Chapter 25

Nominal quantification in Kipsigis

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In this paper, I examine the syntax and semantics of nominal quantification in Kipsigis, a Nilotic language spoken in western Kenya. I present a compositional analysis of quantificational nominals and discuss how the Kipsigis patterns relate to previous crosslinguistic work on quantification.

1 Introduction

In this paper, I examine the syntax and semantics of nominal quantification in Kipsigis, a Nilotic language spoken by roughly 2 million people in western Kenya. I focus on nominals that contain the universal quantifier *tugul*, as in (1):[1]

(1) ru-e lagok tugul
sleep-PRS child.PL all
'All the children are sleeping.'

Such nominals pose a compositional puzzle, as although *tugul* may combine with a plural noun, as in (1), *tugul* may not combine with a singular noun unless the morpheme *age* is also present, in which case the resulting interpretation is 'every, any', as in (2a); *age* on its own translates as 'some, (an)other', as in (2b).[2]

(2) a. ru-e lakwet *(age) tugul
sleep-PRS child.SG *(some.SG) all
'Every child is sleeping.'

[1]All data are from my own field notes collected through elicitation interviews with Robert Kipkemoi Langat, a native Kipsigis speaker in his early 20s.
[2]For brevity, I gloss *age* as 'some' throughout.

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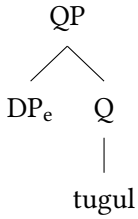
b. ru-e lakwet age
sleep-PRS child.SG some.SG
'Some/another child is sleeping.'

This pattern raises two analytical questions. First, what semantic (and syntactic) contribution does *age* make, to allow *tugul* to attach to a singular nominal? Second, how is the resulting universal interpretation compositionally derived, given that *age* on its own means 'some, (an)other'?

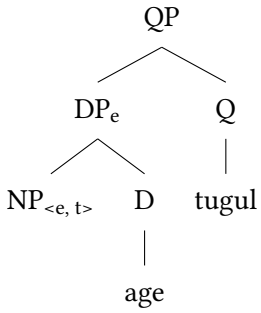
I will motivate an account of this pattern according to which the quantifier *tugul* heads a QP and is sister to an individual-denoting DP, i.e., a DP of type *e* (as Matthewson 2001 argues for quantificational nominals in Lillooet Salish):

(3)



Further, *age* is an indefinite determiner that denotes a variable over Skolemized choice functions (as in Kratzer 1998; see also Reinhart 1997; Winter 1997; Matthewson 1999; 2001; among many others); *age* thus attaches to an NP of type <e, t> and yields a DP of type *e*, in effect creating a suitable argument for *tugul* and restricting its domain (as in Matthewson's (2001) analysis of Salish):[3]

(4)



[3]I thank the anonymous reviewers for suggesting an analysis of *age* along these lines.

Singular nouns on their own are of the basic predicative type <e, t> and so cannot serve as arguments to *tugul*.[4]

This paper thus contributes to the growing body of work on quantification in African languages, as well as across languages more generally, by (a) providing a description of the structure and interpretation of nominal quantification in Kipsigis, which to my knowledge has not previously been published; (b) presenting a compositional analysis of those structures; and (c) discussing how the Kipsigis patterns relate to previous crosslinguistic work on quantification.

The remainder of this paper is organized as follows. In §2, I provide relevant background on the structure of Kipsigis. In §3, I discuss the syntax and semantics of bare nouns, and in §4, I present a compositional account of quantificational nominals. Finally, §5 concludes the paper.

2 Background on Kipsigis

The basic word order of Kipsigis is verb initial, with both VSO and VOS occurring as possible variants:[5,6]

(5) a. ko-e Kiprono peek (VSO)
PST-drink Kiprono water
'Kiprono drank water.'

b. ko-e peek Kiprono (VOS)
PST-drink water Kiprono
'Kiprono drank water.'

Within nominals, the head noun appears first. Nouns are inflected for number, and demonstratives (6a) and possessives (6b) appear as suffixes on the head noun:

(6) a. ko-ibut lakwa-ni (demonstrative)
PST-fall child.SG-this
'This child fell.'

[4] As I will show in §3, bare singular nouns appear in argument positions, where they permit definite interpretations; because definite singulars are standardly taken to denote individuals, they may incorrectly be expected to occur with *tugul*. I address this point in §4.

[5] Kipsigis nominals are case-marked by tone, where subjects bear a lower tone than their non-subject counterparts (Jake & Odden 1979; see also Creider & Creider 1989; Creider 2003 for the closely related dialect Nandi). I leave out tone in my transcriptions here.

[6] See Diercks et al. 2016 for a description and analysis of Kipsigis word order.

b. ko-ibut lakwe-nyin (possessive)
PST-fall child.SG-her
'Her child fell.'

Adnominal modifiers must follow the head noun, as (7) shows for various types of modifiers (viz., a quantifier, numeral, possessive phrase, and relative clause):

(7) ru-e lagok somog-u ap Kiprono tugul ne-mingen
sleep-PRS child.PL three-NOM of Kiprono all REL-small
'All three of Kiprono's children that are small are sleeping.'

Postnominal word order is highly flexible, so that the modifiers in (7), for example, may occur in any order with respect to one another.

3 Bare nouns

This section discusses the syntax and semantics of bare nouns in Kipsigis; this is a necessary step in understanding the composition of quantificational nominals, because bare nouns serve as building blocks for them. I look at the various interpretations of bare nouns in §3.1 and discuss the semantic contribution of number in §3.2.

3.1 Indefinite, definite, and generic interpretations

Bare nouns (both singular and plural) appear in argument positions, where they permit indefinite, definite, and generic interpretations.

There is a long-standing debate regarding how to semantically characterize definiteness (see, among many others, Frege 1997[1892], Russell 1998[1905], Heim 1982, and Schwarz 2009). I will assume here that definites have two characteristic properties: (a) they are felicitious only in contexts in which their referents are both familiar and unique, and (b) they are scopeless with respect to quantifiers (such as negation). Indefinites, in contrast, are felicitous in novel, nonunique contexts, and can interact scopally with other quantifiers.

With respect to these properties, bare nouns in Kipsigis allow both definite and indefinite interpretations.[7] Bare nouns are felicitous in both novel and familiar contexts:[8]

[7] For reasons of space, I omit examples with bare plurals in (8) though (14); however, the patterns observed for bare singulars in these examples also hold for bare plurals.

[8] The examples in (8) and (9) are modeled after the tests for bare nouns in Gillon (2015).

(8) a. enkeny-ko ki-mi kirowgindet (novel)
long-ago there-was chief.SG
'Long ago there was a chief.'

b. ki-chamat kirwogindet piik (familiar)
PASS-like chief.SG person.PL
'The chief was liked by the people.'

Bare nouns are also felicitous in both nonunique and unique contexts:

(9) a. [Context: There are two identical cups in the cupboard.]
konon kikombet (nonunique)
give.IMP cup.SG
'Give me a cup!'

b. [Context: There is just one cat and one dog, and they are fighting.]
ko-suger ngokta ak paget agoi ko-labat paget (unique)
PST-fight dog.SG and cat.SG until PST-run.away cat.SG
'The dog and the cat fought until the cat ran away.'

Bare nouns also appear in sluicing constructions, again indicating that they permit (existential) indefinite interpretations (see Chung et al. 1995 and Reinhart 1997):

(10) ko-ger lakwet, kobaten mongen ale ainon
PST-see child.SG but NEG-know.1SG COMP which
'She saw a child, but I don't know which.'

Bare nouns also permit both narrow-scope and scopeless interpretations with respect to negation. For example, given the context set by (11), the continuation in (12) is ambiguous (examples modeled after Matthewson 2001). On one reading, (12a), *kitabut* 'book.SG' is scopeless; in this case, *kitabut* corefers with the previously mentioned book (i.e., it is interpreted as a definite). On a second reading, (12b), *kitabut* scopes below negation (i.e., it is interpreted as a narrow-scope existential indefinite).

(11) ko-tach Kipto kitabut ak chaik
PST-receive Kipto book.SG and tea
'Kipto received a book and tea.'

(12) mo-cham kitabut
NEG-like book.SG

a. ‘She doesn’t like the book.’ (scopeless)
b. ‘She doesn’t like books.’ (Neg > ∃)

In fact, Kipsigis, like many other languages, has no nominal expression corresponding to the English determiner *no*; instead, nominal negation can be expressed using a bare noun in combination with verbal negation, further illustrating that bare nouns permit narrow-scope existential interpretations:

(13) ma-ibut chita
NEG-fall person.SG
‘No one fell.’

Kipsigis bare nouns do not, however, permit wide-scope existential interpretations (i.e., they are nonspecific indefinites). For example, (14) can only be interpreted as in (14a), where the second instance of *chita* ‘person’ scopes below negation (my consultant reported (14a) as “contradictory”, but as the only interpretation available); in contrast, (14b), in which the second instance of *chita* ‘person’ scopes above negation, is not an available interpretation.

(14) ko-ibut chita ako ma-ibut chita
PST-fall person.SG and PST-fall person.SG
a. ‘Someone fell and no one fell.’ (Neg > ∃)
b. *‘Someone fell and someone (else) did not fall.’ (*∃ > Neg)

Finally, in addition to definite and nonspecific indefinite interpretations, singular and plural bare nouns can also be interpreted generically:

(15) a. tinye paget saroriet
have cat.SG tail.SG
‘A cat has a tail.’
b. tinye pagok sarurek
have cat.PL tail.PL
‘Cats have tails.’

To account for the various (i.e., definite, nonspecific indefinite, and generic) interpretations of bare nouns, I will assume – as is standard – that bare nouns have the basic predicative type <e, t>. Different semantic mechanisms (i.e., type shifting rules or modes of composition) then derive their different interpretations. Specifically, to derive nonspecific indefinite interpretations, bare nouns

may combine with a transitive verb via predicate restriction (Chung & Ladusaw 2004; see also Carlson 1977). To derive definite interpretations, bare nouns may be type-shifted via iota-shift (Partee 1987). Finally, to yield generic interpretations, bare nouns may be bound by a covert generic operator (Krifka 1995).

3.2 The interpretation of number

This section provides background on the number interpretation of bare nouns. Plural nouns in Kipsigis appear to be number-neutral (i.e., compatible with a singular or plural interpretation; see Link 1983 and Corbett 2000), as the question in (16a) can be answered with either a singular or plural (16b) (diagnostic from Link 1983):

(16) a. ko-ger tuga i
PST-see COW.PL Q
Q: 'Did he see cows?'

b. ee, ko-ger {teta agenge / tuga somog}
yes, PST-see {COW.SG one / COW.PL three}
A: 'Yes, he saw {one cow/three cows}.'

In contrast, singular nouns are not number-neutral, but rather necessarily semantically singular. For example, singular nouns are ungrammatical in combination with numerals greater than one:

(17) * rue lakwet somog-u
sleep child.SG three-NOM

Given these observations, I will adopt a semantic analysis of number in Kipsigis as in Link 1983, whereby a singular noun denotes a set of atomic individuals (atoms), and a plural noun denotes a set of both atomic and plural individuals.

4 Quantificational nominals

4.1 The universal quantifier *tugul*

Returning now to the patterns observed for universally quantified nominals observed in §1, recall that the quantifier *tugul* expresses universal quantification:

(1) ru-e lagok tugul
sleep-PRS child.PL all
'All the children are sleeping.'

In the following two subsections, I present a syntax (§4.1.1) and semantics (§4.1.2) for *tugul*.

4.1.1 The syntax of *tugul*

I adopt the following syntax for *tugul*, in which it heads a QP and is sister to DP:

(18) [$_{QP}$ DP [$_{Q}$ tugul]]

Evidence that *tugul* is sister to DP comes from (19), which shows that *tugul* may combine directly with a pronoun; pronouns are standardly taken to be DPs, as they appear on their own in argument positions.

(19) ko-gitiense echek tugul
PST-sing[1PL] we all
'All of us sang.'

In addition, *tugul* may appear on its own, as long as the reference of the head noun is clear from the context:

(20) ko-ger tugul
PST-see all
'He saw all.'

These facts suggests that *tugul* licenses DP ellipsis (in contrast, NP ellipsis appears to be ungrammatical in Kipsigis, as I show in §4.2.2).

4.1.2 The semantics of *tugul*

Descriptively, *tugul* is a nondistributive universal quantifier (i.e., it permits both distributive and collective interpretations). Consider (21), for example, which is ambiguous between a distributive and collective reading:

(21) ko-yot bokisinik somok lagok tugul
PST-lift box.PL three child.PL all
a. 'The children each lifted three boxes.' (*distributive*)
b. 'The children collectively lifted three boxes.' (*collective*)

The semantics of *tugul* can accordingly be modeled as a function that maps an individual (the denotation of DP) to a generalized quantifier (the denotation of QP; as in Matthewson 2001):[9]

[9]This formalism comes directly from Zimmermann (2014), which is based on Matthewson (2001).

(22) $[\![tugul]\!] = \lambda x_e \,.\, \lambda f_{<e,\,t>} \,.\, \forall y[y \leq x \rightarrow f(x)]$

This semantics for *tugul* allows for both distributive and collective interpretations, as the subpart relation ($\leq$) holds for atoms as well as collections. A distributive interpretation results when *tugul* quantifies over atomic subparts of the individual denoted by DP, and a collective interpretation results when there is only one subpart (i.e., $x = y$).

The proposed syntax and semantics for *tugul* explains why *tugul* cannot combine directly with a singular noun, as observed in §1:

(23) * ru-e lakwet tugul
sleep-PRS child.SG all
'Every child is sleeping.'

At the NP level, a singular noun has neither the right syntax (it is not a DP) nor semantics (it is not of type *e*) to combine with *tugul*.[10]

4.2 The morpheme *age*

As also observed in §1, *tugul* can combine with a singular nominal just in case the morpheme *age* is also present:

(24) ru-e lakwet *(age) tugul
sleep-PRS child.SG *(some.SG) all
'Every child is sleeping.'

The plural form of *age*, namely, *alak*, may also occur with *tugul*, in which case quantification is over groups (or kinds):

(25) ru-e lagok alak tugul
sleep-PRS child.PL some.PL all
'All (or any groups of) children are sleeping.'

Both *age* and *alak* translate as 'some, (an)other' when used on their own:[11]

[10] However, as shown in §3, bare singulars permit definite interpretations, and so the analysis may incorrectly predict that a bare singular that is type-shifted to a definite could serve as an argument to *tugul*. I will assume that the combination of a definite singular with *tugul* is ruled out on pragmatic grounds: Attaching *tugul* to a definite singular would result in universal quantification over a single individual, which is equivalent to the denotation of the definite.

[11] Because *alak* is simply the plural form of *age*, I will henceforth use *age* to refer to both *age* and *alak*, unless otherwise noted.

(26) a. ko-bua lakwet age
PST-come.by child.SG some.SG
'Some/another child came by.'

b. ko-bua lagok alak
PST-come.by child.PL some.PL
'Some/other children came by.'

This raises the question of what the semantic and syntactic contribution of *age* is, to allow *tugul* to combine with a singular DP and yield a universal (and in some cases free-choice) interpretation. In the following two subsections, I will present evidence that *age* is semantically an indefinite (§4.2.1) and syntactically a determiner (§4.2.2).

4.2.1 The semantics of *age*

There are several ways in which *age* behaves semantically like an indefinite (tests for indefiniteness are from Matthewson 1999). First, *age* permits sluicing:

(27) ko-ger lakwet age, kobaten mo-ngen ale ainon
PST-see child.SG some.SG, but NEG-know[1.SG] COMP which
'She saw another child, but I do not know which.'

Second, *age* may introduce new discourse referents:

(28) ko-bua chita age
PST-come.by person.SG some.SG
'Some/another person came by.'

Third, *age* interacts scopally with other quantifiers, such as modals and negation. Unlike bare nouns, *age* permits both narrow- and wide-scope existential interpretations with respect to negation:[12]

(29) ko-bua piik alak ako ma-bua piik alak
PST-come.by person.PL some.PL and NEG-come.by person.PL some.PL
a. 'Some people came by and no other people came by.' (Neg > ∃)
b. 'Some people came by and other people did not come by.' (∃ > Neg)

[12]It is possible that the wide-scope interpretation here is actually a definite interpretation; see the discussion of definite interpretations for *age* below.

Interestingly, *age* only permits narrow-scope interpretations with respect to modals; for example, (30) only permits the narrow-scope interpretation in (30a) (cf. the wide-scope interpretation in (30b)).

(30) [Context: Kipto wants to marry Kiprono.]
moch-e ko-tun chepkeleliot age
want-PRS INF-marry girl.SG some.SG
a. 'He wants to marry another girl (it doesn't matter who).'
b. *'He wants to marry another girl in particular (say Chepto).'

Summarizing, these examples suggest that *age* is an indefinite that permits both narrow-scope (i.e. nonspecific) interpretations and, unlike bare nouns, wide-scope existential interpretations (at least with respect to negation). It should be noted, however, that there are some uses of *age* that appear to be definite, as the referent of an *age*-DP may be familiar:

(31) [Context: Two children came by.]
angen lakwet agenge, ako m-angen lakwet age
know[1.SG] child.SG one, and NEG-know[1.SG] child.SG some.SG
'I knew one child but I did not know the other child.'

Such examples may indicate that *age* is not an indefinite determiner, but rather an adnominal modifier positioned within a bare plural that, like other bare plurals, permits indefinite or definite interpretations. What, then, would be the semantic contribution of *age*? As already noted, *age* is associated with free-choice interpretations, as my consultant often offered 'any' as a translation for *age* in combination with *tugul*.[13] If free-choice interpretations are derived via domain

[13]The free-choice interpretation of *age* in combination with *tugul* is made clear in *yes-no* questions. Consider, e.g., (i), which is ambiguous: This question can ask whether all of the children sang (a universal interpretation) or whether any of the children sang (a free-choice interpretation). In contrast, *tugul* on its own can only be interpreted as a non-free-choice universal, as in (ii).

(i) ko-tien lakwet age tugul i?
PST-sing child.SG some.SG all Q
'Did {every/any} child sing?'

(ii) ko-tien lagok tugul i?
PST-sing child.PL all Q
'Did all the children sing?'

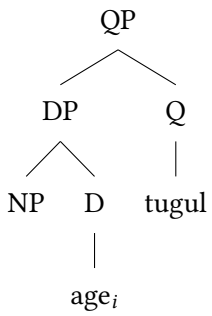
widening (as in Kadmon & Landman 1993 and Kratzer & Shimoyama 2002, among others), then *age* may be widening the domain of the NP it modifies; *tugul* then quantifies over the widened domain. However, an analysis that treats *age* as a modifier within a bare plural would fail to account for the apparent wide-scope existential interpretations available to *age*, as in (29b), which bare plurals do not permit.[14] I conclude that *age* encodes indefiniteness (and allows wide-scope existential interpretations) and set aside its definite and free-choice interpretations as issues for future research.

As an indefinite, *age* can be analyzed semantically as introducing a variable over Skolemized choice functions (as in Kratzer 1998). A choice function is a function that maps an nonempty set of individuals to a unique individual in that set (Reinhart 1997). A Skolemized choice function has additional implicit argument. Thus, *age* (henceforth represented as age_i, where the subscript *i* represents its implicit argument) maps an individual (its implicit argument) to a function from a nonempty set (the denotation of NP) to an individual (the denotation of DP). More specifically (i.e., taking into account the contribution of number), *age* maps a singular NP to an atom, whereas *alak* maps a plural NP to an atomic or plural individual.

4.2.2 The syntax of *age*

I adopt the syntax in (32) for *age*, in which it heads a DP and is sister to NP:

(32)



[14] In addition, an anonymous reviewer points out that the 'other' interpretation is a pervasive feature of indefinites across West Chadic (see Zimmermann 2008 for Hausa, and Grubic 2015 for Ngamo).

Evidence that *age* forms a subconstituent with NP within QP (to the exclusion of *tugul*) comes from (33a), which shows that *age* must precede *tugul*; other modifiers, such as numerals, may precede or follow *tugul*, (33b).[15]

(33) a. * ru-e lakwet tugul age
PST-come.by child.SG all some.SG

b. ko-bua lagok {somog-u tugul / tugul somog-u}
PST-come.by child.PL {three-NOM all / all three-NOM}
'All three children came by.'

There is also some evidence that *age*, at least when combined with *tugul*, occupies a determiner position. Unlike *tugul*, *age* may not attach to a pronoun:[16]

(34) * ko-gitiense echek {age/alak} tugul
PST-sing[1PL] we {some.SG/some.PL} all

Furthermore, in combination with *tugul*, *age* may not appear on its own, without the head noun:[17]

(35) * ko-ger {age/alak} tugul
PST-see {some.SG/some.PL} all

These facts (i.e., that *age* must precede *tugul* and cannot combine with a pronoun or occur on its own when combined with *tugul*) are explained if *age* is (a) in a lower position syntactically than *tugul* and (b) a determiner, on the grounds that like the English determiners *a* and *the*, *age* cannot license NP ellipsis.

[15]Note also that no modifiers may intervene between *age* and *tugul* (e.g., **lagok alak somogu tugul* lit. 'child.PL some.PL three all').

[16]However, in the absence of *tugul*, *alak*, but not *age*, may attach to a pronoun:

(i) ko-gitiense echek alak
PST-sing[1PL] we some.PL
'Some of us sang.'

Because this is a partitive, *alak* may in this case be in a different, higher syntactic position than it is when it appears with *tugul*, permitting it to combine with a pronoun.

[17]However, here too, in the absence of *tugul*, *age* may occur on its own (as long as the reference of the head noun is clear from the context):

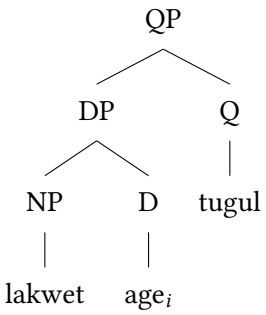
(i) ko-ger {age/alak}
PST-see {some.SG/some.PL}
'He saw {another/others}.'

4.3 The semantic composition of nominals containing *age* and *tugul*

Having established a syntax and semantics for both *age* and *tugul*, consider again a nominal that contains both:

(36) a. lakwet age$_i$ tugul
child.SG some.SG all
'every child'

b.



The semantic composition of such nominals would be computed as follows: The quantifier *tugul* binds the implicit argument of the choice function denoted by *age*. In effect, for any value for the implicit argument, the choice function output for that argument satisfies the NP predicate. This derives universal quantification over atoms in the case that *tugul* attaches to a (singular) *age*-DP, and quantification over atomic or plural individuals (i.e., groups) in the case that *tugul* attaches to a (plural) *alak*-DP.

This semantics thus predicts that when *tugul* combines with an *age*-DP, only a distributive interpretation is possible (because quantification occurs over atoms), and, indeed, only distributive interpretations are possible in this case:

(37) ko-yot bokisinik somok lakwet age tugul
PST-lift box.PL three child.SG some.SG all

a. 'Each child lifted three boxes.' (*distributive*)

b. *'All the children collectively lifted three boxes.' (*collective*)

In contrast, when *tugul* combines with an *alak*-DP, quantification may occur over atomic or plural individuals, producing distributive or collective interpretations:

(38) ko-yot bokisinik somok lagok alak tugul
PST-lift box.PL three child.PL some.PL all

a. 'Each child lifted three boxes.' (*distributive*)
b. 'All (or any groups of) of the children collectively lifted three boxes.' (*collective*)

4.4 Summary of the analysis

Summarizing, *tugul* heads a QP and combines with a DP of type *e*. As a result, *tugul* may attach to a pronoun and appear on its own (i.e., it licenses DP ellipsis), and may not attach to a predicative singular noun nor, for pragmatic reasons, a singular definite. *Age* is an indefinite determiner that heads a DP and denotes a Skolemized choice function that, relative to an implicit argument, maps an NP of <e, t> to a DP of type *e*. The resulting *age*-DP may then attach to *tugul*, which binds the implicit argument of *age*, resulting in universal quantification.

5 Conclusion

This paper has presented a compositional analysis of quantificational nominals in the Nilotic language Kipsigis. In short, *tugul* is a nondistributive universal quantifier that heads a QP and combines with a DP of type *e* to create a generalized quantifier (as in Matthewson's (2001) analysis of Salish). The morpheme *age* is an indefinite determiner that denotes a variable over Skolemized choice functions (as in Kratzer 1998; see also Matthewson 1999; 2001); *age* thus combines with a predicative NP to create a DP of type *e*, and this DP can combine with *tugul*. Future research may shed light on the free-choice and definite interpretations observed for *age*, which remain open questions here.

Abbreviations

PST	past	SG	singular
PRS	present	PL	plural
NEG	negation	COMP	complementizer
NOM	nominative	Q	question marker

In the orthographic conventions used here, *ch* represents a voiceless palatal affricate [ʧ], *ny* a palatal nasal [ɲ], *ng* a velar nasal [ŋ], and *y* a palatal glide [j].

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