is known about sound change in this family.

meanings, they could be the source of the clause-final or postverbal negator.[19] But we have to be careful: Dryer (1988: 96, 2013d) has shown that SOV languages would have either a negator directly following the verb or directly preceding the verb equally often.

Thus some languages of the Je family show evidence for a development of postverbal negators from clause-final lexical verbs with terminative semantics, such as 'finish'/'end', 'stop'. We refer the reader to van der Auwera and Krasnoukhova (2022) for an extensive discussion of the suggested path and the Je languages involved. Example (14) illustrates Canela-Krahô, where the negator *nare* (from *inõare, A. Nikulin, p.c.) derives from the grammaticalized form of the lexical verb 'finish'/'end' (Castro Alves 2010: 468–469). This lexical verb can still be found in the closely related language Kayapó (see also Silva 2015: 189–192), shown in (15). It is of interest to note that in Canela-Krahô, the negator *nare* has also a short form *na* (Castro Alves 2004: 129), which may suggest the process of grammaticalization taking place.

(14) Canela-Krahô (Northern Je, Macro-Je) (cane1242)

Me	*h-ũmre*	*te*	*cukryt*	*cura-n*	***nare.***
PL	3-M	ERG	tapir	kill.SG-NF	NEG

'Men didn't kill the tapir.'
(Miranda 2015: 249, in van der Auwera and Krasnoukhova 2022: 22)

(15) Kayapó (Northern Je, Macro-Je) (kaya1330)

Ga	*arỳm*	*a-kõ-m*	*o*	***Ø-inõ-re.***
2.NOM	already	2-drink-NF	INSTR	3-end-DIM

'You have already finished drinking.'
(Castro Alves 2010: 469, in van der Auwera and Krasnoukhova 2022: 22)

A third line of thought takes us to the 'Negative Existential Cycle' (Croft 1991; Veselinova 2014; Veselinova and Hamari forthcoming), the process in which negative existential verbs, equivalents to the English 'not exist', can develop into

19 It should be mentioned that Givón (1973, 1978: 89, 2001: 267) suggests that inherently negative modality verbs, such as 'fail', 'lack', 'refuse', 'decline' or 'avoid' constitute a "universal source of negation-marking morphemes". The process involves grammaticalization. Givón (2001: 268) proposes that "[s]ince the syntactic construction in which grammaticalization occurs is that of main verb over its verbal complement, in OV languages the negative modality verb would tend to grammaticalize as a suffix, and in VO languages as a prefix". While the grammaticalization path from verbs into affixes as such can be supported by cross-linguistic data (see also Krasnoukhova et al. 2021: 507–509), Givón's argument that negators in the world's languages originate in inherently negative modality verbs has been convincingly demonstrated only for the Bantu language family (see Bernander et al. submitted). Its relevance for South America is not yet demonstrated.

standard negators. Relevant for us is that negative existential verbs which occur in the clause-final position can develop into clause-final standard negators. A good example are languages of the Pomoan, Yukian, and Wintuan families, spoken in the Northern California (see Mithun 2021). As Mithun (2021) demonstrates, in these families postverbal negators have their origin in clause-final negative existentials. Examples (16) and (17) sketch the situation in Pomoan. In Central Pomo, the form *čʰów* can function synchronically as a new (standard) negator, although its use is still restricted to realis clauses (Mithun 2021: 689). The source of this negator – a perfective verb meaning *čʰó-* 'not exist, be absent' – can still be found in the language (Mithun 2021: 689). In Eastern Pomo, the same negative verb (*kʰú-y* 'not.exist-PFV') has developed into a standard negator too, but the development has gone further: the new negator has been generalized to all types of negative constructions, and it has undergone reduction in form in dependent clauses, occurring now as a suffix (McLendon 1996: 533 in Mithun 2021: 691).

(16) Central Pomo (Pomoan) (cent2138)

a. *Mú:t̪uya=ʔkʰe* *ʔ=má:* ***čʰó-w.***
3PL=POSS COP=land not.exist-PFV
'Their land does not exist'='They don't have land.'
(Mithun 2021: 689)

b. *ʔa:* *mi:* *wá-:ʔw-an* ***čʰów***
1SG.AGT there one.go-around-IPFV.SG NEG
'I didn't go.'
(Mithun 2021: 689)

(17) Eastern Pomo (east2545)
'They kept traveling like that,
ma:xár-heʔ-bà-ya *xól-pʰi:li:-****kʰ*****uy.**
crying-SPEC-that-LOC towards-MULT.come-NEG
'never coming to where their mother was crying.'
(McLendon 1977: 42.77 in Mithun 2021: 691).

A development of a negative existential verb into a (standard) negator has been argued for a number of South American languages too, viz, some Chibchan languages, as well as some Je languages (see van der Auwera and Krasnoukhova 2020b, 2022).

A (clause-final) negative existential verb can become a (clause-final) standard negator not only via the Negative Existential Cycle. We argue that a negative existential verb can become a standard negator in constructions of verb serialization, verb incorporation and verb compounding. These processes are productive in different language families in South America. For example, in Mapudungun,

verbal roots/stems incorporated into other verbs are abundant (Zúñiga 2017: 115), and noteworthy is the fact that derivational affixes "seem to have verbal etymons" (Zúñiga 2017: 115). Along these lines a serialization path has been proposed for standard negation in the Tucanoan languages (Krasnoukhova et al. 2022).

Of course, the question remains as to why specifically South America as a whole has a preference for postverbal morphological negation. Here (ancient) language contact could have played a role. The postverbal pattern is dominant in several large language families (Pano-Tacanan, Tucanoan, Macro-Je, Cariban, the Chibchan languages of the Magdalenic branch),[20] as well as in different small language families (viz. Nambiquaran, Arawan, Barbacoan, Chicham, Chocoan, Saliban, Naduhup, Yanomaman, Boran, and Huitotoan – see Appendix 2). We can hypothesize that the postverbal pattern (possibly involving a syntactic negator at that time) has developed in a family with major extensions, or a dominant language group, and that it subsequently spread through language contact by means of smaller spreads.[21] Here contact among genealogically related languages (see Epps et al. 2013 for a discussion) is likely to be as relevant as contact among unrelated languages. Different processes could have been at play at different times, including contact-induced grammaticalization (Heine and Kuteva 2003) and direct affix borrowing – see Seifart (2017: 397, 415), who also stresses the importance of sociolinguistic factors (Seifart 2015: 100; Thomason and Kaufman 1988).

20 In the large Arawakan family, it is the preverbal pattern that is dominant (see also Michael 2014), and in the large Tupian family we find both postverbal as well as double negation.

21 One could push the argument further and consider different aspects of the prehistory of this continent. South America was the last continent to be settled by humans (except Antarctica), and early settlers went through a significant population bottleneck at the point of entry to South America (Goebel et al. 2008; Gómez-Carballa et al. 2018; Waters 2019). A limited pool of languages that the founder population could have brought with them might have had the postverbal pattern. This pattern could have been retained in different language families that have diversified to the extent that we have no evidence for their genealogical relatedness. The relatively limited time period during which South America was populated (compared to the other continents) could have been insufficient enough to develop the preverbal pattern to the extent that we see on the other continents. However, while this might partly explain why South America stands out compared to other continents, it cannot explain regional patterns within the continent. As seen in Figure 6, the highest concentration of postverbal morphological negation is in the northwest of the continent, which is closer to the point of entry to the South American continent and which also has a long history of human occupation (Goldberg et al. 2016). An additional counterargument is that a change of a negation pattern can happen relatively quickly, even within a few generations. So, the only way to sustain a dispreferred strategy over extended time periods could be language contact. Needless to say, there is no way one can go beyond conjecture in connecting the dominance of postverbal negation to South American prehistory.

Note that contact in earlier times seems most probable here. It emerges from a recent study by van Gijn et al. (2022) that data from linguistics and genetics in the sampled language groups in the Amazon region suggest a shared history (which may point to common ancestry or admixture) in the period before ca. 500 AD. Van Gijn et al.'s study focuses on the languages spoken in the Northwest Amazon region, which corresponds approximately to the area where the highest density of the postverbal morphological negation is identified (Figure 6).

If language contact is responsible for the dominance of postverbal (morphological) negation, it is likely that contact also played a role in maintaining this pattern. The postverbal negation strategy is functionally disfavored. One would thus expect that it is unstable, and that the 'Neg Early' pressure makes languages dispose of the pattern. However, it has been argued that some cognitively dispreferred patterns (e.g. ergativity, cf. Nichols 1993, 2003: 289; Bickel et al. 2015) have higher chances to 'survive' in situations of language contact (see Bickel 2015: 911–912; Nichols 2003: 295).

7 Conclusions

We can draw the following conclusions with respect to the way South American languages encode negation as compared to the rest of the world.

First, South American languages have a clear preference for the postverbal negation pattern, which goes against the global cross-linguistic preference for the preverbal pattern. Second, it was also shown that there is an over-representation of morphological negation, but this only concerns negators in the postverbal position. Third, we can state that South American languages prefer postverbal morphological negation to any other strategy. The dominance of postverbal morphological negation sets the South American continent apart from the rest of the world, since this strategy is among the least common ones elsewhere. Fourth, with respect to areal distribution of negation strategies within South America, we can conclude that the four main patterns of negation (i.e., postverbal morphological, postverbal syntactic, preverbal morphological and preverbal syntactic) each has their own area of concentration. The areal concentration of the dominant strategy, i.e., postverbal morphological negation, is found in the northwest of the continent, with the highest concentration around the boundaries between Colombia, Peru and Brazil. The fact that the postverbal morphological negation occurs in 58% of language families in South America calls for a consideration of language-internal developments as well as processes rooted in language contact.

Abbreviations

1	1st person;
2	2nd person;
3	3rd person;
ACC	accusative;
AGT	grammatical agent;
AN	animate;
AUX	auxiliary;
CAUS	causative;
CLF	classifier;
COLL	collective;
COP	copula;
DECL	declarative;
DEM	demonstrative;
DIM	diminutive;
DK	direct knowledge;
DS	different subject;
ERG	ergative;
F	feminine;
FM	final marker;
FUT	future;
GEN	general;
IND	indicative;
INSTR	instrumental;
INTNS	intensifier;
IPFV	imperfective;
IRR	irrealis;
LOC	locative;
M	masculine;
MULT	multiple;
NASSRT	non-assertive;
NEG	negative;
NF	non-finite;
NEUT	neutral aspect;
NMLZ	nominalization/nominalizer;
NOM	nominative;
NTHEME	non-theme;
NVIS	non-visual;
OBL	oblique;
PFV	perfective;
PL	plural;
POSS	possessive;
PRS	present;
PST	past;
REC	recent;

REL	relativiser;
S	subject of intransitive or stative verb;
SG	singular;
SPEC	specific;
SUB	subordinator;
THEME	theme;
TOP	topic marker;
VPL	verbal plural

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