The development of lateral obstruents in Nguni languages (S40, Southern Bantu) A diachronic study

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The development of lateral obstruents in Nguni languages (S40, Southern Bantu): a diachronic study

by

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A thesis submitted to the Faculty of Humanities, Leiden University, in partial fulfillment of the requirements for the degree of Master of Arts

Programme: Research Master Linguistics

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Leiden, June 2023

Acknowledgements
This work has been as much mine as it is a result of the people around me, in academia and beyond. It is to them that I dedicate this work, with much gratitude of their support – you know that you have true friends and family when they will patiently listen to and partake in spontaneous lectures on everything Bantu and beyond. I'm also very grateful to my friends that read (parts of) this thesis and helped me develop the ideas as they exist now in this work.

Special thanks go out to the teachers I have had during my time in Leiden. I especially want to thank Hilde, Maarten M., Jenneke, Felix, Sara, and Maarten K. You have not only been a formative part of my education but also showed me the researcher I hope to one day be.

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List of Abbreviations

Numbers in glosses refer to noun classes (see 2.2.1).

BLR 3	Bantu Lexical Reconstructions 3
C	Consonant
CV	Consonant Vowel
IPA	International Phonetic Alphabet
NUGL	New Updated Guthrie List
PB	Proto Bantu
PHOIBLE	Phonetics Information Base and Lexicon
PN	Proto Nguni
SB	Southern Bantu
SI	Supporting Information
V	Vowel
WALS	World Atlas of Language Structures

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Summary

This study investigates the development of the following lateral fricatives and affricates (obstruents) in Nguni (S40) languages, spoken in Southern Africa. These lateral obstruents (/ɬ, ⁿɬ, ɮ, ⁿɮ, k͡ǂ/) are rare in the Bantu language family, but occur in three subbranches of Southern Bantu: Sotho Tswana, Nguni, and Tsonga. Given the rarity of these sounds, in Bantu and crosslinguistically, the question arises how Southern Bantu languages have incorporated lateral obstruents in their phonologies, as they are not reconstruced for Proto Bantu. To answer this question, I analyze secondary data from 10 Nguni languages to study which lateral obstruents are used and how, leading to the conclusion that both inheritance and contact played a role in the development of lateral obstruents in Nguni languages. The data shows that alveolar lateral obstruents can be reconstructed to Proto Nguni and derive from a regular sound change from Proto Bantu palatals /t͡ʃ/ and /d͡ʒ/. The velar lateral affricate finds its origin in loan words. I evaluate existing theories that proposed several contact scenarios, which at this point are not plausible explanations for the development of Nguni lateral obstruents.

The findings from this study make several contributions to the field. It is the only empirical study to date to collect and reinterpret data from a large number of secondary sources, leading to a better understanding of not only the distribution of lateral obstruents in Nguni languages, but also the hypothesized ancestor of these related languages, Proto Nguni. Further, this thesis lays the groundwork for future research into lateral obstruents in Southern Bantu. If we expand our focus from Nguni to the other subclades that feature lateral obstruents, we can combine that knowledge of lateral obstruents in Southern Bantu with other innovations and patterns to gain insight into the diversification of Southern Bantu languages and understand how the subgroups relate to each other.

1. Introduction

Some Southern Bantu languages have words like this:

1) Northern Sotho (Louwrens, Kosch & Kotzé 1995: 16)[1]
   *-**ɬ**aβa*
   'stab'

2) Zulu (Doke 1947: 17)
   *uku-**ɮ**a*
   15-eat
   'to eat'

3) Tswa (Persson 1932: 19)
   *ⁿ**kl̥̂**anu*
   'five'

The sounds that are bolded are referred to as **lateral obstruents**: lateral fricatives and affricates. What is remarkable is that these sounds are very rare in Bantu languages. In fact, out of all the 500 – 600 Bantu languages spoken across Sub-Saharan Africa (see Figure 1), only 20 Bantu languages have these lateral obstruents in their consonant inventories to my current knowledge. Moreover, except for one Bantu language in East Africa, Davida (E74), these all occur in Southern Bantu languages. The Bantu languages of Southern Africa are divided in 6 subfamilies: Shona, Venda, Sotho Tswana, Nguni, Tsonga, and Chopi. Of these subbranches of Southern Bantu, Sotho Tswana, Nguni and Tsonga languages make use of lateral obstruents (Gunnink et al. 2022). Lateral obstruents are not reconstructed for Proto Bantu (Meeussen 1967). Given the rarity of these sounds, both in Bantu and crosslinguistically, the question arises how Southern Bantu languages have developed these sound in their phonological inventories: have Southern Bantu languages spontaneously developed them or has language contact played a factor in the development of thes sounds?

To better understand the use of lateral obstruents in Southern Bantu languages, this thesis is focused on the development of lateral obstruents in the Southern Bantu Nguni languages. The Nguni languages are an ideal subfamily for a study on lateral obstruents, as all Nguni languages make use of lateral obstruents and appear to be relatively uniform in this use of lateral obstruents. The research question that this thesis focuses on is thus as follows: *How did Nguni languages develop lateral obstruents?*

To answer this research question, lexical data from Nguni languages will be presented in Chapter 2 and analyzed in Chapter 3. This thesis will end with Chapter 4, which includes concluding remarks, the implications of my findings, and avenues for future research. The remainder of this first chapter will provide a background into Bantu languages and their classification (referential and genealogical), with a focus on Southern Bantu (1.1), which will be relevant to compare against the distribution of lateral obstruents. To understand the genesis and diversification of Southern Bantu, I will discuss how a large-scale migratory event

[1] Throughout this thesis, language data is presented in the International Phonetic Alphabet (cf. section 2.1).

referred to as the 'Bantu Expansion' lead to contact between Southern Bantu and Khoisan languages, the latter of which influenced Southern Bantu languages, possibly with regards to lateral obstruents (1.2). Given the rarity of the sounds under study, I will discuss lateral obstruents and their distribution crosslinguistically as well as across Africa, where we find them in East and Southern Africa (1.3). This is followed by a section on the possible role of language contact in the origin of lateral obstruents in Southern Bantu (1.4), as multiple proposals have been put forward discussing this link. Finally, this will be taken together to explain the relevance of the research question of this thesis.

1.1. Bantu languages and classification

Bantu languages are typically classified in one of two ways: via a referential system or via a linguistic genealogical system. The referential classification is useful to locate a Bantu language or language subfamily but does not make strong claims on relatedness of the languages grouped together. It reflects the geographical distance between the languages in a way. The genealogical system is grounded in lexical comparison of languages to see which pattern more closely together. When we talk about genealogy in this sense, we do not refer to the relatedness of the speakers of the Bantu languages (e.g., genetics) but the relatedness of the languages themselves in relation to a common ancestor. The first portion of this subchapter is dedicated to the referential system, followed by a discussion of genealogical classifications.

1.1.1. Referential classification

Bantu languages are traditionally referred to by the name of the language and an additional code, consisting of a letter and a combination of one or multiple numbers. This system finds its origin in the referential classification of Malcom Guthrie (1948; 1967), who made a geographical division of the area in which Bantu languages are spoken. Zones are indicated with a letter from A to S and followed by a number for the language group and individual language (see Figure 1). For example, the subfamily of Nguni languages within Southern Bantu is referred to as S40. Xhosa, one of the languages within this subgroup, has the code S41. Dialects are grouped together by additional letters to indicate their relation (e.g S21A refers to Phani and S21B refers to Ilafuri, both considered to be dialects of Venda (S21)).[2] It is important to underline that this classification is not a genealogical classification; the latter will be discussed in the following section. Southern Bantu languages are grouped together in zone S and are spoken in the following countries: Mozambique, Zimbabwe, Botswana, Namibia, South Africa, Lesotho, and Swaziland. Figure 1 shows the Bantu language zones following Guthrie's referential classification, including language names.

[2] The codes for Xhosa (S41) and Venda (S21) reflect the most recent referential classification for Bantu languages and the one that I follow in this thesis, namely that of Hammarström (2019: 51-52).

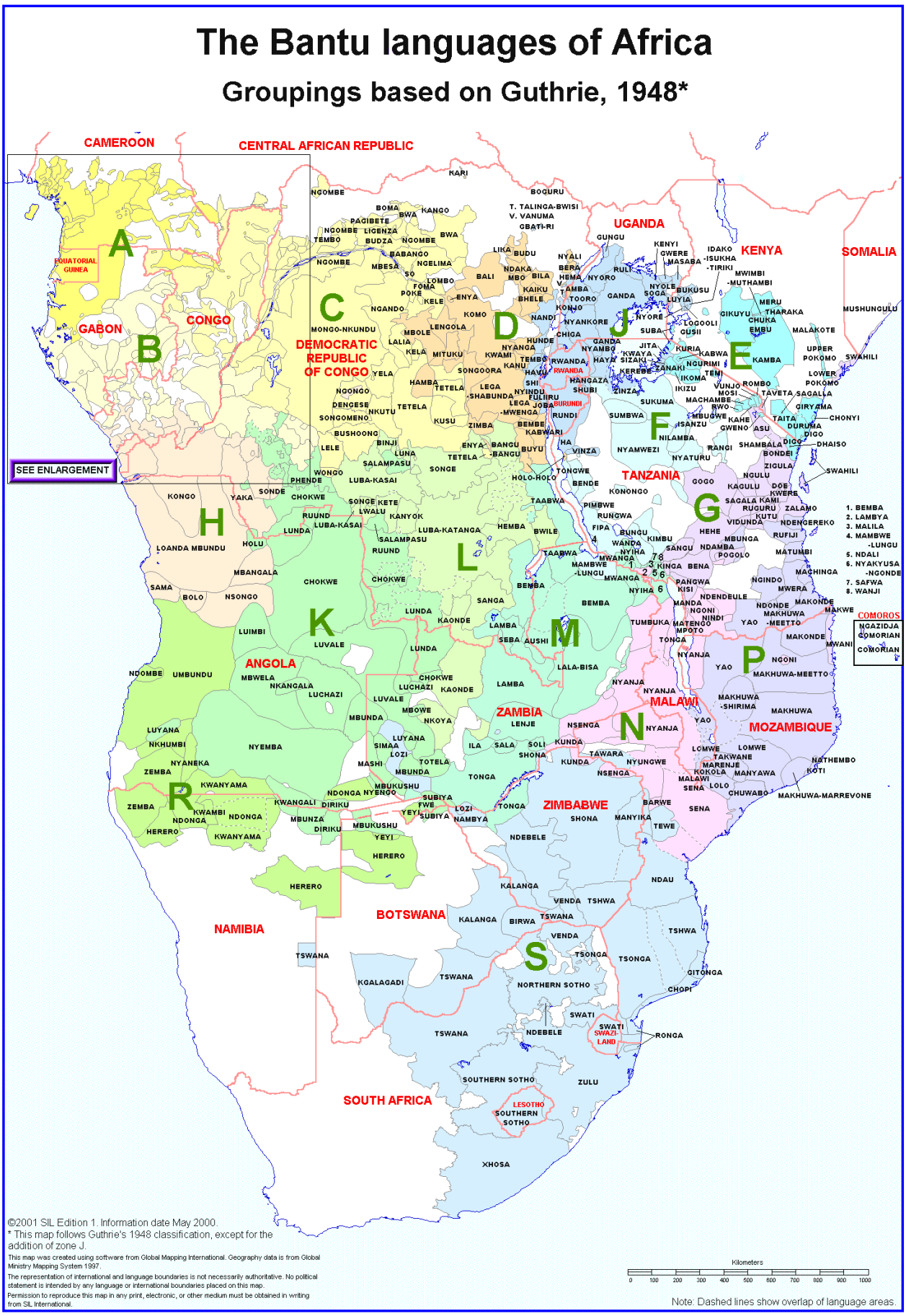
The Bantu languages of Africa
Groupings based on Guthrie, 1948*
CAMEROON
CENTRAL AFRICAN REPUBLIC
UGANDA
KENYA
SOMALIA
EQUATORIAL GUINEA
GABON
CONGO
DEMOCRATIC REPUBLIC OF CONGO
RWANDA
BURUNDI
TANZANIA
ANGOLA
ZAMBIA
MALAWI
MOZAMBIQUE
ZIMBABWE
BOTSWANA
NAMIBIA
SOUTH AFRICA
LESOTHO
SWAZILAND
COMOROS
SEE ENLARGEMENT
A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
S
1. BEMBA
2. LAMBYA
3. MALILA
4. MAMBWE -LUNGU
5. NDALI
6. NYAKYUSA -NGONDE
7. SAFWA
8. WANJI
©2001 SIL Edition 1. Information date May 2000.
* This map follows Guthrie's 1948 classification, except for the addition of zone J.
This map was created using software from Global Mapping International. Geography data is from Global Ministry Mapping System 1997.
The representation of international and language boundaries is not necessarily authoritative. No political statement is intended by any language or international boundaries placed on this map.
Permission to reproduce this map in any print, electronic, or other medium must be obtained in writing from SIL International.
Kilometers
0 100 200 300 400 500 600 700 800 900 1000
Note: Dashed lines show overlap of language areas.

Figure 1: Map of Bantu classification, cf. Guthrie (1948) (Nurse 2001)

This referential system is widespread in Bantu literature and has been taken up by other scholars like Jouni Filip Maho and Harald Hammarström. Maho (2003; 2009) updated Guthrie's 1967-1971 work, resulting in the New Updated Guthrie List (NUGL) in 2009. Most recently, Hammarström (2019) published an updated list of all known Bantu languages at the time of writing in the edited volume *The Bantu Languages* (*2nd edition*), following and expanding the work of Guthrie and Maho. In this work, I will follow Hammarström's 2019 classification since this is the most recent.

1.1.2. Genealogical classification

In this section, I will discuss several genealogical classifications of the Bantu languages, especially in relation to Southern Bantu. Referential classifications of the type discussed above are valuable for locating the Bantu languages in space. However, as noted, they do not give us information – nor do they claim to – about the relatedness of the languages that are grouped together. Genealogical classifications, on the other hand, are rooted in the comparison of language data. These comparison allow us to make inferences about the level of relatedness between the languages (see 2.1.1). Within genealogical classifications, I will first briefly touch on lexicostatistical studies, before discussing two studies that use Bayesian tree models for their genealogical classification. For both, I will focus on their findings regarding the classification of Southern Bantu languages.

Lexicostatistical studies

In their large-scale lexicostatistic study of Bantu languages, Bastin, Coupez & Mann (1999) present 543 wordlists of around 450 languages. They used a reduced Swadesh 100-list, judging the cognacy of 92 basic semantic concepts (Bastin, Coupez & Mann 1999: 5). In this classification, the 23 Southern Bantu languages included are recognized as a single cluster. Moreover, the six traditionally recognized subclusters (Shona, Venda, Sotho Tswana, Nguni, Tsonga, Chopi) appear too (1999: 142). As most other lexicostatistical studies after Bastin et al. (1999) make use of their data or include a smaller number of Southern Bantu languages, I refer to the thorough overview chapter on classifying Bantu languages by Philippson and Grollemund (2019: 335–354) in *The Bantu Languages* for more information.

Bayesian tree models

Bayesian tree models are a statistical means that found its origin in evolutionary biology. Such a model for genealogical language classification is based on lexical cognates and generates as many trees as it is asked to. Based on the rate of change you set, the phylogeny becomes time-dated. All generated trees combined result in a *consensus tree*, a summary of the sets of trees generated by the model with the highest likelihood of occuring. Each branch in the tree model is assigned a number which represents the number of times in which, out of all the models generated, this specific grouping or split occurred. The number ranges between 0 and 1 (or 0 and 100), in which 0 means that the grouping or event did not occur in any of the scenarios and 1 (or 100) means that the grouping or split occurred in all the scenarios. Time-trees are 'rooted' by out group language families that have split off in the past to help establish a direction of time. Bayesian models can also be programmed to take certain events from other disciplines into account, for example from archeology. For more background on Bayesian tree models in linguistics, I refer the reader to Greenhill, Heggarty & Gray (2020) and Neureiter et al. (2022). The next section will show examples of Bayesian trees by elaborating on two genealogical Bantu classifications made using this method (Grollemund et al. 2015 and Gunnink et al. 2022).

In their 2015 paper, Grollemund et al. use data from 424 languages to generate a phylogenetic tree of the languages. 409 of these languages are Bantu languages, 15 are Bantoid.[3] The authors follow Guthrie's classification and include the following 11 Southern Bantu languages: Lozi (K21), Shona (S11), Kalanga (S16), Venda (S21), Tswana (S31), Shekgalagari (S311), Xhosa (S41), Zulu (S42), Ndebele (S44), Tshwa (S51), and Tsonga (S53) (Supporting Information (SI), 5). A Bayesian posterian sample of n = 100 phylogenetic trees from linguistic data was derived (Grollemund et al. 2015: 13297). As shown in Figure 2 below, the 11 Southern Bantu languages form a monophyletic group. The clades recognized in referential classification emerge here too, despite the small sample; Shona, Venda, Sotho, Nguni and Tsonga form distinct clusters. Shona forms a sister branch to the other Southern Bantu languages, and Tsonga and Nguni form a subgroup.

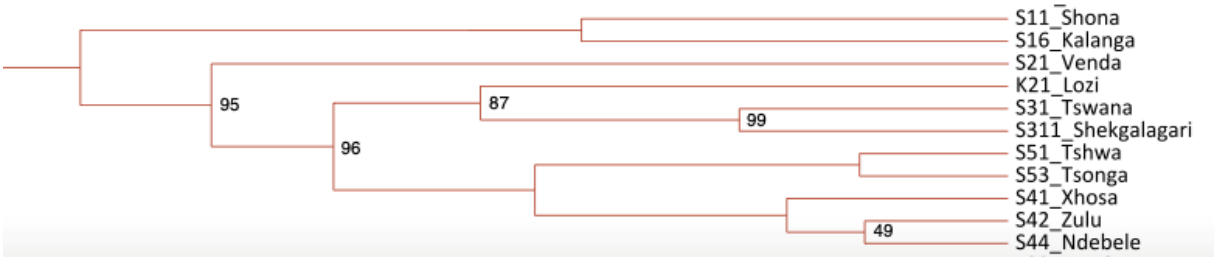

Figure 2: Consensus tree of the Southern Bantu languages included in Grollemund et al. (2015: SI p. 4)

In a recent study, Gunnink, Chousou-Polydouri, and Bostoen (2022) present a new, lexicon-based phylogenetic classification of 79 Bantu languages. Out of these 79 languages, 34 are Southern Bantu languages (as can be seen in Figure 3). This is the highest number of Southern Bantu languages included in a classification to date. Their findings position Southern Bantu within Eastern Bantu, and Southern Bantu languages are shown to share a single, direct ancestor, Proto-Southern Bantu (2022: 86–88). Both findings are in line with earlier lexicon-based classifications, as well as the work of Grollemund et al. (2015). Furthermore, the classification again supports the division of Southern Bantu languages into the 6 traditionally recognized subgroups. See the consensus tree of their phylogenetic analysis below:

[3] See recent work by Koile et al. (2022), where this data is used with different model values, leading to a different classification.

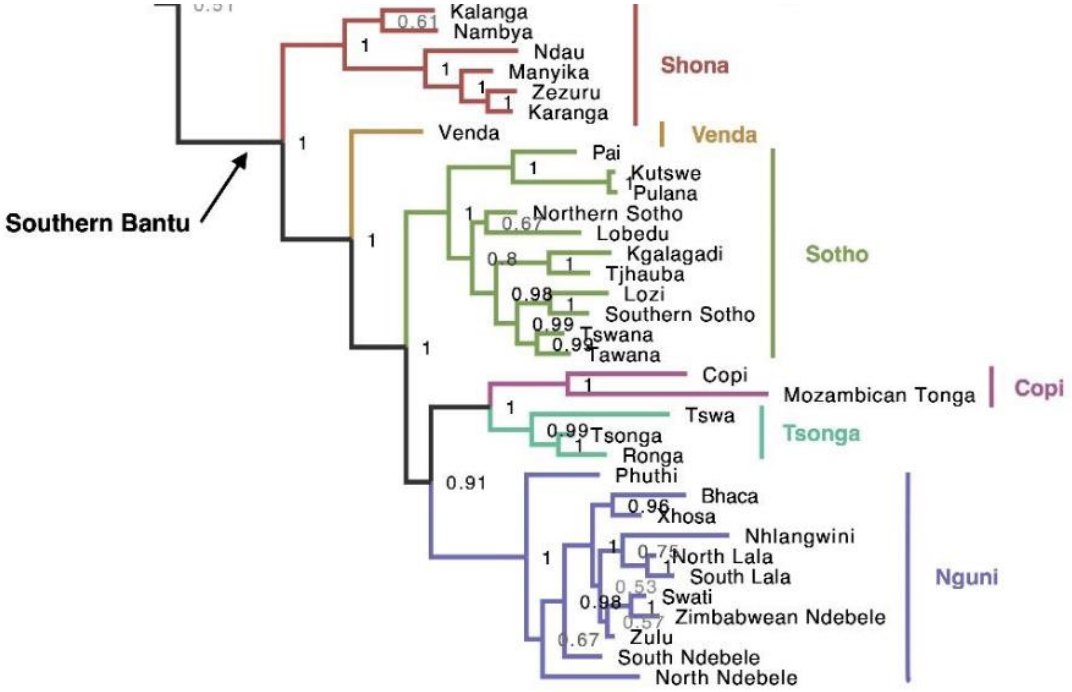

Figure 3: Consensus tree Southern Bantu based on posterior sample (*Gunnink et al. 2022: 87*)

As the classification and internal structure of Southern Bantu are relevant to which clades feature lateral obstruents, I will highlight some aspects of this classification next. Tsonga (S50) and Chopi (S60) are found to closely group together, just like Nguni (S40) closely groups together with Tsonga/Chopi (S50-S60). The grouping of Tsonga and Chopi is more certain than that of Tsonga/Chopi with Nguni, since the later has a 0.91 posterior probability as opposed to posterior probability of 1 in the case of Tsonga/Chopi. In turn, the clades of Nguni and Tsonga/Chopi form a clade with Sotho (S30), which is a sister to Venda (S20). Lastly, Shona (S10) is a sister to all other Southern Bantu languages. As Shona shows different features than the other Southern Bantu languages, the authors exclude Shona as a part of "Nuclear Southern Bantu" (2022: 88). I will briefly discuss their findings on Nguni languages more in depth given their importance to the current research question. The authors note that the Nguni languages (S40), previously assumed to be closely related, do indeed pattern together and form a single, highly supported clade. Some Nguni languages (Phuthi, Southern Ndebele, Northern Ndebele) have undergone heavy influence from neighboring Bantu languages. Despite the recognized language contact, they are still acknowledged as part of the Nguni cluster based on their basic vocabulary. Nguni internal classification, however, is more uncertain (Gunnink, Chousou-Polydouri & Bostoen 2022: 91–95).

Even though genealogical classifications are a valuable tool, it is important to be aware of what this method can and cannot do, and what it is that the data shows. As Grollemund and Phillipson (2019: 339) explain, lexicostatistical studies do not filter out linguistic phenomena like borrowing or language convergence, and neither do they differentiate between retentions and innovations. Bostoen (2018: 6) notes that classifications from languages spoken nowadays do not necessarily correspond to the original migration of Bantu speech communities; possible linguistic diversity of languages that are not spoken anymore nowadays cannot be factored into migration models, especially if only a small part of their vocabularies is considered. Extending this argument, the consensus tree that the model produces is, of course, based on the languages that serve as

an input for it. However, lesser known or undocumented languages, or languages that are not included, can change the model. Thus, the resulting consensus tree can only tell us something about the languages included. Lastly, Gunnink et al. (2022: 94-95) make the following two points: 1) models like this can be limited by differences in data, which results in different outcomes for different studies even though the same languages are included, and 2) these models focus on similarities as opposed to innovations.

1.2. The Bantu Expansion and Southern Bantu languages in contact with Khoisan

Nguni languages are part of the Bantu language family, which in turn belong to the larger Niger-Congo language phylum. To understand the present-day dynamics of Southern Bantu languages, it is important to understand how Bantu languages came to be spoken in Southern Africa as a result of the Bantu Expansion.

1.2.1. The Bantu Expansion

The 'Bantu Expansion' refers to a series of migratory events of Bantu speakers from their original homeland on the borderland of present-day Nigeria and Cameroon to large parts of Sub-Saharan Africa. The linguistic diversity of Bantu languages is highest between Nigeria and Cameroon and this is where Proto Bantu is thought to have diverged from South Bantoid languages between 6,000 – 7,000 and 4,000 – 5,000 years ago (Bostoen 2018: 3). With the spread of the Bantu people came the spread of Bantu languages over this vast area (as well as the introduction of agriculture), as indicated in Figure 4, where *A* indicates the homeland and the shaded area the area over which Bantu languages are distributed.

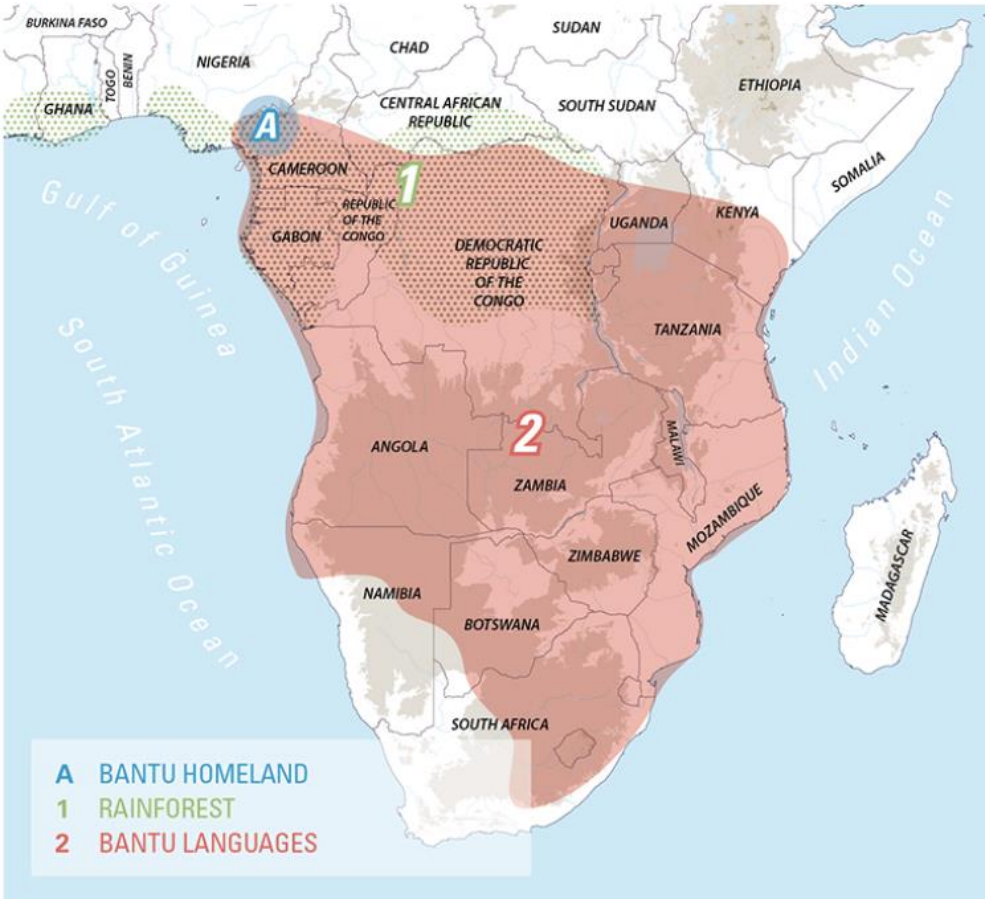

Figure 4: Map of Bantu expansion. Courtesy of Moritz Zauleck (Bostoen 2018: 2)

In earlier work, the Bantu Expansion was seen as a single migratory event but more recently researchers have argued for multiple successive expansions (Vansina 1995: 195; Bostoen 2018). The initial stage of the Bantu Expansion is believed to have been slower than subsequent stages of the expansions based on the internal diversity of Bantu languages as well as archeological evidence (Bostoen et al. 2015: 12; Bostoen 2018: 3–4). Noteworthy is the geographical spread of the Bantu Expansion compared to the relatively shallow time depth. In a timespan of less than 2 millenia, the distance between Central Cameroon and South Africa was crossed (Bostoen et al. 2015: 2; Bostoen 2018: 3). After the Bantu languages split from Bantoid languages, it expanded as a single language to later split between Proto-West and Proto-East Bantu. Proto-East Bantu then expanded from the Congo rainforest towards South-East Africa (Vansina 1995: 186-7; Bostoen 2018). All Bantu languages found in Eastern and South-Eastern Africa belong to a single Eastern branch. Thus, Southern Bantu is a subbranch of Eastern Bantu (Bostoen 2018: 5; Vansina 1995: 194). This is indeed also found in the genealogcial classifications of Bastin et al. (1999), Grollemund et al. (2015) and Gunnink et al. (2022) discussed in 1.1.2. The next section will elaborate on the last phase of the Bantu Expansion: the arrival of Bantu people in Southern Africa and subsequent contact with Khoisan speakers.

1.2.2. Southern Bantu in relation to Khoisan languages

A little under 2,000 years ago, the first Bantu speakers are though to have reached parts of present day South Africa (Bostoen 2018: 3). The current evidence suggest multiple migration events into Southern Africa of Bantu speakers (Choudhury et al. 2021; Gunnink et al. 2022). With the arrival of Bantu people in Southern Africa, the last phase of the Bantu Expansion, speakers of these Bantu languages encountered pre-existing populations already living in Southern Africa who were speakers of Khoisan languages. The Khoisan languages have been grouped together and proposed to be a language family by Greenberg (1963: 190) but this classification has been debated ever since (see for example Güldemann (2014: 2) and Güldemann (2018: 106)). Instead of a single Khoisan family, Güldemann (2014: 25) describes the currently recognized Khoisan languages as three non-related language families in Southern Africa (Khoe-Kwadi, Kx'a, and Tuu) and two languages in Eastern Africa: Hadza and Sandawa. Hadza and Sandawa are nowadays seen as language isolates, although Sandawe has some resemblances to the Khoisan languages of the Khoe-Kwadi branch. Thus, 'Khoisan' does not refer to a genealogical unit but to three distinct language families and two languages isolates.

As we can observe nowadays, the contact situation between Southern Bantu and Khoisan languages has influenced or is influencing both these language families. I will focus on Khoisan influence on Bantu languages as it is most relevant to this thesis. A prominent example of Khoisan influence concerns the use of click phonemes as consonants. Khoisan languages make extensive use of click phonemes. Although many (if not all) languages of the world make use of clicks in extralinguistic contexts, there is only a handful of languages that have clicks in their phoneme inventories. These all occur in Africa: the Khoisan languages in East and Southern Africa as disucussed above, some East African languages (e.g. Dahalo, Hadza, Sandawe), and some Bantu languages, most notably Nguni languages but also some South West Bantu languages like Few and Yeyo. Concerning the Southern Bantu languages, we know that they have acquired clicks through language contact with Khoisan languages (Herbert 1990; Güldemann & Stoneking 2008), showing us that there is phonological influence of Khoisan on Southern Bantu (see for example Herbert (1990) on the

sociohistory of clicks in Southern Bantu, Gunnink (2022a) on the presence of clicks in Proto Nguni, Sands and Gunnink (2019) on clicks as a feature of the Kalahari Basin linguistic area).

Further evidence for this view on Bantu and Khoisan close contact comes from DNA research done on modern speakers. Genetic testing shows us that there has been genetic admixture which again shows us Khoisan and Bantu speakers were in close contact with each other. This Khoisan admixture in Bantu speakers dates to within the last 1500 years (Choudhury et al. 2021: 57). Barbieri, Vicente, et al. (2014: 10) conclude that, based on the dataset they are working with, gene flow from autochtonous populations into Bantu speaking populations took place a long time ago or involved Khoisan populations that did not survive into the present. The level of admixture between immigrating Bantu speakers and autochtonous Khoisan speakers varies highly; some Bantu populations show no admixture at all, like the Eastern Tonga, whilst the Kgalagadi show admixture up to 21-51% (Barbieri et al. 2014: 9). With regards to what this gene flow looked like and the directions of it, Choudhury et al. (2021: 60) conclude the following: "… despite an overarching trend of male-biased gene-flow from Bantu speakers into the Khoe-San and female biased gene-flow from Khoe-San into the Bantu-speakers, these interactions were strongly influenced by locally defined factors that were unique to each of these interactions." It is explained that the gene flow differs from region to region, ranging from a bidirectional gene flow to no admixture and complete replacement. Moreover, their findings would support the scenario of multiple waves of migrations during the Bantu Expansion into Southern Africa (Choudhury et al. 2021: 60). Pakendorf, Bostoen, and de Filippo (2011) reitterate that DNA studies confirm language shift from Khoisan-speaking women marrying into Bantu society. However, for a study whose findings might contradict the incorporation of local women during the Bantu Expansion, see de Filippo et al (2012: 3261).

1.3. Lateral obstruents crosslinguistically and in African languages

"Lateral obstruents" or "obstruent laterals" are terms used to refer to the combined class of lateral fricatives and lateral affricates. For fricatives, the channel through which the air flows is narrowed so that the flow of air is turbulent (Ladefoged & Maddieson 1996: 137). In the case of lateral fricatives (voiceless /ɬ/ and voiced /ɮ/), the airstream flows over one or both sides of the tongue (Ladefoged & Maddieson 1996: 182). Lateral affricates are thus stops such as /t/, /d/ or /k/ released into a lateral fricative via the lowering of the tongue. Examples include /t͡ɬ/, /d͡ɮ/ or prenasalized /ⁿt͡ɬ/ or /ⁿd͡ɮ/. As lateral is not a place of articulation, lateral obstruents can have varying places of articulation such as alveolar (as from the previous examples in the last sentence) or velar (/k͡ʟ̝/). The remainder of this subchapter will elaborate on the occurrence of lateral obstruents crosslinguistically (1.3.1), their occurrence in languages in East Africa (1.3.2), and lastly their occurrence in Southern Bantu languages (1.3.3).

1.3.1. Crosslinguistically

When it comes to the occurrence of lateral obstruents in the languages of the world, there is no straightforward way to count how many languages have these sounds. Databases like the World Atlas of Language Structures (WALS) (Dryer & Haspelmath 2013) and the Phonetics Information Base and Lexicon (PHOIBLE) (Moran & McCloy 2019) give us useful insights in linguistic and phonological trends, however. WALS is a database which features structural properties based on descriptive materials like reference grammars. One of the chapters on their website concerns laterals in the languages of the world. Based on this, we can make some inferences about the occurrence of laterals. Of the 567 languages included in their sample,

54 languages (9,5%) have lateral obstruents. The languages appear to be concentrated in the northern half of North America, the Caucasus, around Lake Chad, and the northeast highlands regions of Africa. In Southern Africa, the only language indicated to have lateral obstruents is the Bantu language Zulu. Of the 54 languages with lateral obstruents, 51 have lateral fricatives, more often voiceless than voiced ones. Lateral affricates, on the contrary, are less common, only occurring in 25 languages of the sample (4,4%). 22 of these 25 languages also have a lateral fricative in their consonant inventory (Maddieson 2013). 'Lateral' obstruent is not defined further than lateral fricatives and affricates, so it is unclear if this would include the velar lateral affricate /k͡ʟ̥/. The following map visualizes all languages included in the sample of WALS recognized as having a lateral fricative or affricate in their phoneme inventory:

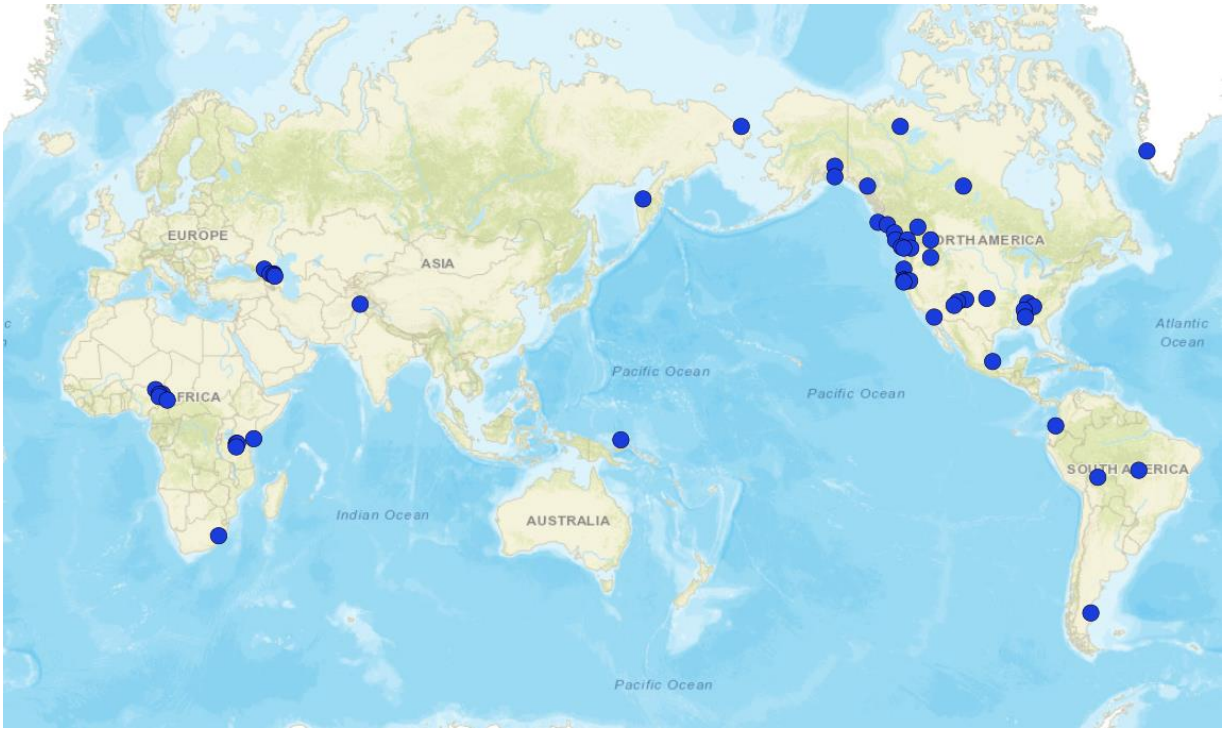

Figure 5: Languages with lateral obstruents (*Maddieson 2013*)

The database PHOIBLE contains cross-linguistic phonological data of 2186 languages. They report the following frequency of occurrence of lateral obstruents, of which the selection in the Table 1 corresponds to lateral obstruents found as phonemes in Nguni languages (see Chapter 2):

Table 1: Relative occurrence of lateral obstruents cf. PHOIBLE

Phoneme	Occurrence in sample
ɬ	149 (5%)
ɮ	48 (2%)
tɬ	15 (0%)
tɬʰ	11 (0%)
tɬʼ	28 (1%)
d͡ʒ	4 (0%)

k͡ɬ̥	1 (0%)[4]

Based on this, we can make the following generalizations: the /ɬ/ is the most common lateral obstruent, noted in Africa for Southern Bantu languages (Shona, Zimbabwean Ndebele, Zulu, Ronga, Xhosa) as well as in East Africa for Hadza, Sandawe and Iraqw (see 1.3.2) and several more languages in West Africa. This is followed by the /ɮ/, reported for Shona, Zimbabwean Ndebele, and Zulu, and again several languages in West Africa. The /t͡ɬ, t͡ɬʰ, t͡ɬʼ, d͡ɮ/ occur to varying degrees in Hadza, Sandawe, and Iraqw (again, see East Africa), and the /k͡ɬ̥/ is only noted for Zulu. Ladefoged and Maddieson (1996: 206) comment on the velar lateral ejective affricate, stating it is 'an unusual sound' and that it has in the past been described as a palatal lateral ejective because velar laterals were not thought to be possible as speech sounds. However, they explain there is no reason to doubt these two components of the affricate are velar in articulation and go on to note that the fricative component of the affricate is auditorily similar to the velar fricative /x/ but is lateral. They thus transcribe it as /k͡ɬ̥ʼ/, where the /ɬ̥/ is used to indicate it is voiceless and raised to a fricative (see also 2.2.4). It is unclear if these generalizations also hold for the velar lateral affricate when it is *not* ejective, as is also found in Nguni languages (cf. 2.3) next to the ejective velar lateral affricate.

Based on this information from WALS and PHOIBLE, lateral obstruents are relatively rare. This makes it all the more interesting that it occurs in several Bantu languages in Southern Africa, especially since none of the other Bantu languages feature this sound and linguists do not reconstruct such phonemes for Proto-Bantu (cf. Meeussen 1967). A critical note must be placed on the language sample, however. The languages included or excluded influence the occurrence we see to a large extent; for Southern Africa, the current research will show that at least 19 Bantu languages have lateral obstruents in their phoneme inventory (see Chapter 2 for an overview of these languages and Chapter 3 for an analysis). However, many of these languages are not included in WALS nor PHOIBLE. Lack of data in maps like these may skew the findings. This is a caveat one must keep in mind whilst using tools like these to draw conclusions on crosslinguistic tendencies. They are a powerful tool in providing a starting point for the distribution of linguistic phenomena globally. Consequently, let us now zoom in to take a more detailed look at lateral obstruents in East African languages.

1.3.2. East Africa

Lateral obstruents occur in languages or different language families in East Africa: Southern Cushitic languages, Hadza, Sandawe, Taita Bantu (Davida and Saghala), and Kuliak languages (Beer et al. fthc.). These languages mostly occur in the Tanzanian Rift Valley, where lateral obstruents have been proposed to be a characterizing feature of this linguistic area. The following table summarizes the proposed origins of lateral obstruents in this area:

Table 2: Lateral obstruents in languages of the Eastern Africa (*Beer et al.: fthc.*)

Language (family)	Origin of lateral obstruents
Southern Cushitic languages	Inherited from Cushitic and Afro Asiatic

[4] There is one language in the database that contains the segment /kɬ/, Nivaclé (Paraguay), for which it is currently unclear if this is an affricate (as analyzed for Nguni languages, see 2.2.4) or a consonant sequence, and if it is worth considering /k͡ɬ̥/ as a transcription.

Hadza	Contact induced retention, lateral obstruents also occur in some borrowings from Cushitic
Sandawe	Lexical transfer via Southern Cushitic
Kuliak languages	Contact induced retention, reconstructed for Proto Kuliak, also in several words with lateral obstruents that correspond to words in Rift Valley languages
Taita Bantu	Davida (E74): sound change of inherited vocabulary related to the Bantu Spirantization, also in some Cushitic loans Saghala (E741): Cushitic loans

As can be read from the table, Beer et al. argue for the inheritance of lateral obstruents in Southern Cushitic, Hadza, Kuliak and Davida, even though some Cushitic loans with lateral obstruents are noted for Hadza, Kuliak, and Davida. In the case of Sandawe and Saghala, Cushitic loans are identified as the source of lateral obstruents. They thus argue for a case of contact induced retention in the former languages and lexical transfer via Cushitic for the latter languages. Concerning the Bantu languages, the lateral obstruents in Davida are seen to develop as a reflex of the Bantu Spirantization (see section 3.1), although they refer the reader to other work for illustration of this sound change to lateral obstruents conditioned by high vowels, and the lateral obstruents in Saghala occur in Cushitic loans. It is also noted that external pressure in developing this sound change cannot be ruled out given the presence of lateral obstruents in the languages of the area. The sound change to lateral obstruents as an outcome of Bantu Spirantization is not attested elsewhere in Bantu languages.

1.3.3. Southern Africa: Bantu and Khoisan

In Southern Africa, we find Bantu and Khoisan languages with lateral obstruents. In addition to the lexicon-based genealogy of Southern Bantu languages, Gunnink et al. (2022) present phonological and morphological features which characterize Southern Bantu as a subfamily. These include features like the presence of depressor consonants and phonemic clicks, the loss of prefixal diminutive and locative marking (and innovation of suffixal diminutive, locative, and feminine marking), as well the occurrence of lateral obstruents and dental stops as reflexes of Proto-Bantu *tʃ and *d͡ʒ (Gunnink, Chousou-Polydouri & Bostoen 2022: 98–100). This last feature is the most relevant to our research question. The Proto Bantu (PB) palatal phonemes *tʃ and *d͡ʒ[5] often have the following reflexes in Bantu languages (Hyman 2019: 128)

- *tʃ > /s/
- *d͡ʒ > /z/, /j/ or /d͡ʒ/

These are not the reflexes Southern Bantu languages show, however. Table 3 represents the reflexes of *tʃ and *d͡ʒ in Southern Bantu languages:

*Table 3: Reflexes of PB *tʃ and *d͡ʒ in Southern Bantu languages (cf. Gunnink et al. 2022.: 98)*

	Reflexes of *tʃ and *d͡ʒ
Shona (S10)	s, ʃ, z, ʒ

[5] I do not follow the typically used *c and *j in Bantu research tradition to represent the affricates /tʃ/ and /d͡ʒ/ but instead use IPA notation for this (see also 2.1).

Venda (S20)	t̪, t̪ʰ , d̪
Sotho Tswana	t̪, t̪ʰ , d̪ (Kgalagadi, Tjhauba, Lobedu, Tawana)
(S30)	k͡ǂ, ʧʰ , ɬ (Pai, Pulana, Kutswe)
	ɬ, ʧ, ʧʰ (Southern Sotho, Northern Sotho)
	ʧ, ʧʰ (Tswana)
Nguni (S40)	ɬ, ʧ, ɮ
Tsonga (S50)	ɬ, ʧ, ɮ
Chopi (S60)	?

Gunnink et al. (2022: 98-100) observe that only Shona languages (S10) have the common Bantu reflexes. Venda (S20) does not make use of lateral obstruents at all but has dental stops as reflexes of Proto-Bantu *ʧ and *d͡ʒ. The situation for Chopi (S60) is unclear. For a more detailed account, I refer the reader to Gunnink et al.'s article.

Most relevant to the research question of this thesis is the fact that Sotho Tswana (S30), Nguni (S40), and Tsonga (S50) languages have lateral obstruents as reflexes of the Proto-Bantu palatals (as summarized in Table 3). The following observations can be made: Kgalagadi, Tjhauba, Lobedu, and Tawana have dental stops for the reflexes of *ʧ and *d͡ʒ, like Venda. Pai, Pulana, and Kutswe (also referred to as 'Eastern Sotho' by Ziervogel (1954) and Taljaard (1997) pattern together in that they use a velar lateral affricate /k͡ǂ/ in addition to an alveolar lateral fricative or affricate. Nguni (S40), Tsonga (S50) and the Sotho Tswana (S30) languages Tswana, Northern Sotho and Southern Sotho have the lateral fricatives /ɬ, ɮ/ or lateral affricates /ʧ, ʧʰ, d͡ɮ/as reflexes of Proto-Bantu *ʧ and *d͡ʒ (Gunnink, Chousou-Polydouri & Bostoen 2022: 98–99). The authors also note that lateral obstruents occur in lexemes that do not have a Bantu origin. For example, the velar lateral affricate /k͡ǂ/ occurs in the Nguni languages Zulu (S42), Zimbabwean Ndebele (S44), and Swati (S43), and does not occur in words with a Bantu etymology (2022.: 100, ft. 13). Lanham and Hallowes (1956: 103) suggest that this sound is of Khoisan origin. Moreover, in the Sotho Tswana language Tswana, the affricate /ʧ/ occurs both in words of Bantu origin and in words that are cognate with Xhosa words with clicks, e.g, Xhosa *ǁoǁa* 'chat' and Tswana *ʧoʧa* 'chat' Louw and Finlayson (1990: 406), following Gunnink et al. (2022: ft. 13). Apart from these remarks, lateral obstruents with a non-Bantu origin are not discussed in depth. See the next section (1.4.1) for a brief summary of Louw and Finlayson's paper and proposal (1990: 406).

Gunnink et al. (2022: 99) argue that Nguni (S40) and Tsonga (S50) languages may share this innovation in their most recent shared ancestor because the reflexes seem to be fairly homogenous. Their linguistic phylogeny supports the grouping of Nguni (S40) and Tsonga (S50) languages into one clade, which matches this innovation. However, Chopi (S60) is also a part of this clade, although it does not have lateral obstruents as reflexes of *ʧ and *d͡ʒ. The question then arises if Chopi developed lateral obstruents and lost them or if it never developed lateral obstruents to start with.[6] Since Sotho Tswana (S30) shows divergent reflexes of *ʧ and *d͡ʒ (the velar lateral affricate /k͡ǂ/ in Pai, Pulana and Kutswe, dental reflexes in Kgalagadi, Tjhauba, Lobedu, and Tawana, and lateral fricatives and affricates in Southern Sotho, Northern Sotho, and Tswana), it also seems unlikely that the clade unifying Sotho Tswana (S30) with Nguni (S40), Tsonga (S50), and Chopi (S60) would have had lateral obstruents in their proto language (Gunnink et al. 2022: 99). As inheritance thus

[6] In Eaton's (2022) reconstruction of the shared ancestor of Tsonga (S50) and Chopi (S60), he argues that this ancestor had lateral fricatives and Chopi (S60) then lost them

does not seem a likely option and given the unique status of lateral obstruents in Southern Bantu, the authors propose language contact as the origin for these sounds. This scenario is discussed in the next subchapter together with other contact proposals put forward on the origin of Southern Bantu lateral obstruents.

1.4. Language contact in the development of Southern Bantu lateral obstruents

Multiple scholars have argued for language contact as a possible source of the Southern Bantu lateral obstruents. Suggested donor languages or language families are Southern Cushitic (Louw and Finlayson 1990) and Khoisan (Gunnink et al. 2022), and a linguistic area is proposed by Güldemann (2011; 2019).

1.4.1. Language contact between Southern Cushitic and Southern Bantu

Louw and Finlayson (1990) discuss the origins of Southern Bantu based on a study of Xhosa and Tswana, also dedicating some analysis to lateral obstruents. The authors note the following on the rarity of lateral obstruents in Bantu (1990: 406): "As is the case of Xhosa *hl* and Tswana *thl* many words could occur with *dl* and *tl* which are not reflexes of any starred reconstructed forms. They should rather be accepted as typical for these southern languages." They take the presence of lateral obstruents in both these languages to be a sign of close contact with Cushitic for some time, although it is not specified what this situation would have looked like.

Regarding the origin of the lateral obstruents, it is speculated they have been borrowed from a non-Bantu language. Southern Cushitic is proposed to be a donor of these sounds, the borrowing event then having taken place during the time the ancestral languages came into contact with Cushitic on their way to South Africa (1990: 406). It would be interesting to see if such a contact could have indeed taken place, since South Cushitic speakers themselves migrated from further up north to where they are found nowadays in Tanzania (Nurse and Spear 1985: 34). Gunnink et al (2022.: 99) also comment on this proposal, acknowledging that ancestors of Southern Bantu speakers did in all likelihood pass through areas in East Africa where Southern Cushitic languages were spoken, which indeed make use of lateral obstruents. However, no other Southern Cushitic influence is established as of yet. This makes Southern Cushitic languages as the origin of lateral obstruents not the most likely candidate.

1.4.2. Language contact between Khoisan and Southern Bantu

Instead of inheritance as an explanation for the distribution of the reflexes of *ʧ and *d͡ʒ in Southern Bantu, Gunnink et al. (2022) tentatively propose language contact with Khoisan languages as a source of the lateral obstruents. Not only do we know that Khoisan languages have been in close contact with Bantu speakers (see 1.2 The Bantu Expansion) and have influenced each other, but lateral obstruents are also attested in multiple Khoisan languages (2022: 99):

Table 4: Lateral obstruents in Khoisan languages (*Gunnink et al. 2022: 99-100*)

Language	Language family	Location spoken	Source
ǁXegwi (extinct)	Tuu	Northern South Africa and Eswatini	(Lanham & Hallowes 1956)
ǂHoan (a variety of ǂ'Amkoe)	Kx'a	Botswana	(Sands 2007)

Some varities of Glui and G‖ana	Khoe-Kwadi	Central Kalahari	(Sands 2007; Nakagawa 1996: 112)
!Xung	Kx'a	Angola	(Traill & Vossen 1997)
Kwadi (almost extinct)	Khoe-Kwadi	Angola	(Güldemann 2013)

The authors do not note which lateral obstruents these Khoisan languages use and if these are similar to the lateral obstruents found in Southern Bantu languages. A further question would be if these languages are or in the past have been spoken in the proximity of the Southern Bantu languages that feature lateral obstruents. They do offer two explanations for how Southern Bantu languages could have acquired their lateral obstruents. Firstly, language contact with these Khoisan languages could have influenced a sound change resulting in lateral obstruents. Secondly, it is known from Khoisan languages that lateral obstruents can originate from click loss. In such an instance, a click is changed to a lateral obstruent. Both lateral clicks and non-lateral clicks have been reported to change into lateral obstruents (2022: 100). Following Gunnink et al. (2022: 100), the lateral obstruents resulting from click loss can be observed in the following languages: Kwadi (Fehn 2020a), some !Xung varieties (Fehn 2020b; Traill & Vossen 1997), and ǁXegwi (Sands 2007), hence in all three Southern African Khoisan families.

1.4.3. Linguistic macro area Eastern and Southern Africa

Tom Güldemann (2011; 2019) argues for a linguistic macro area connecting East and Southern Africa.[7] He offers the idea of a macro area to explain what he calls "non-trivial geographical distributions of linguistic features that cross genealogical boundaries over long distances and provide information about likely large scale areal relationships in the remote past" (2019: 290). Simplified, the thought behind this is that, if some languages from unrelated language families share a rare linguistic feature, this can be an indication for an earlier linguistic area characterized by this (and likely other) feature(s); it is then difficult to find a family-internal reason for the change. For Southern and Eastern Africa, two of these features occurring across the languages are the following (291-292):

i) head final noun marking such as suffixes and postposition for derivational and locative use,
ii) certain rare consonants (continentally and globally): ejectives, lateral obstruents, and clicks

This pattern is visualized in the following maps:

[7] Güldemann (2019: 285-6) follows Lobeck (1946) and uses the term 'High Africa', which includes the East African Highlands and the South African Platform. As it largely corresponds to Eastern Africa and Southern Africa, and these terms are used in most other sources I use, I will refrain from introducing a new term and continue to use 'Eastern' and 'Southern Africa' instead.

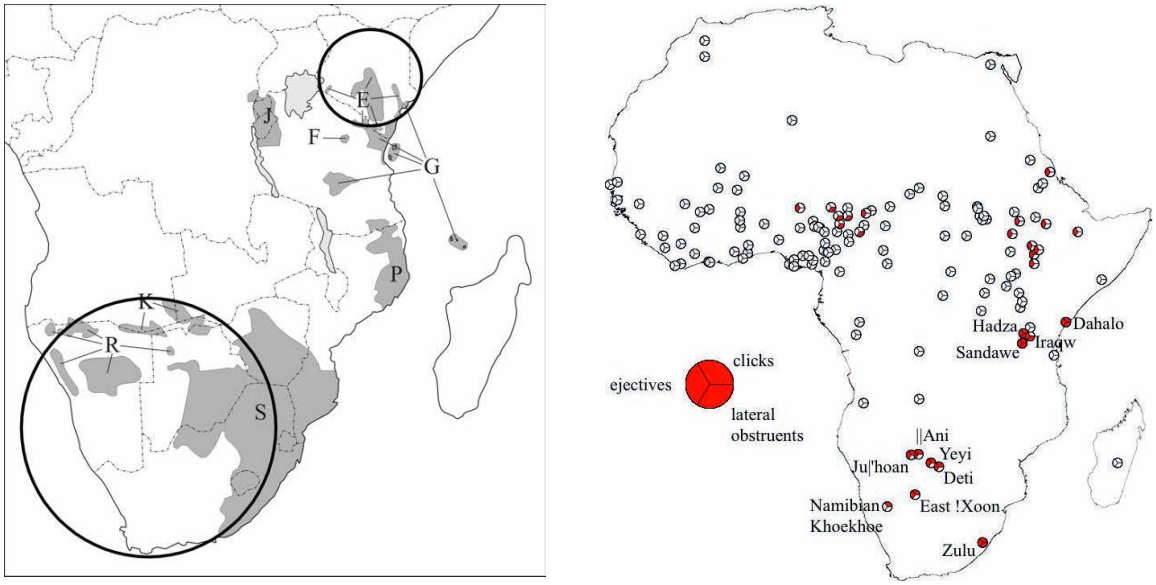

Figure 6: Untypical head-final noun marking in Bantu (cf Güldemann 1999) (left), occurrence of rare consonants (right) (Güldemann 2019: 292)

What arises is what Güldemann (2019: 292) calls a "saddle distribution": they are present at both ends of Eastern and Southern Africa where the Bantu languages do not fully dominate the linguistic landscape but where non-Bantu languages from before the Bantu expansion are also still spoken. Extending this logic, it is argued that this structural profile was also found in the languages in Eastern and Southern Africa from before the Bantu Expansion. These languages then became largely suppressed during the Bantu Expansion, and their speakers shifted to Bantu languages. The distribution we see nowadays would only be the remnants of the languages that have not shifted to Bantu at both ends of the macro area of Eastern and Southern Bantu (2019: 291-292). Finally, Güldemann (2019: 298) explains that it is not only linguistic evidence that support substrate evidence: "The case under 3 of the Bantu languages of zone S and their assumed Khoekhoe and Tuu substrate is corroborated by the fact that relevant Bantu populations display a high amount of genetic admixture from local groups traditionally subsumed under the concept "Khoisan" (Pakendorf et al. 2017; Bajić et al. 2018)".
The macro area is his solution to the occurrence of certain rare linguistic features occurring in both East and Southern Africa. This area would have been connected before the Bantu Expansions (for more on the Bantu Expansion, 1.2). The Bantu Expansion then divides the macro area since speakers of unknown indigenous languages shifted to Bantu languages when they were in contact with Bantu speakers. We know this from studying the DNA of Bantu speakers and the high amount of genetic admixture we find (see also 1.2). On the edges of this zone in East and Southern Africa, we still see the remnants of this former linguistic area.

This view offers a tempting explanation for the distribution of lateral obstruents. Some aspects of Güldemann's hypothesis pose us with theoretical challenges, however. Regardless of the likelihood of the hypothesis, the challenge of this theory is that there is not a linguistically sound way to test this and there might never be. The languages that supposedly connected East and Southern Africa are not found anymore; speakers shifted away from them (to, for example, Bantu languages) and languages have died with their last speakers. We would thus need to assume that these hypothetical languages i) existed and ii) featured lateral obstruents (or other rare features like clicks). Since we find a lot of genetic admixture in Bantu speakers (see 1.2 The Bantu Expansion), i) seems to be a sound assumption. However, without knowledge of these languages, it remains hypothetical if these languages had rare features such as lateral obstruents as in assumption (ii).

Furthermore, it remains important to treat different lines of research with care, as well as be aware of which claim is supported by which argument. For example, Güldemann (2019) comments on how research from other disciplines also points us in the direction of substrate evidence, explaining that speakers of Bantu languages in zone S show high amounts of genetic admixture with Khoisan populations. Even though this proves a mixing of populations, it does not automatically prove substrate influence. As Herbert (1990: 303) writes: "… genes do not speak languages…". However, it is a clear sign the populations interacted intensively, which is indeed necessary if one argues for a contact analysis.

What remains unclear as well is how linguistic areas relate to language contact; could language contact explain the occurrence of these sounds in Eastern and Southern Africa, or do we need to also reconstruct a successive linguistic area? Additionally, Figure 6 also shows that Chadic languages exhibit some of the rare consonantal like ejectives and laterals, like the aforementioned languages in Eastern and Southern Africa have. This shows that a contact hypothesis is not essential for the development of these consonants. Finally, based on the sample of languages that displays these features in Figure 6, we can observe that most languages in Southern Africa are Khoisan languages, not Bantu languages. These Khoisan languages were supposedly part of the substrate, so to properly see what characterizes Bantu languages in Southern Africa, we need a sample that includes more Bantu languages in the area.

To summarize, this theory raises many questions. If this area indeed existed, then which language or languages first featured lateral obstruents? And via which way or scenario would this then have spread? Which languages were donor languages and which languages were on the receiving end of the language contact or contact zone? It is necessary to stress again that I do not argue that a linguistic area between Eastern and Southern Africa is unlikely. However, as historical linguistics already makes inferences about languages not spoken today, it remains essential to base our scientific theories on data and sound argumentation, not on assumptions.

1.4.4. Summary

Taking the different contact hypotheses into consideration, we can make the following predictions for the origin of lateral obstruents in Southern Bantu languages (cf. Figure 7:). The lateral obstruents could either have been a spontaneous development (A), due to language contact (B), or a combination of both (C). If it is due to language contact, we can identify several sources: South Cushitic languages (B1), as proposed by Louw and Finlayson (1990), a linguistic macro area connecting East and Southern Africa (B2) as proposed by Güldemann (2011; 2019), Khoisan languages (B3), as proposed by Gunnink et al. (2022.), and/or Bantu languages (B4). As noted above, scenario (B2) is not unlikely but remains very difficult to test. Lastly, Southern Bantu languages could have acquired their lateral obstruents from intense contact with other Southern Bantu languages; in that case, there would have been horizontal spread of the lateral obstruents. The question then again arises if the first Southern Bantu languages to make use of lateral obstruents spontaneously developed it (A) or if they acquired it due to language contact (B).

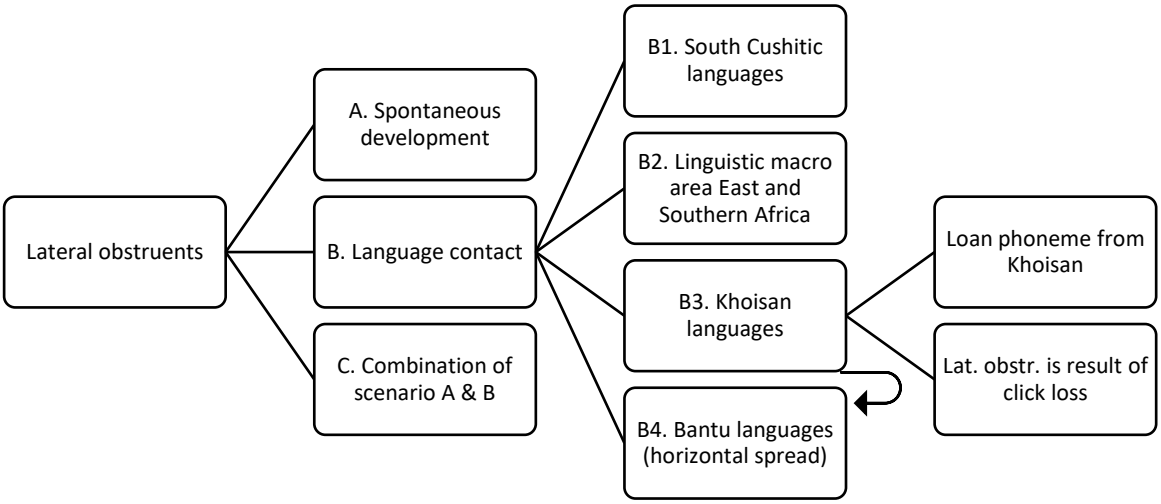

Figure 7: Possible origin lateral obstruents in Southern Bantu/Nguni

If (B) is the case, one would like to trace the phenomenon to a source language. Moreover, we know that language contact almost never occurs in isolation and should occur in at least two different structural subsystems, such as lexicon, phonology, and syntax (Thomason 2009: 322). So, if this is a contact phenomenon, we expect language influence of this language or language family on more levels of the language; it will likely not be an isolated phenomenon. Thomason (2009: 324) also explaines that multiple causation of linguistic change is common, and a single change might be motivated by both language external and language internal factors. If one or more Khoisan languages were to be the source, there are multiple scenarios possible. As explained in (1.3.3), lateral obstruents can result from click loss in Khoisan languages. Southern Bantu lateral obstruents can thus originate from directly borrowing the lateral obstruent from a Khoisan language, which could have possibly acquired it through click loss. Alternatively, clicks could also result from click loss in the recipient Southern Bantu languages, where the click after the borrowing event turned into a lateral obstruents. Nowadays, many of the Khoisan languages once spoken are lost; the last speakers either died or speakers have shifted to other languages, like Bantu languages (1.2). In terms of determining the source language of the language contact, this could be problematic. Lastly, lateral obstruents could also find their origin in a combination of these two scenarios (C), for example if the lateral obstruents have diverging origins or if a possible sound change was contact induced.

With this background knowledge of (Southern) Bantu languages, the nature of lateral obstruents, and possible contact scenarios proposed, we can again turn back to the significance and research question.

1.5. Significance and research question

Lateral obstruents have long been recognized as a notable feature in Southern Bantu languages. As will become apparent in the next chapter, previous studies have provided important information on these sounds for individual languages. However, to date, no research has dealt with the phenomenon specifically or

provided a larger scale comparison within a language family. This leads to the following research question: *How did Nguni languages develop lateral obstruents?*

To answer this research question, I will carry out a study on the lateral obstruents in the Southern Bantu subfamily of Nguni languages. It has recently been observed that Nguni languages have the following sounds as reflexes of PB palatals: /ɬ, t͡ɬ, ɮ/ (Gunnink et al. 2022: 25). Moreover, some Nguni languages also have a velar lateral affricate /k͡ǁ/ which does not occur in words of PB origin. Thus, my research will investigate all lateral obstruents that occur in the Nguni languages. After composing an inventory of lateral obstruents in Nguni languages, I will investigate in which words they occur, focusing for example on if these words are cognates of each other and if they occur in words of Bantu origin, as put forward by Gunnink et al. (2022). This will aid us in testing the competing hypotheses on their origin set out in this chapter: are the lateral obstruents a spontaneous innovation, or could their development be influenced or due to language contact? And if language contact would be a possible explanation, could this have been due to a linguistics macro area or contact with Southern Cushitic or Khoisan?

This study seeks to investigate the development of lateral obstruents in Nguni languages. It will provide us with a first ever detailed understanding of the distribution of lateral obstruents in Nguni, combining and reinterpreting data from a large number of earlier sources, as well as work toward a first in depth picture of lateral obstruents in Southern Bantu languages. Understanding the nature of the lateral obstruents in Nguni languages will also give us insight in the nature of sound change, either arisen as a spontaneous development, or as a contact driven phenomenon. Should the latter be true, this research will contribute to insights about population movement and contact. Finally, as Gunnink et al. (2022: 99-100) discuss the possibility of lateral obstruents as a shared, non-contact driven innovation, this study can potentially shed new light on Southern Bantu internal classification.

2. Distribution of lateral obstruents in Nguni (S40) languages

Chapter 2 presents an overview of lateral obstruents in Nguni languages. I will first elaborate on the methodology (2.1), consisting of a background on the comparative method and which languages and language data I used and how. This is followed by a short overview of Bantu nouns, verbs, and tone (2.2), as this information is necessary to understand the data presented in 2.3: for the selected Nguni languages, I discuss the locations as well as which lateral obstruents they feature, illustrated by examples and any other noteworthy information such as occurrence or the behavior of the sounds.

2.1. Methodology

In this section, I elaborate on the Comparative Method, as well as the selected sample of languages and the nature and quality of the language data I work with.

2.1.1. Comparative Method

To investigate the nature and development of lateral obstruents, I use the Comparative Method. This method is used in historical linguistics to reconstruct the history of related languages and identify their most recent common ancestor, the proto language, based on a systematic comparison of the synchronic language data. In this case, I compare language data from present-day Nguni languages in order to make inferences about Proto Nguni and the development of the lateral obstruents in these languages. This chapter presents the language data, and the inferences about Proto Nguni and the development of lateral obstruents are discussed in the next chapter. By comparing the lateral obstruents in the present-day Nguni languages, we can see in what environments they occur and how the sounds behave. Should this be similar behaviour in similar environments, then this points to a single development of lateral obstruents in Nguni, which would support hypothesis A of spontaneous development (cf. Figure 7). Should we encounter much diversity in the sounds as well as in their use, we will explore hypothesis B (cf. Figure 7).

2.1.2. Language sample, language data, and orthograph conventions

Data from 10 Nguni languages is included (see Figure 8). This sample encompasses one or multiple languages from all Nguni subgroups in Hammarström (2019: 52).

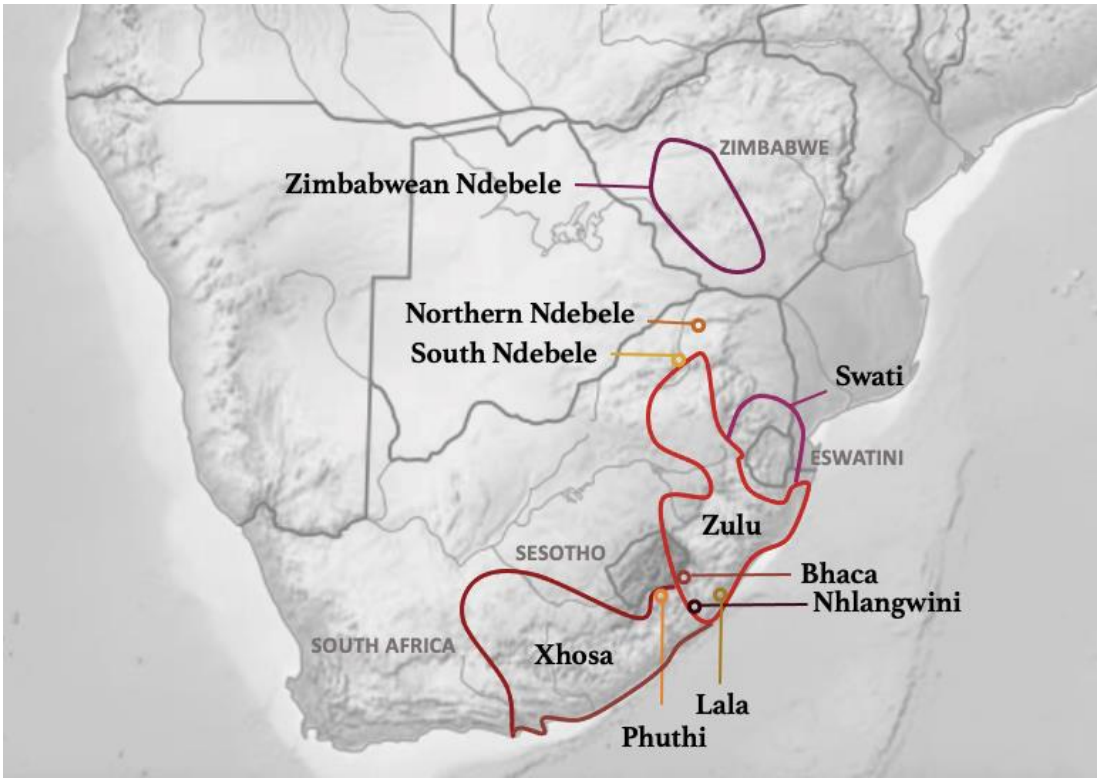

Figure 8: Map of Nguni languages, based on Maho (2009) and Msimang (1989: 330) for the location of Lala

The Nguni languages form a subbranch of Southern Bantu languages that are closely related to each other to the degree that they are often mutually intelligible. They are mainly spoken in South Africa, Eswatini (formerly known as Swaziland), and Zimbabwe. Of these languages, the following are recognized as official languages in South Africa: Zulu, Xhosa, Southern Ndebele, and Swati (cf. Glottolog).

Traditionally, Nguni languages have been divided in Zunda (Zulu, Xhosa, Zimbabwean Ndebele, Southern Ndebele) and Tekela (Swati, Phuthi, Bhaca, Lala, Northern Ndebele, Nhlangwini), with Zunda /z/ regularly corresponding to /t/ in Tekela (Bryant 1905; Msimang 1989), although recent work by Gunnink et al. (2022: 91-92) shows that the /t/-/z/ correspondence might well be the only distinguishing characteristic between Zunda and Tekela languages, with other diachronic phonological data such as the presence of click types not supporting this divide. See also 1.1.1 and 1.2 on Southern Bantu and Nguni classification. As Nguni languages are documented to varying degrees, this influences the sample of the thesis, as explained below.

The language sample in this thesis is based on the availability of data. Data have been collected from secondary sources such as dictionaries and grammars, referenced throughout the chapter. To create a uniform analysis, I have used the International Phonetic Alphabet (IPA) to present the language data. This was done based on the analysis and description of the lateral obstruents in the original work. I deviate from the IPA for the /j/, as this is typically transcribed as [y] in Bantu tradition. Further, I follow the tone notation from the original sources. Often the affricates /ʧ/ and /ʤ/ are transcribed as [c] and [j] in Bantu tradition. I will deviate from Bantu transcription and use IPA here in order to avoid confusion since the Proto Bantu *ʧ and *ʤ are of importance to the development of lateral obstruents in Nguni langauges. When available, multiple sources are used for a single language, which is then indicated in both 2.3 and the appendix. Following the references, Appendix A shows the orthography of the source work, the description of the sound

in the original work, the IPA symbol I adopted, and the respective reference. Where possible, other orthographical conventions (like vowel type and tone) were also taken into consideration.

Working with secondary sources means that the available data is limited in nature. This applies to the data available in the sources, as well as the quality and reliability of these sources, specifically regarding lateral obstruents. Lateral obstruents in Southern Africa form a peculiarity for most researchers given their rarity (see Chapter 1), meaning that many of the early researchers may not have been familiar with these sounds. Moreover, some of the researchers were missionaries by training rather than linguists. When specific information could not be obtained from a given source, this is indicated. Nevertheless, this work is still a crucial step towards a first comparative overview of lateral obstruents in Nguni and it can thus be seen as a starting point for further research. Not only will I provide the first ever analysis on the nature and development of lateral obstruents in Nguni, but I will also combine and reinterpret data from a large number of earlier resources. To understand this data, some background on Nguni languages is necessary, as provided in the following section.

2.2. Structural properties of Nguni languages in relation to lateral obstruents

There are several structural properties of Nguni languages that are relevant for the understanding and analysis of the data concerning lateral obstruents. In Nguni (and Bantu) languages, nouns are distributed over a set of noun classes, and verbs typically show agglutinative morphology for derivation and inflection. Both of these can have lexical and grammatical tones, all discussed below. As is reconstructed for Proto Bantu, and holds for Nguni, most Bantu languages nowadays have the following syllable structures: CV(V), V, and N (Hyman 2019). Further, prenasalization, aspiration, and ejectives are also characteristic of Nguni languages. These properties are all elaborated on below.

2.2.1. Nouns

Bantu nouns typically have disyllabic roots and fall into the nominal classification system of noun classes, of which Bantu languages have between fifteen and eighteen generally (Marten 2021). This noun class membership is indicated by means of a prefix, and this prefix changes to indicate whether the noun is singular or plural, illustrated by the following Nguni examples which have the monosyllabic root *-ɬo*.

4) Southern Ndebele (Skhosana 2010: 148–149)
   a) ***ili***-*ɬo*
      5-eye
      'eye'
   b) ***ame***-*ɬo*
      6-eye
      'eyes'

Throughout this thesis, roots are separated from prefixes in glossing where possible or indicated in the original source. For the Comparative Method used in this thesis, this means that nouns are compared by roots, not noun class prefixes. For example, in (5) and (6) the word 'pain' is compared in Swati and Nhlangwini. The roots are similar and thus comparable, whilst the prefixes are not.

5) Swati (Ziervogel 1952: 34)
ɓu-ɬuⁿgu
14-pain
'pain'

6) Nhlangwini (Msimang 1989: 323)
úbú-ɬûⁿgu
14-pain
'pain'

For more on nominal morphology and noun formation, I refer the reader to Van de Velde (2019) and Marten (2021).

2.2.2. Verbs

Infinitive verbs fall into this noun class system too, nearly always in noun class 15. This means that the root and prefix of verbs are separated where possible (7), or that the verb is presented without the prefix (8).

7) Phuthi (Donnelly 2007: 159)
kú-ɬáátà
15-vomit
'to vomit'

8) Zulu (Doke et al. 2014: 716)
-ɬeka
laugh
'to laugh'

2.2.3. Tone

Nguni languages are tone languages, like the majority of Bantu languages (Marlo & Odden 2019). Most Nguni practical orthographies mark high tones with an acute accent, whilst low tones are left unmarked. I follow the conventions used in the sources concerning tone annotation.

2.2.4. Syllable structure

Firstly, as discussed in 2.2, Bantu languages often do not allow for a syllable structure with consonant sequences. We do find prenasalized consonants or affricates with the same place of articulation. This holds for Southern Bantu languages too: Doke (1954: 33) explains that affricates in Southern Bantu languages are generally homorganic.[8] When lateral obstruents are transcribed as consonant sequences that do not have the same place of articulation, this poses a problem for the phonotactical structures we know (Southern) Bantu languages often have. Consonant sequences like /tl/ as transcribed for Phuthi (Donnelly 2007) or /dl/ as

[8] See also Doke (1954: 34) for a discussion on heterorganic compounds, which are restricted to Sotho, Chopi, and Phuthi. Note that this does not change the analysis for Phuthi, as the heterorganic compounds are also discussed by Donnely (2007: 63, ftn 5) and concern combinations as /tf/.

transcribed by Doke (1947) for Zulu are, whilst not impossible because languages can change over time, not the most likely to assume initially. The more probable analysis would be an affricate with the same place of articulation as opposed to a consonant sequence, which would mean that the /tl/ corresponds to /t͡ɬ/ and /dl/ to /d͡ɮ/. The velar lateral affricate is also often found with varying transcriptions (see Appendix A), but given that affricates in Southern Bantu are homorganic, the IPA transcription /k͡ʟ̝̊/ or /k͡ʟ̝̊ʼ/ is used, depending on whether the affricate is ejective or not. Further, the /ʟ/ is devoiced (marked by the superimposed circle) to match the voiceless /k/ and is raised to a fricative (marked by the diacritic under the symbol); transcriptions like /kl/ or /kɬ/ are often found but not correct in the case of Southern Bantu or Nguni languages. Until recorded data can be analyzed in a program such as Praat (Boersma & Weenink 2023), the working hypothesis is that we are dealing with homorganic affricates.

2.2.5. Aspirated and ejective contrast

Some Nguni languages contrast between alveolar lateral affricates that are aspirated (/t͡ɬʰ/) and alveolar lateral affricatives that are ejectivized (/t͡ɬʼ/), as can be observed in 2.3. As Southern Bantu languages often contrast between ejectivized and aspirated sets of stops and affricates (Doke 1954: 31), this is not surprising. Further, as many Nguni languages are in contact with Sotho, and Sotho has a distinction between aspirated and ejectivized sets of stops and affricates, it could potentially be an effect of language contact. For example, we know that Southern and Northern Ndebele have been varyingly influenced by Sotho, the latter more than the former (Skhosana 2010). Further research would be needed to confirm this.

2.2.6. Prenasalization

As will become apparent from the data, prenasalization of lateral fricatives (/ɬ, ɮ/) often turns lateral fricatives into alveolar lateral affricates: /ⁿɬ, ⁿɮ/ > [ⁿt͡ɬ, ⁿd͡ɮ]. This is an effect of the movement and speed of the articulatory organs, as the prenasalized segment of the sound generates a closure so that the air flows to the nasal cavity. When transitioning to a fricative from this closure, this more often than not happens via a stop. This affrication of fricatives as a postnasal process is commonly found in Bantu languages, attested for example in Kongo, Yaka, Tuki, and Venda (Hyman 2001: 169–170). The sources that form the basis of this thesis differ in how they analyze prenasalized fricatives. In this thesis, the analysis of the prenasalized fricatives or affricates is based on the descriptions given in the sources. Without recordings, it is impossible to say if all Nguni languages affricate fricatives when prenasalized. Moreover, not all authors analyze prenasalized lateral obstruents as separate or contrastive phonemes, but instead as sequences of a nasal and lateral obstruent. One reason for this is that prenasalization can be an effect of noun class: classes 9 and 10 are often marked by a nasal or prenasalization. If a lateral obstruent then follows the noun class marker, this can result in a prenasalized lateral obstruent. I will come back to this in the next chapter, but one way to test if the prenasalized lateral obstruents are independent, unconditioned phonemes is to see if the prenasalized lateral obstruent occurs root internally, as it is less likely to be an effect of noun class in that position.

2.3. Lateral obstruents in Nguni (S40) languages

In Table 5, an overview of the languages and their lateral obstruents is presented. In addition to the general background on Bantu languages provided above, it is important to elaborate on some characteristics of Southern Bantu languages before we can turn to the language sections with examples, as these characteristics have analytical consequences.

Table 5: Overview lateral obstruents in Nguni languages

Language	Lateral obstruents	Reference
Bhaca (S402)	ɬ, ɮ, ⁿɬ, ⁿdɮ	Jordan (1953)
	ɬ, ɮ̈, ⁿɬ, ⁿɮ	Msimang (1989)
Phuthi (S404)	ɬ, dɮ, tɬ	Msimang (1989)
	ɬ, d̤ɮ, tɬʼ, tɬʰ	Donnelly (2007)
Nhlangwini (S405)	ɬ, ɮ̈, ⁿɬ, ⁿɮ, k͡ǂʼ	Msimang (1989)
North/South Lala (S406)	ɬ, ɮ̈, ⁿɬ, ⁿdɮ, k͡ǂʼ ~ k͡xʼ	Msimang (1989)
	ɬ, ɮ, k͡ǂ	Zungu (1999)
Southern Ndebele (S407)	ɬ, ɮ, ɮ̈, ⁿɬ, ⁿɮ, tɬʼ, tɬʰ	Skhosana (2010)
Northern Ndebele (S408)	ɬ, dɮ, ⁿɬ, ⁿdɮ, tɬʼ, tɬʰ	Ziervogel (Ziervogel 1959)
	ɬ, dɮ, ⁿɬ, ⁿɮ, tɬʼ, tɬʰ	Msimang (1989)
	ɬ, ɮ, ⁿɬ, ⁿɮ, tɬʼ, tɬʰ	Skhosana (2010)
Xhosa (S41)	ɬ, ɮ, ⁿtɬ, ⁿdɮ	McLaren (1952)
	ɬ, ɮ̈, ⁿtɬʼ, ⁿdɮ	Finlayson et al. (1990)
Zulu (S42)	ɬ, ɮ, ⁿtɬ, ⁿdɮ, k͡ǂ ~ k͡xʼ, ⁿk͡ʟʼ	Doke (1947)
	ɬ, ɮ, ⁿtɬʼ, ⁿdɮ, k͡ǂʼ	Poulos and Msimang (1998)
Swati (S43)	ɬ, ɮ, ⁿɬ, ⁿɮ[9]	Ziervogel (1952)
	ɬ, ɮ, ⁿɬ, ⁿɮ, k͡ǂʼ	Msimang (1989)
Zimbabwean Ndebele (S44)	ɬ, ɮ, ⁿɬ, ⁿɮ, k͡ǂ	Pelling (1966)
	ɬ, ɮ, ⁿɬ, ⁿdɮ	Bowern and Lotridge (2002)

Lastly, as discussed in the introductory chapter of this thesis, lateral obstruents are rare in Bantu languages. As a result of this, not all researchers were familiar with the existence of these sounds or how to transcribe and interpret them. There is not much research into the phonetic transcription, nor articulatory analysis available when it comes to Southern Bantu lateral obstruents. I will interpret the nature of the sounds and their contractiveness based on the comments and transcriptions. With this background in mind, we can now turn to the language data. Each subsection is dedicated to a Nguni language and contains a table with the lateral obstruents and words illustrating the sounds. If applicable, notable features or discrepancies between the sources are discussed.

2.3.1. Bhaca (S402)

The following lateral obstruents are reported for Bhaca by Jordan (1953) and Msimang (1989).

[9] Even though Ziervogel (1952) does not discuss the / k͡ǂ/, he does discuss the /kx/. This is relevant, as these two sounds sometimes alternate (e.g., Zulu). See the section on Swati for more information.

Table 6: Lateral obstruents in Bhaca (S402)

Sound	Example	Source
ɬ	*ame-ɬo* 'eyes'	Jordan (1953: 8)
ɮ	*iɮa^{n}ga* 'vulture'	Jordan (1953: 8)
^{n}ɬ	*i^{n}ɬitiyo* 'heart'	Jordan (1953: 7)
^{n}d͡ɮ	*i^{n}d͡ɮala* 'starvation'	Jordan (1953: 9)
ɬ	*ámɛ-ɬɔ* 'eyes'	Msimang (1989: 104)
ɮ	*uk^{ʔ}weɮ̈ula* 'to go past'	Msimang (1989: 104)
^{n}ɬ	*i^{n}ɬóko* 'head'	Msimang (1989: 312)
^{n}ɮ	*i^{n}ɮu* 'house'	Msimang (1989: 310)
k͡ʔ'	See below	

As can be observed, Jordan (1953) does not mark tones in his work, meaning that we are reliant on Msimang's (1989) analysis for tonal marking and his transcriptions are preferred in cases where language data could be drawn from two sources, like with 'eyes' in the table above. Further, according to Jordan (1953: 11), the /ɬ/ can be preceded by a nasal, as in: *n'ɬ*, where it is left unspecified what the apostrophe indicates and if the nasal part is prenasalized or not. It is also explained that a nasal preceding the voiced lateral fricative /ɮ/ results in ejectivization: *ɮala* 'play' > *i^{n}'ɮala* 'play' (1953: 11). As ejectives are produced with the vocal cords closed until the end, they can neither be nasal nor voiced, so it is unclear what effect Jordan refers to here. Further, Jordan (1953: 9) uses an unfamiliar phonetic symbol to describe a 'voiceless velar affricate' of which a screenshot can be found in Appendix A in the Bhaca section. It is unclear if this is a lateral affricate or not; it is not described as lateral, but it occurs in words with similar meanings where other Nguni languages might use a velar lateral affricate:

9) *kʔwela* 'scratch' (Jordan 1953: 9), cf.
   a) Nhlangwini - *k͡ʟ̝̊'wéḛ̩ą* 'scratch' (Msimang 1989: 114)
   b) Lala - *k͡ʟ̝̊wéḛ̩ą* (Msimang 1989: 110)

The uninterpretable transcribed words it occurs in (like 'scratch' and 'peep') do not occur in Msimang's work and thus cannot be checked for transcription. As 'lateral' is not specified, I assume the affricate has the same place of articulation and is thus a velar stop with fricative: /kx/.

Msimang (1989: 104, 106) presents the following lateral obstruents: /ɬ, ɮ/, which both occur prenasalized. Prenasalized lateral fricatives or affricates are not discussed in the consonant section of Msimang's (1989) work. However, in the appendix of Msimang's work, we also find examples of prenasalized lateral obstruents, in addition to non-prenasalized lateral obstruents. As there are ample examples with this combination (see the table above and the appendix of Msimang's work), I conclude that Msimang analyzes it as a consequence of morphology (e.g., as a result of a noun class prefix) instead of a distinctive morpheme. However, /^{n}ɮ/ does not only occur as a result of morphophonological proceses in the language but also as part of the root of words:

10) *ísá-^{n}ɮa* 'hand' (Msimang 1989: 313)
11) *ámá-^{n}ɮa* 'power, strength' (Msimang 1989: 313)

It is unclear if the same holds for /ⁿɬ/ based on the appendix. This might be an indication that /ⁿɬ/ is not a separate phoneme, especially given that Jordan does analyze the /ⁿd͡ʒ/ as a separate phoneme Jordan (1953: 9), but the voiceless equivalent is not analyzed as such. In the section on nasals, however, Jordan (1953: 7) distinguishes the alveolar nasal /n/, which appears before all vowels as well as in combinations like /ⁿd͡ʒ/, and the syllabic alveolar nasal /n̩/, found before "the voiceless homorganic fricatives *s* and *hl* [ɬ] (1953: 7)". It is unclear why it is analyzed as a syllabic nasal in this case instead of prenasalization. As no explanation is given as to why these would be syllabic nasals instead of prenasalization, other Nguni languages do not have syllabic nasals followed by lateral obstruents, and Msimang does not include this in his work on Bhaca, I will analyze the /n/ as prenasalization. Further research is needed to conclusively determine its status. Further, as Msimang does not discuss the prenasalized lateral (af)fricates, it is unclear if they are pronounced as prenasalized fricatives (/ⁿɬ, ⁿɮ/) or prenasalized affricates (/ⁿt͡ɬ, ⁿd͡ɮ/). See also the introduction of 2.3 for more on prenasalization of fricatives and affricates. Lastly, Msimang (1989: 106) includes a velar lateral affricate in the consonant chart but does not provide examples later on or elaborate on it. Thus, I will not consider it further.

2.3.2. Phuthi (S404)

The following lateral obstruents are reported for Phuthi by Msimang (1989) and Donnelly (2007).

Table 7: Lateral obstruents in Phuthi (S404)

Sound	Example	Source
ɬ	*kú-ɬala* 'to sit/stay'	Msimang (1989: 118)
d͡ɮ	*ídɮɛ̯bɛ́* 'ear'	Msimang (1989: 118)
t͡ɬ	*sinɔ́t͡ɬɔlɔ́* 'key'	Msimang (1989: 119)
ɬ	*k'ú-ɬaala* 'to sit, stay, live'	Donnelly (2007: 70)
d͡ɮ	*k'ú-d͡ɮa̯ála* 'to play'	Donnelly (2007: 69)
t͡ɬ'	*k'ú-t͡ɬ'ááma* 'to tie up'	Donnelly (2007: 69)
t͡ɬʰ ~ ɬ	*í-t͡ɬʰaaɣ́ú́* 'maize kernel, alphabet letter'	Donnelly (2007: 69)

There are no prenasalized lateral fricatives or affricates in Phuthi due to a loss of prenasalization virtually everywhere in the language (Msimang 1989: 198-199; Donnelly 2007: 43-45). Moreover, Msimang (1989: 120) explicitly states that there is no lateral velar affricate /k͡ɬ/ in the language.[10]

Msimang (1989: 119) remarks the following: "Again in Phuthi like in Sumayela Ndebele (see below) /d͡ɮ/ occurs as an affricate and not a fricative as in other Tekela dialects. Again this could be ascribed to Sotho influence where /tl/ is an affricate." Why this voiceless Sotho affricate /tl/ would affect the voiced alveolar affricate is unclear. Concerning the voiceless alveolar lateral affricate /t͡ɬ/, Msimang (1989: 119) notes that it: 1) occurs at

[10] It does occur in the consonant chart (see Appendix B). However, as no examples are given and it is explicitly stated that the velar lateral affricate does not occur in the language, its occurrence in the consonant chart is more likely to be a mistake.

a low frequency, and 2) is found in a few loans from Sotho (S33), a Southern Bantu language of a different subgroup, including the example in the table above. The original Sotho word is not mentioned, however.

Donnelly (2007: 65) classifies the sounds in Table 7 as laterally released ejected voiceless stops (/tl'/), laterally released aspirated stops (/tl^{h}/), breathy voiced stops (/d͡l̤/), and voiceless fricatives (/ɬ/)[11]. 'Laterally released' with 'laterally' as a secondary feature seems to be his solution to keeping the traditionally found Bantu CV structure intact, as the sounds are still classified as stops or fricatives (but not affricates) in the consonant chart. I will reanalyze the first three sounds as lateral affricates (/tl'/ > /t͡ɬ'/, /tl^{h}/ > /t͡ɬ^{h}/, /d͡l̤/ > /d͡l̤ʒ̤/) because combinations like /tl/ and /dl/ are unexpected given the syllable structure Bantu languages typically display (See Section 2.3) where only homorganic affricates would be allowed, and Donnelly (2007: 82) also explains that Phuthi generally follows a CV syllable structure. Combinations like /tl'/ would go against this structure, whereas a combination with a homorganic stop and fricative like /t͡ɬ'/ are more in line with (Southern) Bantu syllable structure.

Donnelly (2007: 65) notes that the /t͡ɬ'/ and /t͡ɬ^{h}/ are "saliently of Sotho origin, and occur only in loan items, making their frequency and distribution relatively low". It is unclear what status the /t͡ɬ^{h}/ has in Donnelly's work, of which Msimang (1989: 119) mentions it is of low frequency. Donnelly (2007: 28) names the /t͡ɬ^{h}/ to be a sound Phuthi incorporated via Sotho, occurring for example in:

12) *í-t͡ɬ^{h}úg̤ṳ̀* 'nipple' cf. Sotho *t͡ɬ^{h}úkù ~ ɬúkù* 'nipple' (Donnelly 2007: 29)
13) *kú-t͡ɬ^{h}útlhúrà* to shake out' cf. Sotho *hù-t͡ɬ^{h}útɬ^{h}úrá* 'to shake out' (Donnelly 2007: 29)[12]

Donnelly (2007: 29) notes that there is variation between the /t͡ɬ^{h}/ and /ɬ/ within and across speakers, which holds true both for Sotho, where the sound is incorporated from, and Phuthi. This variation is not described in detail, however. There are, however, three transcriptions of 'maize kernel, alphabet letter' found in Donnelly's (2007) work, which seems to confirm this variation:

14) *í-tl^{h}àà̤ŋ̤ṳ́*, orthographically to be represented as *í-tlhaa̤ŋ̤ṳ́* (p. 69)
15) *í-t͡ɬ^{h}à̤ŋ̤ṳ́* (p. 25)
16) *i-ɬàvú* (p. 1101)

As explained above, I will reanalyze the /tl^{h}/ as /t͡ɬ^{h}/, and the /t͡ɬ^{h}/ can alternate with the /ɬ/ (but the /ɬ/ itself also occurs as a separate phoneme in the language, which will not alternate with the /t͡ɬ^{h}/).

2.3.3. Nhlangwini (S405)

The following lateral obstruents are reported for Nhlangwini by Msimang (1989).

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[11] Donnelly only transcribes the /d͡l̤/ with a ligature tie (but not /tl'/ or /tl^{h}/), indicating he analyzes this as monosegmental. However, as I analyze all three sounds as affricates, I analyze all three as monosegmental.

[12] Interesting to note in (13) is that the /t͡ɬ^{h}/ as found twice in Sotho 'to shake out' corresponds to /t͡ɬ^{h}/ and /tlh/ in its Phuthi transcription. The second instance likely needs to be /t͡ɬ^{h}/ too.

Table 8: Lateral obstruents in Nhlangwini (S405)

Sound	Example	Source
ɬ	*ísí-ɬaɬa* 'tree'	Msimang (1989: 113)
ɮ	*ú-kuɮá* 'food'	Msimang (1989: 113)
ⁿɬ	*itiⁿɬitíyo* 'hearts'	Msimang (1989: 322)
ⁿɮ	*ámá-ⁿɮa* 'power, strength'	Msimang (1989: 321)
kǐˀ'	*- kǐˀ'wéḭ̯ą* 'to scratch'	Msimang (1989: 114)

Msimang (1989) does not describe prenasalized lateral obstruents in the Nhlangwini consonant section, implicating he does not consider them to be contrastive phonemes. Examples do occur in the vocabulary list. This raises the question if the prenasalized lateral obstruents are an effect of noun class (e.g., noun class 9/10 nasal prefixes in combination with a lateral obstruent in the stem) or occur in different environments too. I will address this question in the discussion chapter (3.1.2 and 3.1.3) but want to point out that the examples as found above seem to imply prenasalized lateral obstruents occur outside noun class 9/10 too.

2.3.4. North Lala and South Lala (S406)

The following lateral obstruents are reported for North Lala and South Lala by Msimang (1989) and Zungu (1999). Zungu (1999) judges the differences between North and South Lala to be marginal and thus considers them to be the same language: Lala. However, as will become apparent below, there are some relevant differences between North and South Lala concerning lateral obstruents.

Table 9: Lateral obstruents in North Lala and South Lala (S406)

Sound	Example	Source
ɬ ~ x	*sí-ɬâɬá* 'tree'	Msimang (1989: 109, corrected)[13]
ɮ ~ ɣ	*índɮɛ̯́lá* 'path'	Msimang (1989: 109)
ⁿɬ	*íⁿɬóko* 'head'	Msimang (1989: 312)
ⁿd͡ɮ	*íⁿd͡ɮɛ̯́lá* 'path'	Msimang (1989: 109, 311)[14]
kǐˀ' ~ k͡xˀ'	*- kǐˀ'wéḭ̯ą* 'to scratch'	Msimang (1989: 110)
ɬ ~ x	*ɬaba* 'earth'	Zungu (1999: 61)
ɮ	See below	
kǐˀ' ~ k͡xˀ'	*kǐˀ'ama* (N. Lala) ~ *k͡xˀ'ama* 'mark site'	Zungu (1999: 62)

[13] This example was corrected for a typographical error, likely due to the keyboard keys being next to each other, as it said "[ɬ] in **sí**hlâhlá [**ai**ɬaɬa] 'tree' (Msimang 1989: 109, emphasis added)", and I assume the onset is a *s-*, not *a-*.

[14] In the transcription of 'path', the word is given in IPA and the prenasalized voiced lateral fricative /ɮ/ is accompanied by a /d/: /ⁿd͡ɮ/. Caution should be taken since it is based on one transcribed word, but this seems to indicate that prenasalization of lateral obstruents in Lala leads to post nasal fortition.

As holds true for Bhaca and Nhlangwini, Msimang (1989) does not discuss prenasalized lateral obstruents in the consonant section, but they do occur in examples. See the previous sections as well as the third chapter for more on this.

The velar lateral affricate /k͡ɬ̰'/ is classified in the consonant chart as an ejective sound (Msimang 1989: 111). However, all transcriptions in the example section are seen *without* ejective marking, even though it is indicated for other words. Zungu (1999: 62) does not describe the sound as ejective but comments the following: "Zulu /kl/ [k͡ɬ̰'] does not generally change in Sw and NL, but becomes [kx] (a non-lateral voiceless velar affricate) in SL", meaning that the sound in Nothern Lala is similar to the one in Zulu. As Zulu's velar lateral affricate is ejective (see below), I will analyze this sound as ejective. It is unclear if the /kx/ as described below would be ejective too but I will assume that it is for uniformity in analysis as well as patterns between the /k͡ɬ̰/ and /k͡x/ we observe in other languages with this alternation: the velar affricate is ejective in these instances too. Future research would be useful in confirming the exact status of this phoneme. Furthermore, in Zungu's work the word for 'ear' is transcribed the following way for North and South Lala: [iⁿɬɛɓɛ] (1999: 61, emphasis added). This is notable, as 'ear' has a voiced lateral obstruent in all other Nguni languages instead of a voiceless one, and it derives from the Proto Bantu voiced *ⁿj (see next chapter). Although it could in theory be a sound change restricted to the variety Zungu worked with, it seems to be an error in transcription: in a different section, 'ear' is written with a voiced lateral fricative (Zungu 1999: 43), which is more likely and in line with the other Nguni languages and Proto Bantu voicing.

The alveolar lateral fricatives /ɬ/ and /ɮ̰/ differ in use between North and South Lala. Msimang (1989: 109) comments the following: "… the alveo-lateral fricatives [ɬ] and [ɮ̰] occur mainly in the Southern Natal dialects, especially the Ndzelu of Umzinto and the Cele of Ezingolweni et cetera. In the northern dialects one comes across [x] and [ɣ̰] as counterparts of [ɬ] and [ɮ̰] respectively (Van Dyk 1960: 5–8)." The following two examples are then given to illustrate this point, even though the counter part *with* the lateral fricatives are not included:

17) Msimang (1989: 109)
ɬ ~ x
xala 'stay'

18) Msimang (1989: 109)
ɮ̰ ~ ɣ̰
ɣ̰ula 'pass'

It is not explained if this happens in restricted environments or happens in all contexts. In the appendix of Msimang's work, examples of the alternation are found (see 19)a) but not in all contexts: 19)b). In addition, words containing the /ɬ/ are never presented with their alternating /x/ example (19)c)). This can be due to it being restricted to certain contexts, and thus possibly not being included in the wordlist by chance or the author having omitted the alternating forms. Zungu (1999: 75) comments on the phonetic differences between North and South Lala too, explaining how we find the /x/ and /ɣ̰/ in North Lala and the /ɬ/ and /h/ in South Lala. This is notably not the /ɮ̰/, elaborated on below.

19) Msimang (1989: 310-312)
    a) *íⁿɮu* and *íⁿɣru* 'house'
    b) *íⁿɮâla* 'famine'
    c) *íⁿɬoko* 'head'

Concerning the velar lateral affricate / k͡ʟ̝̊'/, Msimang (1989: 110) similarly explains in the section on velars that the /x/ and /ɣ̞/ occur in the northern dialects, especially the Ngcolosi dialect of Kranskop and the Jali dialect of Inanda. He also refers to the alveolar section for a more elaborate explanation of this. As the /ɬ/ and /ɮ̞/ are explained to alternate with the /x/ and /ɣ̞/, I take it this applies to the velars with these sounds in them. Thus, the /k͡ʟ̝̊'/ would alternate with the /k͡x'/. Msimang does not illustrate this, but an example of this alternation comes from Zungu (1999: 62):

20) 'mark site'[15]
    a) North Lala: *k͡ʟ̝̊'ama*
    b) South Lala: *k͡x'ama*

Furthermore, Zungu (1999: 62) also indicates that the / k͡ʟ̝̊'/ stems from Zulu /kl'/ [k͡ʟ̝̊'] and is similar in form in North Lala, but changes to [kx] (a non-lateral voiceless velar affricate] in South Lala. Notably, it is North Lala that has the / k͡ʟ̝̊'/ and South Lala is said to have the /kx'/ in Zungu's work, whereas Msimang states North Lala has the /k͡x'/ and South Lala the /k͡ʟ̝̊'/. As two of the major sources on Lala disagree here, future research is necessary to determine the status of the velar (lateral) ejective affricate in North and South Lala. It should be noted that Zungu (1999) does not discuss the /dl/ in the consonant section, and it does not occur in the consonant chart. However, it does occur in many examples. Taken together with the fact that Msimang (1989) also discusses it, I assume that /dl/ does occur in the language. Moreover, the /dl/ is then likely to orthographically represent the /ɮ̞/, as it occurs in words where, both in other Nguni languages and in Msimangs (1989) work, it refers to the /ɮ̞/.

2.3.5. Southern Ndebele (S407)

The following lateral obstruents are reported for Southern Ndebele by Skhosana (2010).

Table 10: Lateral obstruents in Southern Ndebele (S407)

Sound	Example	Source
ɬ	*-ɬɛba* 'whisper, gossip'	Skhosana (2010: 49)
ɮ̞	*-ɮ̞ula* 'pass'	Skhosana (2010: 49)
ɮ̞̊	*isi-ɮ̞̊aɮ̞̊a* 'a fool'	Skhosana (2010: 49)
ⁿɬ	*iːⁿɬabatʰi* 'types of soil'	Skhosana (2010: 131)
ⁿɮ̞	*iⁿɮ̞u* 'house'	Skhosana (2010: 124)
tɬ'	*-tɬ'ɔla* 'to write'	Skhosana (2010: 50)
tɬʰ	*-tɬʰama* 'to start, begin'	Skhosana (2010: 50)

[15] See also the wordlist in Zungu (1999) from p. 47 onwards for more words that alternate between the /k͡ʟ̝̊'/ and /k͡x'/.

Skhosana (2010: 49) reports on a "voiced lateral aspirated alveolar fricative": /ɮʰ/. As it is physically not possible to aspirate a voiced fricative, the /ɮʰ/ is likely breathy as opposed to aspirated, resulting in /ɮ̈/. Furthermore, given that Southern Bantu languages often have a contrast between ejectivized and aspirated sounds (see introduction of Section 2.3), it is not unlikely for the ejective affricate /ʇʼ/ and the aspirated affricate /ʇʰ/ to be distinctive phonemes. Concerning nasal compounds, Skhosana (2010: 129-133) explains that both Southern and Northern Ndebele nasal compounds are denasalized in different contexts, resulting in alternations like:

21) 'types of soil' (Skhosana 2010: 131)
    a) Southern Ndebele: *iːⁿɬabatʰi*
    b) Northern Ndebele: *tiɬabatʰi*

For more information on the details of this, see Skhosana's work.

2.3.6. Northern Ndebele (S408)

The following lateral obstruents are reported for Northern Ndebele by Ziervogel (1959), Msimang (1989), and Skhosana (2010).

Table 11: Lateral obstruents in Northern Ndebele (S408)

Sound	Example	Source
ɬ	*-ɬálà* 'sit'	Ziervogel (1959: 20)
d͡ɮ	*-d͡ɮà* 'eat'	Ziervogel (1959: 20)
ⁿɬ	*ⁿɬɔ́gɔ̀* 'head'	Ziervogel (1959: 20)
ⁿd͡ɮ	*ⁿd͡ɮálà* 'hunger'	Ziervogel (1959: 20)
ʇʼ	*-ʇʼétʼà* 'milk into the mouth'	Ziervogel (1959: 20)
ʇʰ	*mú-ʇʰáⁿgànà* 'boy'	Ziervogel (1959: 20)
ɬ	*-ɬála* 'stay, sit'	Msimang (1989: 124)
d͡ɮ̈	*kûd͡ɮ̈a* 'food'	Msimang (1989: 124)
ⁿɬ	*ⁿɬóko* 'head'	Msimang (1989: 320)
ⁿɮ	*ⁿɮela* 'path'	Msimang (1989: 319)
ʇʼ	*-ʇʼɛ-ʇʼá* 'milk into the mouth'	Msimang (1989: 124)
ʇʰ	*mu-ʇʰáᵑ̈gạna* 'boy'	Msimang (1989: 124)
ɬ	*-ɬala* 'to stay, sit down'	Skhosana (2010: 60)
ɮ	*-ɮa* 'eat'	Skhosana (2010: 60)
ⁿɬ	*ⁿɬoko* 'head'	Skhosana (2010: 104)
ⁿɮ	*ⁿɮala* 'hunger'	Skhosana (2010: 60)
ʇʼ	*-ʇʼiŋa* 'throttle'	Skhosana (2010: 61)
ʇʰ	*-ʇʰala* 'to divorce'	Skhosana (2010: 61)

Msimang (1989) does not analyze the prenasalized lateral obstruents as distinctive phonemes, even though they do occur throughout the wordlist in his appendix. More on this in the next chapter as this consideration

is relevant to most Nguni languages (see 3.1.2 and 3.1.3). It is also interesting to note that all three sources mostly use the same words to illustrate the ejective and aspirated alveolar lateral affricates. Whether the sounds are marginal, and these are some of the few words it occurs in, or if Msimang and Skhosana based themselves on Ziervogel's work is unclear. Since Ziervogel's work is the oldest, these examples are likely most representative as the language use is declining. Given that Southern Bantu languages often have a contrast between ejectivized and aspirated sounds (see 2.3), it is not unlikely for the ejective affricate /tɬʼ/ and the aspirated affricate /tɬʰ/ to be distinctive phonemes. Msimang (1989: 124) states that the aspirated affricate is of Sotho influence and provides an example for it, but it does not occur in the consonant chart (see Appendix).

Further, the following quote causes some confusion: "On the other hand, Ndebele has a medial (kxʔ) [k͡xʼ] which is an ejective velar affricate, as opposed to the Swati (kɬʔ) [k͡ɭʼ] which is a lateral velar affricate (Msimang 1989: 125)." Based on this phrasing, it is unclear if the /kxʼ/ in Northern Ndebele and /k͡ʟ̝̊ʼ/ in Swati alternate in lexical cognates as there are no examples given to substantiate the claim. Lastly, where Msimang (1989: 124) transcribes an affricate /d͡ɮ̈/, the analyzes of Ziervogel and Skhosana are not as straightforward. Ziervogel's transcriptions are somewhat unclear: he analyzes the following sounds as alveolar lateral stops (and not affricates): /tlʼ, tlʰ, dl, ⁿdl/. I will reinterpret this to mean alveolar lateral affricates, resulting in: /tɬʼ, tɬʰ, d͡ɮ, ⁿd͡ɮ/. If Ziervogel analyze these as alveolar lateral stops, it follows that the /dl/ and /ⁿdl/ refer to affricates, and not to fricatives (/ɮ, ⁿɮ/).

2.3.7. Xhosa (S41)

The following lateral obstruents are reported for Xhosa by McLaren (1952) and Finlayson et al. (1990).

Table 12: Lateral obstruents in Xhosa (S41)

Sound	Example	Source
ɬ	*-ɬala* 'to stay'	McLaren (1952: 8)
ɮ	*-ɮala* 'to play'	McLaren (1952: 8)
/ⁿɬ/ > [ⁿtɬ]	*iⁿ-tɬalo* 'dwelling', cf. *-ɬala* 'dwell'	McLaren (1952: 9)
ⁿd͡ɮ	*iⁿd͡ɮoⁿd͡ɮo* 'a high position'	McLaren (1952: 9)
ɬ	*-ɬála* 'sit'	Finlayson et al. (1990: 61)
ɮ̈	*-ɮ̈âla* 'play'	Finlayson et al. (1990: 61)
ⁿtɬʼ	*íⁿtɬaɬa* 'glossy appearance'	Finlayson et al. (1990: 60)
ⁿd͡ɮ̈	*íⁿd͡ɮ̈ovu* 'elephant'	Finlayson et al. (1990: 60)

McLaren (1952) and Finlayson et al. (1990) report roughly the same consonants, the only difference being that the /ɮ/ is transcribed as breathy by Finlayson et al., whereas that is not the case for McLaren. To determine the exact pronunciation, other sources may be consulted, or new linguistic data may be gathered. Given that breathiness is common as a feature in Southern Bantu languages, and we have encountered it for other voiced lateral fricatives and affricates, it would not be surprising to find it here too. Whereas McLaren (1952: 9) explicitly states that the /ɬ/ preceded by a nasal causes a /t/ to be inserted (/ⁿtɬ/), this is not specified for the /ⁿɮ/. Even though these two sounds are discussed in the section on affricates, McLaren (1952: 8-9) describes affricates as "… combinations in the same syllable of fricatives with nasal and alveolar consonants." Thus, it

is unclear if the nasal and fricatives in these sequences would be analyzed as an affricate (which I analyze as prenasalization of a fricative). However, an effect of co-articulation and post nasal fortition is very plausible (see 2.3), and would be in line with the analysis of Finlayson et al. (1990) of the affricates. Further, Finlayson et al. (1990: 60) explain that the /ⁿɬ'/ and /ⁿd͡ʒ̈/ only occur preceded by a nasal. Whether this is an effect of noun class or not is unclear since they do not show examples with the sound in the root. However, McLaren (1952) illustrates the /ⁿd͡ʒ/ with the following example: *iⁿd͡ʒoⁿd͡ʒo* 'a high position', where it occurs in the root and not as an effect of noun class.

2.3.8. Zulu (S42)

The following lateral obstruents are reported for Zulu by Doke (1947) and Poulos and Msimang (1998).

Table 13: Lateral obstruents in Zulu (S42)

Sound	Example	Source
ɬ	*isi-ɬaɬa* 'a bush'	Doke (1947: 17)
ɮ	*u:ɮweɮwe* 'long staff'	Doke (1947: 17)
ⁿɬɬ	*iⁿɬɬaⁿɬɬa* 'good fortune'	Doke (1947: 17-18)
ⁿd͡ʒ	*iⁿd͡ʒu* 'hut'	Doke (1947: 17-18)
k͡ʟ̝̊ ~ k͡x	*k͡ʟ̝̊'eba* 'scratch'	Doke (1947: 18)
ⁿk͡ʟ	*ⁿk͡ʟ̝̊'iⁿk͡ʟ̝̊'iza* 'breathe with difficulty'	Doke (1947: 18)
ɬ	*iɬaɬa* 'twig'	Poulos and Msimang (1998: 495)
ɮ	*umɮaɬɔ* 'game'	Poulos and Msimang (1998: 495)
ⁿɬ'	*iⁿɬ'aⁿgano* 'meeting	Poulos and Msimang (1998: 517)
ⁿd͡ʒ	*iⁿd͡ʒuzula* 'violence'	Poulos and Msimang (1998: 517)
k͡ʟ̝̊'	*isik͡ʟ̝̊'aɓu* 'sheep'	Poulos and Msimang (1998: 495)

The ejective velar lateral affricate /k͡ʟ̝̊'/ is written by Doke (1947: 18) with a small capital /l/. Since it is analyzed as an affricate, and the ʟ has the same place of articulation as the *k*, I analyze it as a voiceless velar lateral affricate: /k͡ʟ̝̊'/. Doke (1947: 18) notes that there is a variant pronunciation, namely the ejective velar affricate /k͡x'/, which has also been mistaken for a click (see in ɔ the next chapter for more on the apparent link between clicks and lateral affricates). This strengthens the analysis of a voiceless velar lateral affricate, as the /x/ is voiceless too. In addition, Doke (1947: 17) provides the phonetic symbol for the voiceless lateral fricative /ɬ/ but not for the voiced alveolar lateral fricative, instead using *dl* as an orthographical representation. Given that he states the voiced variant is pronounced as /ɬ/ but with voicing, I interpret the /dl/ as /ɮ/. Notably, Doke (1947: 17) describes the /ɬ/ as 'radical', that is to say, voiceless unaspirated: "Radical consonants are pronounced without any accompanying vibration of the vocal cords, or closure of the glottis, or aspiration (Doke 1947: 8)." Poulos and Msimang (1998: 480) note that the /ⁿɬ'/ and /ⁿd͡ʒ/ only occur in nasal compounds, for example in class 9/10 nouns derived from verbs, as illustrated by the following examples:

22) *iⁿɬ'aⁿgano* 'meeting < cf. *-ɬaⁿgan-* 'meet'
(Poulos and Msimang 1998: 517)

23) *iⁿd͡ʒuzula* ‘violence’ < cf.-*ʒuzul-* ‘act violently’
(Poulos and Msimang 1998: 517)

Doke (1947: 14-15) notes something similar, explaining how homorganic nasals in combination with certain consonants lead to phonetic changes in the consonants like fricatives changing to affricates, here observed in singular/plural pairings where the plural takes a nasal prefix, changing the fricative to an affricate:

24) ‘species’ (Doke 1947: 15)
a) *u:ɬɔɓɔ* (singular)
b) *iziⁿt͡ɬɔ:ɓɔ* (plural)

25) ‘ground nut’ (Doke 1947: 15)
a) *u:ʒubu* (singular)
b) i*ziⁿd͡ʒubu* (plural)

2.3.9. Swati (S43)

The following lateral obstruents are reported for Swati by Ziervogel (1952) and Msimang (1989).

Table 14: Lateral obstruents in Swati (S43)

Sound	Example	Source
ɬ	*ɬɔɬa* ‘poke’	Ziervogel (1952: 7)
ʒ	*si-ʒɔʒɔ* ‘head-ring’	Ziervogel (1952: 7)
ⁿɬ	*iⁿɬitiyo* ‘heart’	Ziervogel (1952: 32)
ⁿʒ	*pʰaⁿʒe* ‘outside’	Ziervogel (1952: 34)
ɬ	*úm̤ɬâba* ‘earth’	Msimang (1989: 97)
ʒ̤	*siʒ̤aʒ̤a* ‘paw’	Msimang (1989: 97)
ⁿɬ	*íⁿɬitíyo* ‘hearts’	Msimang (1989: 314)
ⁿʒ	*émáⁿʒa* ‘power, strength’	Msimang (1989: 313)
k͡ʟ̥’	*kúk͡ʟ̥’ɛt’a* ‘milk into the mouth’	Msimang (1989: 98)

Both Ziervogel (1952) and Msimang (1989) discuss two alveolar lateral fricatives. As becomes apparent from Table 14, Msimang (1989) additionally finds the velar ejective lateral affricate. Although Ziervogel does not mention this affricate, he talks about the velar ejective affricate /k͡xʼ/ (1952: 7), which he notes to be marginal and of unknown origin. Given the alternation of /k͡ʟ̥’/ and /k͡xʼ/ in other Nguni languages such as Zulu and Lala, this is an interesting observation. At first sight, it is unclear if there is a link between the velar affricates. A third source, namely the Swati dictionary by Whelton (2013)[16], forms a bridge in resolving this. Compare the following examples:

26) ‘scratch’

[16] The lateral obstruents Whelton (2013) discusses at the start of the dictionary are also enclosed in Appendix A of this work.

a) ***kx'wɛba*** (Ziervogel 1952: 7)
b) ***kɬ'webha*** [k͡ɬ̥'webʰa] 'scratch, scrape' (Whelton 2013: 410)

27) 'incise'
a) ***kx'at'ula*** (Ziervogel 1952: 7)
b) ***kɬ'atula*** [k͡ɬ̥'atula] 'split, cut lengthwise' (Whelton 2013: 407)

Thus, the /k͡ɬ̥'/ and /kx'/ seem to alternate, or at the very least, are used in the words which in Ziervogel's work illustrate the velar affricate. It is unclear if they would alternate in the same context by the same speaker, or if it is perhaps indicative of one's dialect or idiolect. It might also be the case that the sound is marginal, and it was not often found or specifically researched. All of this could all make it more subject to variation. Further, even though Msimang (1989) does not discuss prenasalized lateral obstruents, examples do occur in his appendix. It looks like he does not analyze these as distinctive phonemes, although we find the /ⁿɮ/ in root internal positions like in 'strength' in Table 14. See the discussion chapter for more on this (3.1.2 and 3.1.3).

2.3.10. Zimbabwean Ndebele (S44)

The following lateral obstruents are reported for Zimbabwean Ndebele by Pelling (1966) and Bowern and Lotridge (2002).

Table 15: Lateral obstruents in Zimbabwean Ndebele (S44)

Sound	Example	Source
ɬ	*ili-ɬo* 'eye'	Pelling (1966: 99)
ⁿɬ	*iⁿɬoni* 'shame'	Pelling (1966: 105)
ɮ	*-ɮisa* 'to poison'	Pelling (1966: 120)
ⁿɮ	*isa-ⁿɮa* 'hand'	
k͡ɬ̥	*-k͡ʟek͡ɪa* 'pierce hole in the ear'	Pelling (1966: 42)
ɬ	*isi-ɬaɬa* 'tree'	Bowern and Lotridge (2002: 16)
ⁿɬ	*íⁿɬánz*i 'fish'	Bowern and Lotridge (2002: 7)
ɮ	*uku-ɮa* 'food'[17]	Bowern and Lotridge (2002: 20)
ⁿd͡ɮ	*iᵑtuⁿd͡ɮe* 'giraffe'	Bowern and Lotridge (2002: 7)

Bowern and Lotridge (2002: 7) note that, in contrast to earlier work from Pelling (1971) and Pelling and Pelling (1987), they did not find the /k͡ɬ̥/ in words that supposably contained the velar lateral affricate. This could be due to differences between Swati varieties, individual speakers, marginality of the phoneme, or sample size, as Bowern and Lotridge work with one consultant. Given that multiple other Nguni languages use /k͡ɬ̥/ too, it is not unlikely for Zimbabwean Ndebele to (have) use(d) this phoneme. Further research is needed to establish the status of it.

It is also worth noting that Bowern and Lotridge (2002: 6-7) state that the voicing contrast between /ɬ/ and /ɮ/ is phonemic. However, the examples that they present to substantiate this claim both include

[17] It is noted by Bowern and Lotridge (2002: 20) that some infinitives in class 15 have taken a more general meaning, so that 'to eat' now means 'food'.

prenasalization,(found in Table 15 above for ‘fish’ and ‘giraffe’). In the case of ‘giraffe’, the lateral obstruent is root internal, meaning it cannot be due to an effect of noun class (see the introduction of Section 2.3). Moreover, *íⁿtuⁿɮe* ‘giraffe’ is phonetically transcribed as *íᵑtunᵈɮe* with a superscripted *d* and the explanation that “The voiced fricative often has a slight stop onset when in a cluster” (2002: 6). This indicates the following: /ⁿɮ/ > [ⁿd͡ɮ], when prenasalized, the fricative turns into an affricate (again, see the introduction in Section 2.3). I will analyze this as meaning that their example does not illustrate the voiced fricative but the voiced alveolar prenasalized affricate /ⁿd͡ɮ/. The prenasalization of /ɮ/ resulting in the prenasalized alveolar voiced affricate appears to be similar to Xhosa as outlined above (/ⁿɮ/ > [ⁿd͡ɮ]). It is unclear if this happens to the /ɬ/ too when prenasalized.

3. Inheritance and contact in Nguni lateral obstruents

This study sets out to find how Nguni languages developed lateral obstruents. With the language data from the previous chapter, we can make the following inferences. All Nguni languages in the sample make use of lateral obstruents, as summarized in Table 3 at the start of Chapter 2. Voiced and voiceless alveolar lateral obstruents occur in all the languages, and the voiceless velar lateral affricate occurs in some of the languages: Nhangwini, North Lala, Zulu, Swati, and Zimbabwean Ndebele. This velar lateral affricate is often noted to alternate: k͡ɬ ~ k͡x. Most of these sounds can be prenasalized, except for Phuthi due to a loss of prenasalization virtually everywhere in the language. The following sections will analyze both categories of lateral obstruents and their occurrence in detail (3.1 and 3.2), also in relation to Proto Bantu (cf. Bantu Lexical Reconstructions 3) followed by a comparison to Sotho and Tsonga languages which also make use of lateral obstruents (3.3). With this information, it is possible to make inferences about the nature of lateral obstruents in Southern Bantu languages (3.4), also reflecting on the sound change that occured and evaluating older claims and ideas in light of my new findings. This chapter concludes with recommendations for future research (3.4.4).

3.1. Alveolar lateral obstruents as reflexes from Proto Bantu

To research the nature of alveolar lateral obstruents, I selected words frequently containing lateral obstruents in order to compare their reflexes across Nguni languages, resulting in the database outlined in Appendix B. All examples that occur in this chapter come from the database, and the sources (dictionaries and grammars) are also referenced in the appendix. The Bantu Lexical Reconstructions 3 database (Bastin et al. 2002) from the Royal Museum for Central Africa based in Tervuren was used to compare the present-day reflexes of lateral obstruents to Proto Bantu reconstructions. The database numbers from Bantu Lexical Reconstructions are also added to the appendix so the reconstructions are easily traceable. In the case of nouns, their reconstructed Proto Bantu noun class is mentioned if this is noted in BLR. Not all records have a noun class indexed. For example, the record for 'ear, lobe' cf. 7752 BLR does not indicate noun class membership, or only one noun class is mentioned for 'tree' cf. 9553 (noun class 3, the plural noun class is not offered). Given that the database reconstructs roots, prefixes are excluded from the reconstructions. For noun class 9/10, this means the Nguni reflexes will often have a nasal prefix which is not reflected in the reconstruction. In the database, *c and *j are used to represent the Proto Bantu palatals, which I will thus follow, but as explained in 2.1, these reflect palatal affricates in Bantu research tradition.

Most alveolar lateral obstruents in Nguni stem from Proto Bantu words containing palatals. The following sound changes have taken place:

- *ʧ > ɬ
- *ⁿʧ > ⁿɬ, ɬ
- *ⁿd͡ʒ > ⁿɮ, ɮ

This seems to have been an unconditioned sound change: the position in the word, nor the vowels around it have conditioned the change, as can be observed from the following tables below, sorted by sound.

Given that Bantu syllable structure generally consists of CV syllables, and that most roots are bisyllabic, this results in the following possibilities for lateral obstruents to occur in:

Table 16: Position of lateral obstruents in Nguni

Prefix	Root			
	C1	V1	C2	V2
No *ʧ /*d͡ʒ in PB	ɬ ⁿɬ ⁿɮ		ɬ ⁿɮ (nouns)	

Lateral obstruents do not occur in prefixes. As the *ʧ and *d͡ʒ do not occur in Proto Bantu prefixes, this is to be expected. As seen in the previous chapter, and discussed below, we do see an effect of noun class, when the prefix consists of a nasal N and the root then starts in a /ɬ/ or /ɮ/. The C1 position can be occupied by the following sounds: /ɬ, ⁿɬ, ⁿɮ/. The C2 position can be occupied by the /ɬ/ and /ⁿɮ/, the latter only occurring in nouns. The following sections will elaborate on these findings.

Lastly, Proto Bantu is reconstructed with a seven vowel system with two series of high vowels (Meeussen 1967): *i, *ɪ, *u, *ʊ. Modern Nguni languages have five vowel systems and have collapsed the *u and *ʊ in /u/ and the *i and *ɪ in /i/. This was preceded by a sound change referred to as "Bantu Spirantization", which affected stops before high vowels, resulting in fricatives or affricates, most often including a sibilant (Bostoen 2020: 305-306). Gunnink et al. (2022: 98-99, footnote 11) comment in a footnote that Bantu Spirantization before high vowels has lead to different reflexes of *c and *j in most languages, and that some Bantu languages have developed sibilants before front vowels (cf. Janson 1991/92: 85). Given that high vowels do not result in lateral obstruents, these are not taken into consideration when researching the effect of (high) vowels on lateral obstruents.

*3.1.1. PB *ʧ > Nguni /ɬ/*

The PB *ʧ changes to /ɬ/ in root initial and root medial position. The table below shows that this appears to happen root initially followed by non-front non-high vowels.

*Table 17: PB *ʧ > Nguni /ɬ/ in root initial position*

	a	e	o	ʊ
	***cáànò** 'five'	***cèk** 'laugh'	***jico**[18] 'eye(s)' (5/6)	***cóngó** 'pain, poison, bitterness, anger' (14)
Bhaca	*-ɬanu*	*ɬeka*	*ame-ɬo*	*úbú-ɬûŋgu*
Phuthi	*-ɬáánù*	*ku-ɬeka*	*éma-ɬó*	*bu-ɬùgú*
Nhlangwini		*uku-ɬeka*	*ili-ɬo*	*ubu-ɬungu*
N./S. Lala	*ɬanu*	*kú-ɬêka*	*li-so/li-ɬo*	*bú-ɬûⁿgu*
S. Ndebele	*-ɬanu*	*-ɬeka*	*-ɬo*	*-ɬuⁿgu*
N. Ndebele	*-ɬánu*	*ɬekwa*	*má:-ɬɔ*	*bú-ɬúⁿgu*

[18] Recent work by Wills (2022: 93) suggest that the best reconstruction of Proto Bantu 'eye' would in fact be *ico, in which case the BLR form used here is in need of updating. Further, it is unclear how the reflexes of -so 'eye(s)' developed in some of these languages. As will become apparent throughout this chapter, monosyllabic verb roots appear to prone to more variation.

Xhosa	*ɬanu*	*uku-ɬeka*	*ame-ɬo, ili-so*	*ubu-ɬuⁿgu*
Zulu	*-ɬanu*	*-ɬeka*	*-so, -ɬo*	*ubu-ɬuⁿgu*
Swati	*-ɬanu*	*-ɬeka*	*ɛmɛ-ɬo*	*bu-ɬuⁿgu*
Z. Ndebele	*-ɬanu*	*-ɬeka*	*ili-ɬo*	*ubu-ɬuⁿgu*

In my sample, there are no examples with a Proto Bantu reconstruction of the /ɬ/ followed by an /i/. It is currently unknown if this a phonological restriction or a consequence of sample size. Even though it is unclear how this form developed historically, there is no modern phonological restriction that would prevent this sequence given the examples of *iⁿɬiziyo* 'heart', where the sequence occurs (see Table 25).

The following table shows that Proto Bantu *ʧ > Nguni /ɬ/ in root medial position between #_a_. It is unclear if this happens in other environments due to the data sample.

*Table 18: PB *ʧ > Nguni /ɬ/ in root medial position (#_a_)*

	***pácà** 'twin' (5/6)	***caca** 'tree' (3)
Bhaca		
Phuthi	*lí-pʰáɬá*	
Nhlangwini		*isi-ɬaɬa*
Lala		*síɬâɬa*
S. Ndebele		*isi-ɬaɬa*
N. Ndebele		*si-ɬaɬa*
Xhosa		
Zulu	*i(li)-pʰhaɬa*	*isi-ɬaɬa*
Swati	*li-pʰaɬa*	*sí-ɬaɬa*
Z. Ndebele	*ipʰaɬa*	*isi-ɬaɬa*

*3.1.2. PB *ⁿʧ > Nguni /ⁿɬ, ɬ/*

The Proto Bantu *ⁿʧ changes to /ⁿɬ/ and /ɬ/ in Nguni languages. It occurs root initially when the noun class marking is of class 9 or 10, such as for 'face, forehead'. Further, we also see the /ɬ/ as a reflex of the *ⁿʧ in Phuthi due to a loss of prenasalization everywhere in the language. We also see /ɬ/ word initially sometimes, like in Lala 'head' in the table below, for which we need more research to establish if there is no noun class marking or if it is missing. It would be useful to collect data targeted at different vowel environments in the future, as these were not found now but this could be due to the sampling. Further, analyzing recorded data could also give us insights into the exact status of /ⁿɬ/, given that it is also often found as /ⁿʧ/ (see 2.2.6).

*Table 19: PB *ⁿʧ > Nguni /ⁿɬ, ɬ/ in #_o*

	***cóni** 'shame' (9/10/11)	***cóòkò** 'face, forehead' (14/6)
Bhaca		*íⁿɬóko*
Phuthi	*i-ɬoní*	*í-ɬɔɔkɔ*
Nhlangwini		*iⁿɬoko*
Lala		*ɬoko*
S. Ndebele	*-ɬoni*	

N. Ndebele		*ⁿɬɔ́gɔ̀*
Xhosa	*iiⁿʧɬoni*	*iⁿʧɬoko*
Zulu	*-ɬoni*	
Swati	*- i-ɬońí*	*iⁿɬɔkɔ*
Z. Ndebele	*iⁿɬoni*	*iⁿɬoko*

Further, there are only a few instances of *ⁿʧ root initially attested in BLR 3 where the nasal does not function as a noun class prefix of class 9/10. One such example would be *ncè 'all'. However, a variant form is attested in zones P and S: *cè. 'all' has varying reflexes in Nguni languages, outlined in the table below.

*Table 20: PB *ⁿʧ root initially*

	***ⁿce, *ce** 'all'
Bhaca	*-ⁿke*
Phuthi	*-ọ̀ɬè*
Nhlangwini	
Lala	*oⁿke*
S. Ndebele	
N. Ndebele	*-ɬe*
Xhosa	
Zulu	*-ⁿke*
Swati	
Z. Ndebele	*-ⁿke*

How these forms have developed will be left for future research. Language change in monosyllabic roots like 'all' can easily lead to divergent reflexes at any point in the diversification of Bantu languages, which could have affected these reflexes too. One notable observation that can be made is that there are no reflexes that contain /ⁿʧ/ in any of these languages; this might disfavour 'all' being a reflex from *ⁿce, as this was then the sound change expected (except for Phuthi, see 2.3.2). Further, no cases were found in which the /ⁿɬ/ occurred in root medial position in Nguni languages; upon further research in the BLR 3 database, it turns out that there are no matches for the /ⁿɬ/ in root medial position in Proto Bantu. Thus, the environments that could have fostered the /ⁿɬ/ root initially did not exist to start with. Note that this holds only for /ⁿɬ/ in Proto Bantu reflexes: we do observe it in root medial position in reflexes of words for which it is currently unclear if they are reflex of a Proto Bantu word (cf. 'good fortune' in Table 13).

*3.1.3. PB *ⁿd͡ʒ > Nguni /ⁿɮ, ɮ/*

The Proto Bantu *ⁿd͡ʒ changes to /ⁿɮ/ and /ɮ/ in Nguni languages. It occurs root initially when the noun class marking is of class 9 or 10, such as for 'house' or 'elephant' (Table 21) and is not restricted by the vowel following it. Further, we also see the /ɮ/ as a reflex of the *ⁿd͡ʒ in Phuthi due to a loss of prenasalization everywhere in the language. As for the /ⁿɬ/, it is currently not possible to adopt a uniform analysis regarding its status as a prenasalized fricative or affricate (see 2.2.6).

*Table 21: PB *ⁿd͡ʒ > Nguni /ⁿɮ, ɮ/ root initially*

	a ***jàdà** 'starvation, hunger' (9)	e ***jèbé** 'ear, lobe'	o ***jògù** 'elephant' (9/10)	i ***jìdà** 'path' (9/10)	u ***jò** 'house' (9/10)
Bhaca	*iⁿɮala*	*iⁿɮɛɓe*	*íⁿɮovu*	*iⁿɮela*	*iⁿɮu*
Phuthi		*e-/ti-ɖ̈ɮèbé*	*i-/ti-ɖ̈ɮòvù*	*ji-/ti-ɖ̈ɮèlà*	*i-/ti-ɖ̈ɮù*
Nhlangwini	*iⁿɮala*	*iⁿɮebe*	*iⁿɮovu*	*iⁿɮela*	*iⁿɮu*
Lala		*iⁿɮɛɓɛ*	*iⁿɮovu* (*N*) *iⁿgrovu* (*S*)	*ɮela*	*iⁿɮu* (*N*) *iⁿgru* (*S*)
S. Ndebele	*-ⁿɮala*	*-ⁿɮebe*	*-ⁿɮovu*	*iⁿɮela*	*-ⁿɮu*
N. Ndebele	*ⁿɮala*		*ⁿɮovu*	*ⁿɮélà, ⁿɮílà*	*ńɮu*
Xhosa	*iⁿɮala*		*iⁿɮovu*	*iⁿɮela*	*iⁿɮu*
Zulu	*iⁿɮala*	*iⁿɮebe*	*iⁿɮovu*	*iⁿɮela*	*iⁿɮu*
Swati		*iⁿɮɛɓɛ*	*iⁿɮovu*		*iⁿɮu*
Z. Ndebele	*iⁿɮala*	*iⁿɮebe*	*iⁿɮovu*	*iⁿɮela*	*iⁿɮu*

The /ⁿɮ/ occurs word medially in the nouns 'strength' and 'hand', likely related to each other via the root of *gàⁿja 'hand' (Table 22). This means the /ⁿɮ/ is not only conditioned by noun class but also occurs as a separate phoneme in Nguni languages.

*Table 22: PB *ⁿj in root medial position*

	***gàⁿja** 'hand' (5/6, 7/8)	'strength'
Bhaca	*ísáⁿɮa*	*ámá-ⁿɮa*
Phuthi	*s-/t-àɖ̈ɮà*	*-/em-àɖ̈ɮà*
Nhlangwini	*isaⁿɮa*	*ama-ⁿɮa*
Lala	*saⁿɮa*	
S. Ndebele	*isaⁿɮa*	*-ⁿɮa*
N. Ndebele	*síaⁿɮa, sáⁿɮa*	
Xhosa		*ama-ⁿɮa*
Zulu	*isaⁿɮa*	*ama-ⁿɮa*
Swati		
Z. Ndebele	*isaⁿɮa*	*ama-ⁿɮa*

For verbs, we see that the Proto Bantu *ⁿd͡ʒ in C2 position mostly results in prenasalized /t/ and /z/, although Phuthi uses *ku-siɮa* as a reflex for the verb 'butcher, skin'. In Xhosa, the second syllable appears to have fallen away, thus making a reflex of *ⁿd͡ʒ impossible. These deviant reflexes of *ⁿd͡ʒ can be explained by the Bantu Spirantization as explained in the introduction of 3.1. In the case of Nguni languages, we often see an alternation between /t/ and /z/ coming back to the proposed division of Nguni between Zunda and Tekela (see section 2.1.2), as can be observed in for example Zulu *ɬaⁿza* compared to Swati *kú-ɬáⁿta* 'vomit'.

*Table 23: Nguni reflexes of PB *^{n}d͡ʒ in root final position*

	***ca^{n}j** 'vomit'	***cí^{n}j** 'butcher, skin'
Bhaca		
Phuthi	*kú-ɬáátà*	*ku-sid͡ɮ̰a*
Nhlangwini		
Lala		
S. Ndebele		*-ɬi^{n}za*
N. Ndebele	*-ɬá^{n}ta*	
Xhosa		
Zulu	*ɬa^{n}za*	*ɬi^{n}za*
Swati	*kú-ɬá^{n}ta*	*kú-ɬi^{n}za*
Z. Ndebele	*-ɬa^{n}za*	*-ɬi^{n}za*

*3.1.4. PB *d͡ʒ*

Based on the other sound changes concerning lateral obstruents found, it might be expected that the *d͡ʒ would turn to /ɮ/ in Nguni languages. However, the *d͡ʒ is seen to have been lost in many of these contexts, as exemplified below. One way of analyzing this is assuming the loss of *d͡ʒ would have preceded the sound changes to the lateral obstruents, so that by the time this change happened, the *d͡ʒ was no longer present in most Nguni languages in word initial position. Another analysis based on recent work by Wills (2022) on Proto Bantu *d͡ʒ suggests that this phoneme was likely not part of the Proto Bantu sound inventory.

The following examples show the loss of Proto Bantu *d͡ʒ, if there even is a need to reconstruct it in the Proto Bantu roots but note the exceptions, for example for Phuthi and Northern Ndebele in 'build'. The *d͡ʒ is followed by different vowels to show that the this does not appear to influence the loss of *d͡ʒ.

28) *jak 'build'
   a) - *aak^{h}a* Xhosa (McLaren 1952: 227)
   b) - *ak^{h}a* Swati (Msimang 1989: 169)
   c) - *jak^{h}a* Phuthi (Donnelly 2007: 1113), Northern Ndebele (Msimang 1989: 169)

29) *jíb 'steal'
   a) *úkw-éba* Bhaca (Msimang 1989: 315)
   b) *-ebá* Nhlangwini (Msimang 1989: 169)
   c) *ukw-eba* Zulu (Msimang 1989: 315)
   d) *-ba/eba* Swati (Msimang 1989: 315)

30) *jot 'bask'
   a) *-ot^{h}a* Xhosa (McLaren 1952: 108)
   b) - *wóótʃa* Phuthi (Donnelly 2007: 162)
   c) *-otʃá* Lala (Msimang 1989: 169)

31) *jém, jím ‘stand’
    a) *-ma* Xhosa (McLaren 1952: 237), Swati (Whelton 2013: 458)
    b) -(*i*)*ma* Phuthi (Msimang 1989: 169)
    c) - (*i*)*má* Bhaca (Msimang 1989: 169)

Note that /ɮ/ does occur in Nguni languages (3.2.1), simply not in words with a (recognizeable) Proto Bantu origin.

3.1.5. Alveolar lateral obstruents with no palatal in PB

Two inherited Bantu words in this sample have alveolar lateral obstruents but do not have a palatal in the Proto Bantu reconstruction: *kó^{m}bè ‘shoulder blade’ and*dí ‘eat’, which have the following reflexes in Nguni languages:

Table 24: Alveolar lateral obstruents with no palatal in PB

	***kó^{m}bè** ‘shoulder blade’ (5/6, 7/8)	***dí** ‘eat’
Bhaca		*úku-ɮá*
Phuthi		*bu-d̪ɮ̪á, ku-d̪ɮ̪á*
Nhlangwini		*uku-ɮa*
S. Ndebele	*-ɬo^{m}be*	*-ɮa*
N. Ndebele		
Xhosa		*uku-ɮa*
Zulu	*ili-ɬo^{m}be*	*ɮa*
Swati	*li-ɬo^{m}be*	*ku-ɮa*
Z. Ndebele	*i-ɬo^{m}be*	*-ɮa*

Future research could address these forms, researching how they have developed, possibly looking at intermediate stages between Proto Bantu and Southern Bantu, and whether this contained the voiceless palatal affricate *t͡ʃ in the case of ‘shoulder blade’ and the voiced palatal affricate *d͡ʒ in the case of ‘eat’. If this were to be the case for ‘shoulder blade’, a later version of *kó^{m}bè might have participated in the sound change to alveolar lateral obstruents we have seen in the other Nguni languages. It would also be useful to look into other Proto Bantu words, which may or may not be in class 5 like ‘shoulder blade’, with /k/ as the initial consonant to see if more of the Nguni reflexes contain (alveolar) lateral obstruents in these environments. One last consideration would be to look at the reconstruction of ‘shoulder blade’ in more detail. If we find alveolar lateral obstruents as reflexes of Proto Bantu *t͡ʃ and *d͡ʒ, and the word for ‘shoulder (blade)’ in Nguni languages is clearly a Proto Bantu reflex, as the data from Lala, Southern Ndebele, Zulu, Swati, and Zimbabwean Ndebele would suggest, this potentially means that the reconstruction for ‘shoulder blade’ is not correct, and could in fact be closer to *có^{m}bè. In order to confirm this, we would need to compare this to (Southern) Bantu languages outside the Nguni subgroup too, to see if this form is more widespread. Unfortunately, there is no *fiabilité* (reliability) score given in the database for this reconstruction, so there is no way of telling how reliable the original reconstruction for ‘shoulder blade’ was.

The word for ‘eat’ has the Proto Bantu root *dí. Nearly all Nguni languages use *-ɮa*, for which it is unclear at this point if it is a reflex of *dí. Linguistic change in a monosyllabic reconstructed root, however small, could

easily lead to divergent reflexes at any point in the development of Bantu languages, potentially causing verbs like 'to eat' to alter. Two useful directions for future research to learn more about the nature of this verb and its use of /ɮ/ could include a broader overview of 'eat' in (Southern) Bantu, as well as reconstructing intermediate stages of 'eat'.

3.2. Lateral obstruents without Bantu origin

There are two categories of lateral obstruents with no apparent Bantu origin: alveolar lateral obstruents (3.2.1) and the velar lateral affricate (3.2.2).

3.2.1. Widespread alveolar lateral obstruents of non Bantu reflexes

Apart from the Nguni reflexes of Proto Bantu *$^{(n)}$ʧ and *$^{(n)}$d͡ʒ, there is a set of alveolar lateral obstruents of which there are no Bantu etymologies found in the BLR 3 database. Some of these examples are outlined below, and the full list can be found in Appendix C. These words contain the following lateral obstruents: /ɮ/, as found in 'play' word initally and 'bag' word medially, /^{n}ɬ/ as found in heart', and /ɬ/ as found in 'beautiful':

Table 25: Lateral obstruents without known origin

	'play'	'bag'	'heart'	'beautiful'
Bhaca	*ɮala*		*í^{n}ɬítíyo*	*ɬé*
Phuthi	*ku-ɖ̪͡ɮála*	*mu-/mi-goɖ̪͡ɮa*	*iɬítííyɔ̀*	*-ɬé*
Nhlangwini			*iti^{n}ɬitiyo*	*ɬe*
Lala			*ɬidiyo*	*ɬe*
S. Ndebele	*-ɮala*	*um-goɮa*	*-ɬiziyo*	*-ɬe*
N. Ndebele		*mú-goɮa*	*^{n}ɬitiwo*	*-(n)ɬe*
Xhosa	*uku-ɮala*		*i^{n}ʧiziyo*	*ɬe*
Zulu	*-ɮala*	*um-goɮa*	*i^{n}ɬiziyo*	*-ɬe*
Swati		*si-ʧoɮa*	*i^{n}ɬitiyo*	*-ɬe*
Z. Ndebele	*-ɮala*	*um-goɮa*	*i^{n}ɬiziyo*	*-ɬe*

The fact that the BLR 3 database does not have these reflexes does not in itself mean that there are no plausible Bantu etymologies. The database is a work in progress and is continuously being expanded, so it might be that these words are not yet part of the database or I was not able to find them due to semantic shift. However, it could also be the case that these words have no Bantu etymology but were introduced at a later stage in the development of (a subgroup of) Southern Bantu languages or at any other intermediate stage. For the word 'heart' we can observe that Phuthi does not prenasalize this sound, which could indicate that the loss of prenasalization happened after the possible innovation of this word in Nguni. Further, most of the reflexes are widespread as can be observed in Appendix B, which leads to the idea we can possibly reconstruct them for Proto Nguni. This will be left for future research.

3.2.2. A marginal non Bantu reflex: /k͡ɭ̪/, /k͡ɭ̪'/

Some Nguni languages use a velar lateral affricate /k͡ʟ̝̊/, which may or may not be ejective, in addition to alveolar lateral obstruents. These are: Nhlangwini, North Lala, Zulu, Swati, and Zimbabwean Ndebele (cf. Chapter 2). Some examples include (cf. Appendix D):

Table 26: Velar lateral affricate

	/k͡ʟ̝̊/
Nhlangwini	*-k͡ʟ̝̊'wɛba* 'scratch'
Lala (N.)	*-k͡ʟ̝̊'ama* 'mark site'
Zulu	*ⁿk͡ʟ̝̊'iⁿk͡ʟ̝̊'iza* 'breathe with difficulty'
	k͡ʟ̝̊'weba ~ k͡xweba 'scratch'
Swati	*kuk͡ʟ̝̊'ɛt'a* 'to milk into the mouth'
Z. Ndebele	*k͡ʟ̝̊eza* 'drink straight from the cow'

It is reported that velar lateral affricate is in free allophony with the velar central affricate /k͡x/ in some of these languages: Lala, Zulu, and Swati (cf. 2.3.4, 2.3.8, 2.3.9), as exemplified in the previous chapter and illustrated with an example from Zulu in the table above. None of these three languages have a phonemic opposition between /k͡ʟ̝̊/ and /k͡x/.

Apart from these languages, it is relevant to refer to the appendix of Msimang's (1998: 321-324) work on Northern Ndebele, which contains a lexicon. Even though there is no /k͡ʟ̝̊/ in the phoneme inventory of Northern Ndebele (see 2.3.6), there are ample examples of it in the appendix, such as:

32) Msimang (1989: 322)
ⁿk͡ʟ̝̊omó
'bovine'

33) Msimang (1989: 322)
ⁿk͡ʟ̝̊úⁿti
'bull'

34) Msimang (1989: 322)
k͡ʟ̝̊ubʰo
'rib'

This might reflect an analytical choice on Msimang's behalf, for example to exclude loan words and loan phonemes from the consonant chart if these would indeed be borrowed. Future research is necessary to establish the status of the /k͡ʟ̝̊/ in Northern Ndebele.

As outlined in the previous chapter in the respective sections, the velar lateral affricate is more marginal than the alveolar lateral obstruents, with Ziervogel (1952: 7-8) noting for Swati that it is found in a few words, is of unknown origin and is not derived from Proto Bantu. There also appears to be a relation between these velar (lateral) affricates and clicks, as it is noted for Northern Ndebele (Msimang 1989: 127) to correspond to clicks: "Click sounds simply do not occur in Sumayele Ndebele [Northern Ndebele]. In their place, the ejective velar

affricate (k͡xˀ) is often used e.g. líkrandá [lík͡xʼaⁿdá] instead of líqanda/lícandá [liǃaⁿda/liǁaⁿda] 'egg'", where the square brackets indicate my added phonetic transcriptions. Doke (1947: 18) goes on to explain that for Zulu, the velar lateral affricate has been mistaken for a click. Further, some of the Zulu words which contain the velar lateral affricate correspond to Xhosa and Khoe click words, as well as Xhosa words with a /kx/ (Gunnink 2022, Gunnink 2022):

35) 'milk into the mouth' (Gunnink 2022b: 19)
   a) *k͡ɮ̊ʼeza* (Zulu)
   b) *kxeza* (Xhosa)
   c) *ǁeza* (Xhosa Hlubi)

36) 'spit out, spurt out' (Gunnink 2022c: 17)
   a) *k͡ɮ̊ʼaza* (Zulu)
   b) ǂχʼara (ǃOra)

A thorough analysis of the link between lateral obstruents and (lateral) clicks is beyond the scope of this dissertation. However, a link between lateral ejective affricates and lateral clicks has been proposed before in the literature, for example for Hadza and Sandawe, two languages of East Africa with phonemic clicks. Maddieson, Ladefoged, and Sands (1999: 71–72) and Ladefoged and Traill (1993: 39)[19] explain how the lateral click [kǁ] is similar to the lateral ejective affricate[tɬ̊] in Hadza with respect to the burst amplitude, duration of frication, and articulation (both are produced with a laminal closure involving the front of the tongue and a ring-like closure along the sides), with the lateral ejective affricate being mistaken for [cɬ̊] or [kʟ] in transcriptions too. Acoustic similarities were also noted for the lateral ejective affricate [ƛʼ] and the lateral click [kǁ] in Sandawe, where again caution was needed in transcription to avoid errors (Ladefoged & Traill 1994: 39; Wright et al. 1995: 6–7; Maddieson, Ladefoged & Sands 1999: 79–80). See also "Language contact between Southern Bantu and Khoisan" in section 2.2 for more on lateral obstruents resulting from click loss.

If we combine the fact that not all Nguni languages make use of this affricate, and that the frequency of words with this phoneme appears to be low, as well as of unknown origin, this likely indicates a more recent introduction of the phoneme after the diversification of Nguni languages via language contact. However, the presence of clicks has been reconstructed back to Proto Nguni (Gunnink 2022), meaning that speakers of Nguni languages already used clicks phonemically during the time the velar lateral affricate entered these languages. Why it was borrowed as a velar lateral affricate and not a click would require further research into which words contain velar lateral affricates and their possible source languages. It might be that the language which originally borrowed the phoneme borrowed it as velar lateral affricate, and subsequently the phoneme and some of the words it was used in spread due to contact between Bantu (Nguni) languages. This scenario would explain why we do not see clicks in any of these words in these languages, even though it does not yet account for why a click replacement strategy was used, unless the language that originally borrowed the phoneme did not make use of clicks. We could also look for a more widespread occurrence of this word beyond Nguni languages. Another possibility is that this sound was borrowed before Proto Nguni was formed, so that there were no clicks present at the time of borrowing and a click replacement strategy had to be used.

[19] As I am not familiar with these languages, I follow the orthographical conventions and transcriptions of the referenced authors in this subsection on Hadza and Sandawe.

However, we would then expect this phoneme to be more widespread in Nguni languages, so this is not the most likely scenario.

In the sections above, I have analyzed lateral obstruents in Nguni languages. These often derive from Proto Bantu palatals, although some of them do not appear to have a Proto Bantu reconstruction (Table 25) or seem to have entered the language via loan words (Table 26). Given the uniformity of the use of alveolar lateral obstruents, we can reconstruct the lateral obstruents back to Proto Nguni. The next section briefly looks into Sotho Tswana and Tsonga languages, as these also make use of lateral obstruents, raising the question if they appear in similar environments in these languages or not.

3.3. Lateral obstruents outside Nguni: a perspective from Sotho Tswana and Tsonga languages

Given that we can fairly confidently say alveolar lateral obstruents in Nguni at least date back to Proto Nguni, this raises the question when these sounds were introduced in Southern Bantu. As noted in the introductory chapter, lateral obstruents occur in two other subclades of Southern Bantu too: Sotho Tswana and Tsonga (see Figure 9). In his work on Southern Bantu languages, Doke (1954: 42) reviews the most important sound changes in these languages, among which he reports a sound change from Proto Bantu palatals to lateral obstruents in Nguni, Sotho, and Tsonga. There is one example to illustrate this claim and specific instances or conditions are not discussed, but it is worth noting this observation.

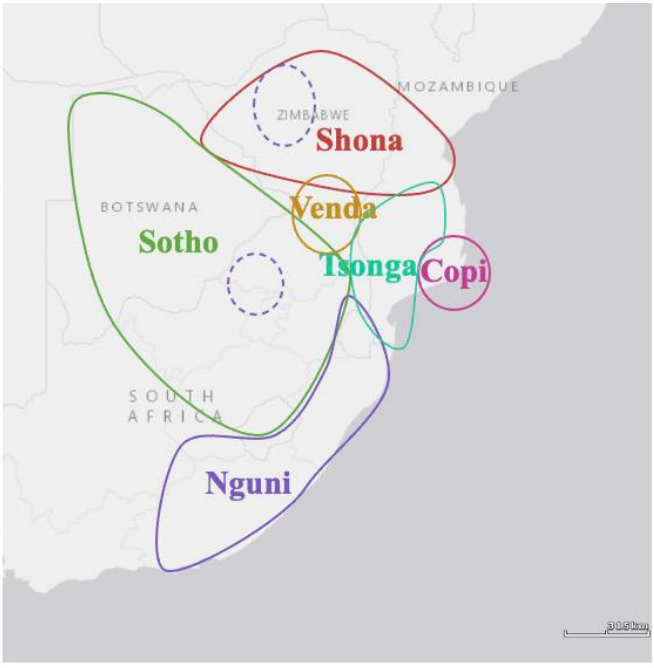

Figure 9: Map of Southern Bantu languages (*Gunnink 2022b: 6*)

In the next sections I will give an overview of the lateral obstruents that occur in Sotho Tswana and Tsonga languages, followed by a brief overview of some examples in order to investigate their use and if this might be similar to Nguni languages. This enables us to make a preliminary analysis about when the sounds were introduced in Southern Bantu languages.

3.3.1. Sotho Tswana languages

Not all Sotho Tswana languages make use of lateral obstruents: they are absent in Lozi (K21), Tawana (S31C), Tjhauba (S311), and Lobedu (S32B). Gunnink et. al. (2022: 98) report these have dental stops instead of lateral obstruents as reflexes of Proto Bantu *tʃ and *d͡ʒ. The following lateral obstruents are reported for Sotho Tswana languages, where the languages without lateral obstruents are excluded:

Table 27: Overview Sotho Tswana lateral obstruents (languages without lateral obstruents excluded)

Language	Sounds	Source
Kutswe (S302)	ɬ, t͡ɬʰ, ⁿt͡ɬʰ, k͡ʟ̝̊’, ᵑk͡ʟ̝̊’, k͡ʟ̝̊ʰ	Ziervogel (1954: 117-118)
Pai (S303)	ɬ, k͡ʟ̝̊’, k͡ʟ̝̊ʰ	Taljaard (1997: 68-76)
	ɬ, ⁿd͡ɮ, k͡ʟ̝̊’, ᵑk͡ʟ̝̊’	Ziervogel (1954: 20-21)
Pulana (S304)	ɬ, k͡ʟ̝̊’, ᵑk͡ʟ̝̊’	Ziervogel (1954: 117-118)
Tswana (S31)	t͡ɬʰ, t͡ɬ’	Krüger and Snyman (1986: 66, 68)
Kgalagadi (S311)	t͡ɬʰ (?)	Lukusa and Monaka (2008: 10)
Northern Sotho (S32)	ɬ, t͡ɬ’, t͡ɬʰ (Standard)	Louwrens, Kosch, Kotzé (1995: 9-13, 16)
	k͡ʟ̝̊ʰ, k͡ʟ̝̊’ (Eastern dialect)	
	k͡ʟ̝̊’ (East-Central dialect)	
Southern Sotho (S33)	ɬ, t͡ɬ, t͡ɬʰ	Mabille and Dieterlen (1961: x)

Looking at the lateral obstruents in Sotho Tswana, we do not see as uniform of a picture as we observe in Nguni languages. Not all languages make use of lateral obstruents: they are absent in Lozi (K21), Tawana (S31C), Tjhauba (S311), and Lobedu (S32B). Typical Southern Bantu characteristics like lateral obstruents disappeared from Lozi (K21) as a result of the Kololo, speaking Southern Sotho, merging with Luyi speakers in Zambia, leading to Sotho grammar and lexicon but Luyi phonology (Gowlett 2009). Contrary to what Gunnink et al. (2022) say, Lukusa and Monaka (2008: 10) include an aspirated alveolar lateral affricate in their consonant chart of Kgalagadi consonants but do not comment on it, making its exact status unclear; if it is still used, it seems to be marginal or possibly a loan phoneme. Note that Ziervogel (1954) used brackets to indicate loan phonemes in his work on Kutswe, Pai, and Pulana – whether that is the case of Lukusa and Monaka (2008) in their Kgalagadi description is unclear. This leaves the other Sotho Tswana languages for analysis in Table 28, as also found in Appendix E.1. Kutswe, Pulana, and Pai are explained by Ziervogel (1954: 4) to form a subgroup within Sotho Tswana, being defined amongst other by the occurrence of velar lateral obstruents. As can be observed in the table below, reflexes of *tʃ and *d͡ʒ all have velar lateral affricates where other Sotho Tswana languages have alveolar lateral obstruents. This thus seems to have been a development specific to this subgroup but note that Kutswe and Pai also make use of the alveolar lateral obstruents /t͡ɬ/ and /ɬ/ respectively. Interestingly, the /k͡ʟ̝̊/ appears to be a reflex going back to Proto Bantu palatals rather than a phoneme occurring in loan words, as is the case for the velar lateral affricate in Nguni languages (cf. 0). For Pulana and Kutswe, Ziervogel (1954: 117)) notes that the /ɬ/ and /k͡ʟ̝̊ʰ/ are “of foreign origin”. Notable is that lateral obstruents in Sotho Tswana are voiceless in all languages with the exception of Pai, for which Ziervogel (1954: 21) describes /ⁿd͡ɮ/. Ziervogel does not include a /d͡ɮ/ in his consonant chart, indicating that it only occurs prenasalized. Notable is that Taljaard (1997) does not report this voiced alveolar lateral obstruent for Pai. In future research, these observation could be followed up on, as they would give us insights into the internal development of lateral obstruents in Sotho Tswana and how the use of their lateral obstruents relates to Nguni languages (see also 3.4).

Table 28: Sotho Tswana reflexes of PB palatal words (languages without lateral obstruents excluded)

	***cànj** 'vomit'	***cáànò** 'five'	***cèk** 'laugh'	***jàdà** 'hunger' (9)	***jògù** 'elephant' (9/10)	***jò** 'house, hut' (9/10)
Kutswe (S302)	*ʧʰats'a*			*k͡ʲʟala*	*k͡ʲʟ'óu*	*ŋk͡ʲʟ'ô*
Pai (S303)		*ɬani*	*ɬeɦisa*	*k͡ʲʟ'ala*		*ŋk͡ʲʟ'ô*
Pulana (S304)	*-k͡ʲʟ'ats'a*			*k͡ʲʟala*	*k͡ʲʟ'óu*	*ŋk͡ʲʟ'ô*
Tswana (S31)	*ʧʰátsá*	*ʧʰánó*	*tsʰɛ̀χà*	*ʧàlà*	*ʧòù*	*nʧo*
Northern Sotho (S32)	*ɬatsa*	*ɬano*	*sega*	*ʧala*	*ʧou*	*nʧo*
Southern Sotho (S33)	*ɬatsa*	*-ɬano*		*-ʧala*	*ʧöu*	*nʧo*

Looking at Table 28, we see different types of lateral obstruent reflexes of Proto Bantu palatals in Sotho Tswana. These show more variation than the reflexes in Nguni languages do, which can be explained by the fact that not all Sotho Tswana languages use lateral obstruents and the data show signs of conditioning. One example of such a conditioning is related to vowel following the original Proto Bantu palatal. This can be observed in reflexes of the verb *cèk 'laugh', which contain a /s/ in Tswana and Northern Sotho instead of a lateral obstruent like the other languages. As *tsʰɛ̀χà* (Tswana) and *sega* (Northern Sotho) do appear to be reflexes of Proto Bantu 'laugh', with similar vowels and other velar phonemes than the /k/, it would be interesting to study this in future research to see if this is more widespread in Tswana and Northern Sotho. It could possibly be a phonological conditioning where for example *ʧ in combination with a front vowel like /i/ or /e/ does not change to a lateral obstruent. Moreover, some authors do comment on the origin of the lateral obstruents, with Ziervogel (1954: 23) for example commenting on Pai lateral obstruents, explaining how the voiceless Proto Bantu palatals change to voiceless laterals (/ɬ/) and how voiced Proto Bantu palatals change to voiceless ejective velar laterals (/k͡ʲʟ'/). This is similar to what he reports for Pulana and Kutswe, explaining how the voiceless Bantu palatals become /ʧʰ/in Kutswe, but /k͡ʲʟʰ/ is also found occasionally and the voiced Bantu palatals becoming /k͡ʲʟ'/ in Kutswe and Pulana (Ziervogel 1954: 120). Lastly, the distribution of lateral obstruents outside reflexes of Proto Bantu palatals in Sotho Tswana would be relevant for future research but is outside the scope of this thesis.

3.3.2. Tsonga languages

All Tsonga languages make use of lateral obstruents. An overview of these is presented in the table below:

Table 29: Overview Tsonga lateral obstruents

Language	Sounds	Source
Tswa (S51)	ɬ, ɬʷ, ɮ, ⁿɮ, ⁿɮʷ, k͡ʲʟ, ⁿk͡ʲʟ, k͡ʟʰ	Persson (1932: 19)
Tsonga/Shangaan (S53)	ɬ, ʧ, ɮ	Junod (1907: 8, 10)
	ɬ, ɬʷ, ʧ, ʧʰ, ʧʷ, ʧʰʷ, ɮ, ɮʷ, d͡ɮ	Baumbach (1987: 5, 10, 13)

	ɬ, ɬʷ, ⁿɬ, ⁿɬʷ, t͡ɬ, t͡ɬʰ, t͡ɬʷ, t͡ɬʰʷ, ⁿt͡ɬ, ⁿt͡ɬʰ, ⁿt͡ɬʷ (?)[20], d͡ɮ, ⁿd͡ɮ, ⁿd͡ɮ̤[21]	Janson (2001: 19, 25)
Ronga (S54)	ɮ[22], t͡ɬ, t͡ɬʰ, d͡ɮ, d͡ɮ̤	Quintão (1951: 9)
	ɬ, ɬʷ, t͡ɬ, t͡ɬʰ, d͡ɮ, d͡ɮʷ	Hargus (1999: 5-6)

Tsonga languages make use of both alveolar lateral fricatives and affricates. It is of particular interest to note here that Tsonga languages have alveolar lateral affricates which occur outside of post nasal contexts (cf. Table 30), whereas Nguni and Sotho Tswana languages only have lateral affricates after prenasalization. In the case of Sotho Tswana, prenasalized lateral affricates are only described for Pai, Kutswe, and Pulana, although more in depth research is necessary to confirm this. As discussed earlier in this chapter and in Chapter 2, prenasalization is not always interpreted as a contrastive feature in the case of lateral obstruents as it can be an effect of noun class. However, there are ample examples where it cannot be an effect of noun class, so it would be necessary to do as detailed of a study of Sotho Tswana lateral obstruents as carried out for Nguni in this thesis. Interestingly, Tswa appears to be the only Tsonga language to make use a velar lateral affricate (see Table 30). Like Nguni lateral obstruents, lateral obstruents are found in Tsonga reflexes of *t͡ʃ and *d͡ʒ (cf. Appendix E.2):

Table 30: Tsonga reflexes of PB palatal words

	***cóòkò** 'face'	***cáànò** 'five'	***cèk** 'laugh'	***jàdà** 'hunger' (9)	***jògù** 'elephant' (9/10)	***jò** 'house' (9/10)
Tswa (S51)	*-ɬoko*	*ⁿk͡ʇ̤anu*	*ɬeka*	*ⁿd͡ɮala*	*ⁿd͡ɮovu*	*-ⁿd͡ɮu*
Tsonga/Shangaan (S53)		*ⁿt͡ɬʰanu*	*-ɬeka*		*ⁿd͡ɮopfu/tiⁿd͡ɮopfu*	*yiⁿd͡ɮu/tiyiⁿd͡ɮu*
Ronga (S54)	*ⁿɬoko*	*ⁿt͡ɬʰanu*	*-ɬeka*	*ⁿd͡ɮala*	*ⁿd͡ɮopfu*	*yiⁿd͡ɮu*

Lastly, the distribution of lateral obstruents outside reflexes of Proto Bantu palatals in Tsonga languages would be relevant for future research but is outside the scope of this thesis, as well as the environments where /k͡ʇ̤/ is used, to see if it is a loan phoneme like in Nguni languages or a reflex of Proto Bantu palatals as in some Sotho Tswana languages, or both. Further, given the numerous lateral obstruents used in Tsonga languages (cf. Table 29), it would be relevant to research if all of these are phonemic, or if some might be allophonic.

The next section will take the findings of Sotho Tswana and Tsonga languages into account in re-evaluating the development of lateral obstruents in Southern Bantu.

[20] As Janson (2001: 19) includes this phoneme with a question mark in his consonant chart, I have followed his analysis.
[21] Janson (2001: 19) uses the following transcription of this sound: /ⁿdlʰ/. Sequences of /dl/ typically refer to /dɮ/, especially in the case of prenasalization (cf. 2.2.6). As voiced consonants cannot be aspirated, the aspiration likely refers to breathiness.
[22] Quintão (1951: 9) uses /xl/ to transcribe this phoneme, which is likely grounded in Portuguese spelling conventions, where this symbol is often used to refer to a /ʃ/, leading to an orthographic representation of /ʃl/, which sounds close to /ɬ/.

3.4. The development of Nguni lateral obstruents: evaluating the sound change, results, revisiting earlier work

In this paragraph, I will first evaluate the sound change from Proto Bantu palatals to alveolar lateral obstruents (3.4.1) before summarizing my overall findings and put forward my analyses (3.4.2). I will also revisit earlier work and theories on the origin of lateral obstruents (3.4.3), and close this chapter with recommendations for future research (3.4.4).

*3.4.1. Evaluating the sound change from *(n)ʃ and *nd͡ʒ to (alveolar) lateral obstruents*

The sound change attested from Proto Bantu to Nguni languages as discussed above are the following:

- *ʃ > ɬ
- *nʃ > ⁿɬ, ɬ
- *nd͡ʒ > ⁿɮ, ɮ

Preliminary results suggest that this sound change may be shared with Sotho Tswana and Tsonga languages but we can at this point confidently reconstruct the alveolar lateral obstruents to Proto Nguni only. As explained in Chapter 1 (1.3), lateral obstruents are rare crosslinguistically, and this sound change is not attested elsewhere in Bantu languages. The only other Bantu languages to make use of lateral obstruents are two Taita languages spoken in the Taita Hills of Kenya: Davida and Saghala (E74, E741), which have acquired the sounds via different ways (Beer et al. fthc.). Lateral obstruents in Davida are the result of the Bantu Spirantization (see 3.1), a regular sound change in Bantu languages, although lateral obstruents are not found as a result of Bantu Spirantization outside Davida, and Saghala acquired its lateral obstruents through contact (cf. 1.3.2). Although both Taita languages and Nguni languages have developed lateral obstruents, the evidence points to two separate innovation events. We can thus conclude that the sound change that occurred in Nguni from Proto Bantu *ʃ and *d͡ʒ to alveolar lateral obstruents is not common or even attested elsewhere in Bantu languages and unique to Nguni languages.

The fact that other Bantu languages do not have this sound change is relevant to note, given that we often see parallel developments in Bantu languages, leading to some typologically common to Bantu but independent changes to the languages, such as Bantu Spirantization or the merger of super high and high vowels from a 7 to a 5 vowel system. Might this sound change then be typologically common? Without a new, dedicated study to this topic, it is hard to judge the likelihood of it occurring. It is also worth mentioning that there must have been intermediate stages between Proto Bantu and Proto Nguni, thus raising the question if the sound change that took place was from palatals or possibly from other common reflexes often found of these palatals like sibilants (cf. 1.3.3). In this sense, given that we know that lateral obstruents are a feature of Southern Bantu languages, it is more important to know what the Proto Southern Bantu reflexes of Proto Bantu palatals were since the lateral obstruents developed from Proto Southern Bantu.

When studying sound changes to /ɬ/, dentals or sibilants often seem to be the origin. Take for example the Uralic language Khanty, where a sound shift from *s to *ɬ took place in Irianian loanwords in Khanty, possibly with an intermediate stage of *θ, whilst the related language Mansi shifted from *s > *θ > *t (Sampsa Holopainen, personal communication). A sound change from /s/ to /ɬ/ is also noted from Proto Tai to one the Central Tai dialects, where reflexes of /s/, /tʰ/, and /ɬ/ are attested (Li 1977: 152). From this we can conclude

that the sound change is not unprecedented, and more research is needed to see if a shift similar to this has occurred in more languages perhaps. This goes back to the reconstruction of Proto Southern Bantu, as I will explain in the following section. In this section, I will summarize my findings and analyses.

3.4.2. Overall findings and analyses

As outlined in Chapter 1, the following scenarios were mentioned as possibilities for the development of lateral obstruents in Nguni languages:

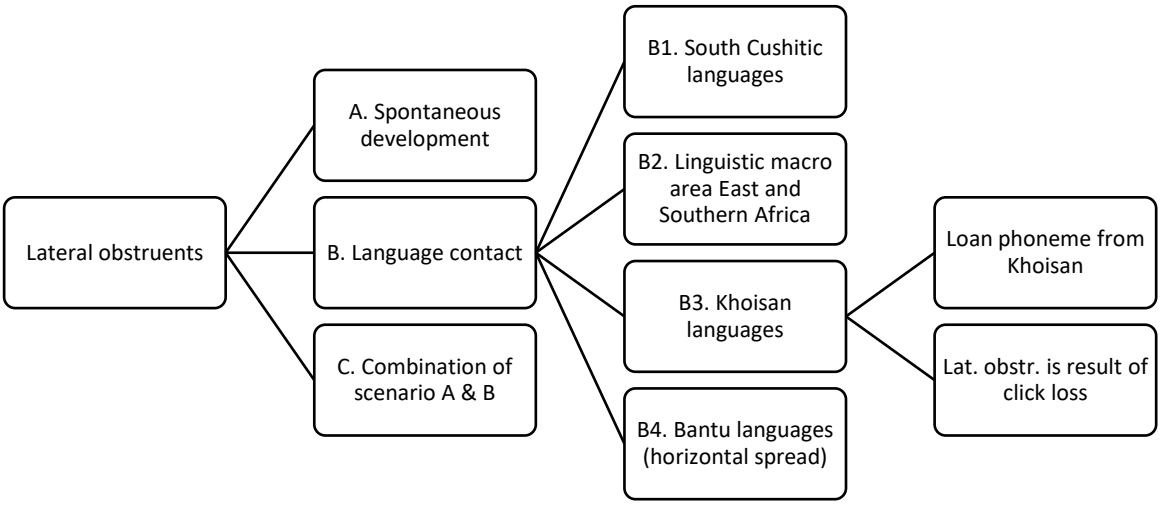

Figure 10: Paths of origin lateral obstruents in Southern Bantu/Nguni

As can be observed from the preceding chapters, I propose that alveolar lateral obstruents can be reconstructed for Proto Nguni, which would point to scenario A of a spontaneous development. Further, lateral obstruents are used in cognates across Sotho Tswana, Nguni, and Tsonga languages, with some differences in voicing, prenasalization, and the development of velar lateral obstruents in a subclade of Sotho Tswana languages. Even though we would need a larger sample for Sotho Tswana and Tsonga languages to confirm the hypothesis, the preliminary proposal is that these three subclades of Southern Bantu languages developed their lateral obstruents in a shared sound change. The likelihood of the development of lateral obstruents happening three times in the separate subclades and in the same context is low. This preliminary suggests that Sotho Tswana, Nguni, and Tsonga formed a subclade in the diversification of Southern Bantu languages (see my results in relation to the classification of Gunnink et al. (2022) below). Interestingly, not all Sotho Tswana languages make use of lateral obstruents. The loss of lateral obstruents in Lozi can be explained by its history (see **3.3.1**). For Tawana, Tjhauba, and Lobedu the question arises if they developed lateral obstruents and lost them, or if they never developed them at all due to already being split off by the time this sound change occurred. Even though a spontaneous sound change can account for the occurrence of lateral obstruents in Nguni languages, and possibly Sotho Tswana and Tsonga languages too (scenario A), it is worth considering the probability of this sound change occurring. As outlined in Chapter 1 (1.3.1), lateral

obstruents are crosslinguistically rare and as explained in the preceding section, it is not widely attested in Bantu or crosslinguistically. Therefore, I will consider the scenario in which the sound change was contact induced (scenario C). In this scenario, language contact could have induced a sound change, as is also argued for Davida (Taita Bantu) .

Given that the sound change from palatals (or possibly sibilants) to alveolar lateral obstruents is not attested outside Southern Bantu and appears to be crosslinguistically rare too, this goes back to the research question of this thesis: how did Nguni languages developed lateral obstruents? Is it due to inheritance or is contact likely to have influenced this sound change? The probability of it arising spontaneously appears to be low, although it should be assumed as the default until more research can exhaustively explore the possible role of contact and a sound change being typologically rare should not automatically exclude this option. As outlined in Chapter 1 (1.4) and also re-evaluated in (3.4.3), several authors have proposed contact with non Bantu languages (Southern Cushitic, Khoisan, linguistic macro area connecting East and Southern Africa) as the origin for lateral obstruents in Southern Bantu languages. As explained in 1.4.1, there are no Cushitic contact features established as of yet, and the linguistic macro area remains difficult to test. Khoisan languages, however, have already been proven to have (phonologically) influenced Southern Bantu languages extensively (cf. 1.3.3 and 1.4.2), even to the extent that phonemic clicks have been reconstructed for Proto Nguni. Combined with the fact that we also see a lot of genetic admixture between Bantu and Khoisan speakers in Southern Africa, and we know that many speakers of Khoisan languages shifted to Southern Bantu languages, a contact induced sound change via substrate influence can be explored in future research. Further, some Khoisan languages also make use of lateral obstruents (1.4.2), plus clicks can and have been replaced by lateral obstruents in click languages in the past (see 1.4.2 and ○) so speakers of these languages were likely familiar with lateral obstruents. If such a scenario would have happened, how could we research that? Most importantly, we need further research into Sotho Tswana and Tsonga lateral obstruents so we can establish when lateral obstruents developed in Southern Bantu languages. We also need to reconstruct the Proto Southern Bantu reflexes of Proto Bantu palatals; if we combine this information with the Sotho Tswana and Tsonga lateral obstruents, we can establish which sound change or sound changes took place and judge how (un)common these might be. Moreover, was the contact between Bantu and Khoisan speakers already ongoing at the point of the sound change and of a nature it could actually influence sound changes? As Thomason (2009: 323-324) further points out, we also need to prove Southern Bantu languages did not already make use of lateral obstruents *before* contact with Khoisan languages if these were the supposed cause of the (contact induced) development. Given that structural interference almost never occurs in isolation (Thomason: 322), we would also need to establish further contact influence, which is indeed a criteria Nguni/Southern Bantu languages meet (1.2.2).

Velar lateral affricates in Southern Bantu have diverging origins. In Nguni languages, they appear to be the indirect result of lexical transfer via Khoisan languages, which is in line with scenario 3B. The velar lateral affricate is in these cases for example used as a replacement strategy for clicks, a phenomenon also noted for Khoisan languages, and similarities between lateral clicks and lateral obstruents have also been reported for languages like Hadza and Sandawe. The /k͡ɬ̥/ is often found to alternate with /k͡x/. In Sotho languages, the velar lateral affricate is the result of an innovation specific to the subgroup formed by Pai, Kutswe, and Pulana (scenario A). It is used in similar contexts to the alveolar lateral obstruents, and it thus appears to have changed from alveolar lateral obstruents to velar lateral obstruents in certain contexts. Interesting to note

here is the difference in acquisition: whereas it is a loan phoneme in Nguni, it is an innovation to a subclade in Sotho Tswana. The situation with Tsonga languages is not fully clear at this point, but it appears Tswa uses a (prenasalized) velar lateral affricate /k͡ɬ̃/ (cf.Table 29) and that Ronga uses a velar affricate /k͡x/, for which it is currently unclear if it alternates with the /k͡ɬ̃/. It is interesting to note the crosslinguistic rarity of /k͡ɬ̃/ as no examples of languages were attested with this phoneme other than Zulu in PHOIBLE (1.3.1) but these Southern Bantu languages do feature this sound, either as a loan phoneme (Nguni) or as a result from a regular sound change (Sotho Tswana).

Further, we find two words in Nguni languages ('eat' and 'shoulder blade') in which alveolar lateral obstruents are widely found but for which there is no palatal in the Proto Bantu word. These require future research, both to research these forms in depth, and to see if there are more words for which this holds. Lastly, the alveolar lateral obstruents in Nguni that have no apparent reflexes in Proto Bantu would be interesting to look into: have these entered Nguni languages via a different path, or do we not have the reconstructions in the database? If they entered Nguni languages via a different path, it is likely to have happened at a Proto Nguni stage given their regularity in all languages. With this analysis in mind, we can revisit earlier work.

3.4.3. Re-evaluating earlier work

I will now assess my results in relation to earlier work as outlined in Chapter 1. Several propositions and comments were made about the origin of lateral obstruents being linked to language contact, concisely summarized in Figure 10 in the preceding paragraph.

As explained above, I propose that alveolar lateral obstruents were already present in Proto Nguni; this is the only scenario that can account for the regularities in reflexes of Proto Bantu *t͡ʃ and *d͡ʒ. This is in line with some of the authors whose language descriptions I have consulted in this thesis, such as Xhosa (McLaren 1952: 187), Swati (Ziervogel 1952: 8), Northern Ndebele (Ziervogel 1959: 31), and Swati, Phuthi, Bhaca, Lala, Northern Ndebele, and Nhlangwini (Msimang 1989: 167-171). As these works make use of dated Proto Bantu reconstructions and these reconstructions are often not included in the works, I will not discuss them in depth but rather acknowledge their existence.

Multiple scholars have argued for language contact as a possible source of the Southern Bantu lateral obstruents. Suggested donor languages or language families are Khoisan (Gunnink et al. 2022) and Southern Cushitic (Louw and Finlayson 1990), and a linguistic area is proposed by Güldemann (2011; 2019).

Louw and Finlayson (1990) suggest SOUTHERN CUSHITIC AS THE ORIGIN OF SOUTHERN BANTU'S lateral obstruents during the time ancestors of Southern Bantu speakers moved through Tanzania to account for lateral obstruents in Southern Bantu words that are not reflexes of reconstructed Proto Bantu words. As the authors do not provide more details on the contact situation, it is difficult to fully assess their claims. However, if Southern Cushitic would have been the origin of the lateral obstruents, we would expect to see them in Cushitic loan words, and if the contact was intense enough to lead to the inclusion of lateral obstruents in Southern Bantu languages, it would be unexpected if it has taken place in isolation: other parts of the Southern Bantu languages would also show traces of this contact. As no other contact influence of Southern Cushitic has been identified until now, this is not the preferred scenario currently. However, we can test their hypothesis in future research by comparing the words in Appendix B for which there are (currently) no Proto Bantu reflexes to (Southern) Cushitic words to see if there would be any plausible correspondences between

them. In researching this, it would also be worthwhile looking at the timeline of Southern Cushitic speakers and ancestors of Southern Bantu speakers and see if they could possibly line up; recent progress in the work by Mous and colleagues (personal communication) on their reconstruction of the linguistic history of East Africa suggest that Southern Cushitic speakers only more recently settled in Tanzania, as late as 1200, having spent considerable more time in Kenya. This might also suggest that, if contact with Southern Cushitic speakers and ancestors of Southern Bantu speakers took place, this might have taken place in Kenya instead of Tanzania as suggested by Louw and Finlayson (1990). Further, as we are talking about ancestors of Southern Bantu speakers, this would then have concerned language influence on the whole subgroup of Proto Southern Bantu languages. As we do not see lateral obstruents in Shona, Venda, or Chopi, and these must have all lost lateral obstruents in this scenario, this evidence argues against the proposed scenario. Furthermore, as the lateral obstruents occur in reflexes of words going back as far as Proto Bantu, the contact would have been the cause of a sound change.

Güldemann's (2011; 2019) ideas about a FORMER LINGUISTIC AREA CONNECTING EASTERN AND SOUTHERN AFRICA is based on the idea that the languages in this area from unrelated language families share linguistic features that are rare crosslinguistically such as lateral obstruents, ejectives, and clicks. He argues that these rare linguistic features were once more widespread in the languages in Eastern and Southern Africa before the Bantu Expansion. As outlined in Chapter 1, it is difficult to test this hypothesis, as the languages that would have been widely spoken before the Bantu Expansion have mostly disappeared now. As it is not testable, and no scenarios about how these features would have spread are discussed, it is difficult to connect this theory to my results. What can be confirmed with regards to Güldemann's sample of languages in Southern Africa that feature lateral obstruents, is that there are many more (Southern Bantu) languages than included in his sample that have these sounds, and that it is thus even more widespread than suggested based on his map (cf. 1.4.3). However, in the case of Southern Bantu languages, these mostly seem to result from inheritance rather than contact, which could argue against a linguistic area, It should be noted that the question if language contact could have prompted this sound change has not been explored yet. Further, work by Beer et al. (fthc.) on lateral obstruents in some Eastern African languages of the Tanzanian Rift Valley and surroundings (Southern Cushitic languages, Hadza, Sandawe, Kuliak languages, and Taita) (see 1.3.2) proposes that (contact induced) retention is the most probable scenario for most of these languages; contact has been proposed as the origin for Sandawe and Saghala (Taita). With this occurrence of lateral obstruents in these Eastern African languages, and the presence of them in several Southern Bantu subgroups, the question of whether they really are as rare as Güldemann suggests is an interesting one: maybe our samples and descriptions up until now have simply not contained the languages with these sounds, as also discussed in Chapter 1 concerning the crosslinguistic distribution of lateral obstruents represented in for example WALS and PHOIBLE (section 1.3.1). If they do appear to be more common than previously thought, this limits the argument that contact was necessary for a rare feature to spread. However, a linguistic area in Southern Africa could, as appears to be the case for East Africa, lead to a contact induced sound change. Whether these two linguistic areas would have been part of the former linguistic area that Güldemann proposes connecting East and Southern Africa, would be difficult to establish.

Gunnink et al. (2022) argue for THE INFLUENCE OF KHOISAN LANGUAGES IN THE CONTACT OF LATERAL OBSTRUENTS IN SOUTHERN BANTU in their new classification of Southern Bantu languages and discussion of notable Southern Bantu features, including lateral obstruents. As they explain, whilst Nguni and Tsonga lateral

obstruents could be a homogenous development from Proto Bantu *ʧ and *d͡ʒ, reflexes of these sounds in Sotho Tswana languages are heterogenous (see also section 1.3.3 and 1.4.2). Given that Chopi languages do not have lateral obstruents as reflexes of *ʧ and *d͡ʒ, and that their phylogenetic classification unifies Sotho Tswana with Nguni, Tsonga, and Chopi, they argue that the development of lateral obstruents cannot be projected back to the clade unifying these four language groups, and it is not inheritance but contact with Khoisan languages that can explain the distribution of these *ʧ and *d͡ʒ reflexes (Gunnink et al 2022: 99). With the new evidence that has come to light in this thesis, I would argue against this claim: even though Chopi does not have lateral obstruents, and Sotho Tswana lateral obstruents are heterogenous, the current evidence in this thesis seems to favor the idea that lateral obstruents developed once in the history of Southern Bantu languages (apart from the lateral obstruent phonemes that were incorporated as loans, such as the /k͡ɬ̠ʲ/in Nguni languages) given that they occur in the same words in a consistent context across all these subgroups. The sound change from Proto Bantu *ʧ and *d͡ʒ to lateral obstruents in Bantu languages is not a common one and not attested outside Southern Bantu languages; the likelihood of this occurring three times in the same contexts would be low. This does not exclude the possibility that the sound change was contact induced, as discussed in 3.4.1 and 3.4.2. Further, as Gunnink et al. (2022: 99) argue, inheritance can especially not explain the lateral obstruents in the Sotho Tswana cluster. However, if we take a closer look, they are not as divergent as they appear to be. Given that Pai, Kutswe, and Pulana are explained to be a subgroup within Sotho Tswana, the occurrence of the velar lateral affricate instead of alveolar lateral obstruents is likely an innovation specific to this subgroup. The velar lateral affricate still appears in the same words as the other Sotho Tswana, Nguni, and Tsonga languages use alveolar lateral obstruents, and, in addition, Kutswe and Pai still make use alveolar lateral obstruents. As an analytical consequence of reconstructing lateral obstruents to Sotho/Chopi/Tsonga/Nguni, three Sotho Tswana languages (Tawana, Kgalagadi, Lobedu) have lost their lateral obstruents, which seems to be favored over six Sotho Tswana languages developing lateral obstruents in similar contexts and words, coming back to the likeliness of this occurring (cf. 3.4.1 and 3.4.2). Further, this also suggests that Chopi lost their lateral obstruent reflexes of PB *ʧ and *d͡ʒ, which is in line with recent work of Eaton (2022). Even though the grouping of Chopi/Tsonga clade is strongly supported by lexical data in the classification of Southern Bantu languages by Gunnink et al. (2022), it would be worth considering a scenario where Chopi did not gain and subsequently lost its lateral obstruents, but never had them to start with; if this were to be the case, it might not group together with Tsonga. To research this, we would need different data, such as morphological or phonological innovations, and see if and how they are shared between Chopi and Tsonga and other Southern Bantu languages. Lastly, in order to establish the development of lateral obstruents in Sotho Tswana and Tsonga with more certainty than the current data shows, further thorough and methodological research is needed. This way, we can study if and in what capacity lateral obstruents can be reconstructed for their respective proto languages.

3.4.4. Lateral obstruents in Nguni and beyond: future research

This study on Nguni lateral obstruents and beyond in Southern Bantu leads to multiple avenues for future research, often outlined in the respective sections, and of which the most important summarized here. As became apparent in Chapter 2, the secondary data used in this thesis, whilst rich enough to add a large amount of new knowledge to the field, brings with it inherent limitations. Primary data collection or new language descriptions could fill this gap. In line with data collection, extending the lexical sample in Nguni languages could lead to fine grained details of the nature of lateral obstruents. Additional research is needed to better understand the velar lateral affricate /k͡ɬ̠ʲ/ in Nguni. For example, if we were to systematically

compare words in which this phoneme is used, does it then show up in lexical cognates? And can we identify source languages and directions of borrowing? As Doke (1954) suggested this is also found in Sotho Tswana languages, we would need to extend this search to those as well. Hopefully, this would give us insights into how this phoneme entered these languages and at what point (e.g., before or after Proto Nguni), which we can also study from a framework of language contact. This would especially be interesting concerning a comparison between lateral obstruents in non Bantu words and Southern Cushitic, as suggested by Louw and Finlayson (1990). To develop a full picture of lateral obstruents in Southern Bantu languages, additional research into their occurrence in Sotho Tswana and Tsonga languages is necessary. It is only with extensive data from these subclades that we can systematically compare the nature of these sounds in Southern Bantu and further research if, as tentative data suggests, this could be a shared development at some point in the diversification of Southern Bantu and if this sound change might have been contact induced. Moreover, with Taita Bantu as the only other Bantu language to make use of lateral obstruents, another relevant avenue for research would include comparing the nature and use of lateral obstruents in Southern Bantu languages to those of Taita Bantu, as well as other East African languages that make use of lateral obstruents. Lastly, in order to further support or test the hypotheses put forward, future research can compare the sound change from *t͡ʃ and *d͡ʒ to lateral obstruents to other sound changes and innovations in Southern Bantu languages. This would give us more insight in the relative order in which the Southern Bantu languages developed from Proto Southern Bantu and how they do or do not cluster together. In the following chapter, some of these ideas for future research are discussed in more detail, as well as a restating of the research question and summary of the main findings and contributions of this study.

4. Conclusion

This research focused on identifying the origin of lateral obstruents in Nguni languages and explored the question of whether their occurrence was due to inheritance or contact with other, non Bantu languages. Based on in-depth analysis of an extensive study of the sounds and words they occur in in 10 selected Nguni languages representing all subgroups, this thesis has shown that alveolar lateral obstruents were already present in at least Proto Nguni and are amongst other found in reflexes of Proto Bantu *t͡ʃ and *d͡ʒ. The velar lateral affricate /k͡ʟ/ is likely a loan phoneme; marginal, not present in all Nguni languages, and used as a strategy for click replacement. I evaluated existing theories that proposed several contact scenarios, which at this point do not seem the most plausible explanations for Nguni lateral obstruents. The presence of alveolar lateral obstruents in Proto Nguni raises the question in which stage of the diversification of Southern Bantu lateral obstruents were developed, especially given the presence of lateral obstruents in Sotho Tswana and Tsonga languages. Whilst the lexical data sample for these language families can and should be elaborated on in future research to establish the tentative findings, the current data leads me to tentatively hypothesize the most likely scenario is that the development of lateral obstruents can be projected to a subclade unifying Sotho Tswana, Tsonga, Nguni, and Chopi languages, where Chopi then subsequently lost the sounds. Whilst the sound change from sibilants to lateral obstruents is not unattested crosslinguistically, it is not found elsewhere in Bantu languages, leading to the question if this sound change might have been contact induced or was spontaneous. Unless or until there is convincing and concrete evidence for a contact scenario, such as languages with lateral obstruents for which it can be established that they were extensively in contact with speakers of Southern Bantu subgroups, the default assumption should be that this sound change was spontaneous.

The findings from this study make several contributions to the field. It is the only empirical study to date to collect and reinterpret data from a large number of secondary sources, leading to a better understanding of not only the distribution of lateral obstruents in Nguni languages, but also the hypothesized ancestor of these related languages, Proto Nguni. Further, this thesis lays the groundwork for future research into lateral obstruents in Southern Bantu. If we expand our focus from Nguni to the other subclades that feature lateral obstruents, we can combine that knowledge of lateral obstruents in Southern Bantu with other innovations and patterns to in the end gain more insight into the diversification of Southern Bantu languages and understand how the subgroups relate to each other.

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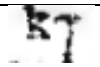
Appendices for 'The development of lateral obstruents in Nguni languages'

This document contains all appendices referred to in the main thesis:

- Appendix A: Description of Nguni lateral obstruents
- Appendix B: Alveolar lateral obstruents as reflexes from Proto Bantu
- Appendix C: Widespread alveolar lateral obstruents of non Bantu reflexes
- Appendix D: A marginal non Bantu reflex: /k͡ɬ/
- Appendix E: Sotho Tswana and Tsonga lateral obstruents

Appendix A: Description of Nguni lateral obstruents

Appendix A shows the original descriptions of the lateral obstruents in the sources consulted, so the reader can refer to what the interpretations in this thesis are based on. If there are multiple sources consulted for one language, different colour shades distinguish between them. The table consists of the IPA, original orthography, original descriptions, source and page number, and additional notes where relevant.

	IPA	Ortho graphy	Original description	Reference	Notes
Bhaca S402	ɬ	hl	"hl (the voiceless fricative alveolar lateral, phon. ɬ.)"	Jordan (1953: 8)	
	ɮ	dl	"dl (the voiced fricative alveolar lateral, phon. ɮ)."	Jordan (1953: 8)	
	ⁿɬ	nhl	"n (the syllabic alveolar nasal). It is found before the voiceless homorganic frictaives s and hl. Among the Bacas of Mpoza, this nasal, like the denti-labial before f, is all but imperceptible."	Jordan (1953: 7)	See the paragraph on Bhaca; it is unclear if this is a syllabic nasal or if it would in this case be prenasalization.
	ⁿd͡ɮ	ndl	"ndl (the voiced lateral alveolar affricate, phon. nd ??"	Jordan (1953: 9)	
			"the voiceless velar affricate"	Jordan (1953: 9)	See the paragraph on Bhaca: it is unclear what sound this symbol refers to. In the examples that go with it, it has either fallen away partially or fully in the scanned document.
	ɬ	hl	radical alveolar lateral fricative	Msimang (1989: 106)	Description based on qualities of the consonant chart.
	ⁿɬ	nhl	N/A		Not described in the consonant section; likely not analyzed by Msimang as a contrastive sound.
	ɮ̈	dl	breathy-voiced alveolar lateral fricative	Msimang (1989: 106)	Description based on qualities of the consonant chart.
	ⁿɮ	ndl	N/A		Not described in the consonant section; likely not analyzed by Msimang as a contrastive sound.
	k͡?'	n/a	ejective velar affricate	Msimang (1989: 106)	Description based on qualities of the consonant chart No example given of this sound in Bhaca; not considered in the analysis (see section for why).

Phuthi S404	ɬ	hl	radical alveolar lateral fricative	Msimang (1989: 121)	
	d͡ɮ	dl	breathy-voiced alveolar lateral affricate	Msimang (1989: 121)	
	t͡ɬ	tl	radical alveolar lateral affricate	Msimang (1989: 212)	
	k͡ʟ̥’	n/a	ejective velar lateral affricate	Msimang (1989: 121)	Specifically stated in the consonant section that there is no velar lateral affricate in the language (Msimang 1989: 120); not taken into consideration for the analysis on Phuthi.
	ɬ	hl	Voiceless laterally released alveolar fricative	Donnelly (2007: 64–65, 70)	Description based on qualities of the consonant chart.
	t͡ɬ’	tl	Voiceless laterally released alveolar ejective stop	Donnelly (2007: 64-65, 69)	Description based on qualities of the consonant chart.
	t͡ɬʰ	tlh	Voiceless aspirated laterally released alveolar stop	Donnelly (2007: 64-65, 69)	Description based on qualities of the consonant chart.
	ɮ, d͡ɮ	dl, d̤l̤	Breathy voiced laterally released alveolar stop	Donnelly (2007: 64-65, 69)	Description based on qualities of the consonant chart.
Nhlangwini S405	ɬ	hl	Alveolar lateral radical fricative	Msimang (1989: 113, 116)	Description based on qualities of the consonant chart.
	ɮ	dl	Alveolar lateral breathy-voiced fricative	Msimang (1989: 113, 116)	Description based on qualities of the consonant chart.
	ⁿɬ	nhl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿɮ	ndl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	k͡ʟ̥’	kl, k͡ɬʔ	Velar lateral ejective affricate	Msimang (1989: 114, 116)	Description based on qualities of the consonant chart.
North and South Lala (S406)	ɬ		Alveolar lateral radical fricative	Msimang (1989: 111)	Description based on qualities of the consonant chart.
	ɮ		Alveolar lateral breathy-voiced fricative	Msimang (1989: 111)	Description based on qualities of the consonant chart.
	ⁿɬ	nhl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive

					phonemes, see respective section.
	ⁿd͡ɮ	ndl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	k͡ʟ̝̊’		Velar lateral ejective affricate [23]	Msimang (1989: 111)	Description based on qualities of the consonant chart.
	ɬ ~ x	hl	Classified as an alveolar sound	Zungu (1999: 60–61)	See respective section about alternation between these phonemes.
	ɮ̈ ~ ɣ̈	dl	Does not occur in consonant description	Zungu (1999: 60-61)	See respective section for more about this sound.
	k͡ʟ̝̊’	kl	Classified as a velar sound	Zungu (1999: 62)	See respective section about alternation between these phonemes.
Southern Ndebele (S407)	ɬ	hl	A voiceless lateral alveolar fricative	Skhosana (2010: 49)	
	ɮ	dl	A voiced lateral alveolar fricative	Skhosana 2010: 49)	
	ɮ̈	dlh	A voiced lateral aspirated alveolar fricative	Skhosana (2010: 49)	
	ⁿɬ	nhl	N/A		Skhosana (2010) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿɮ	ndl	N/A		Skhosana (2010) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	t͡ɬ’	tl	A lateral ejective alveolar affricate	Skhosana (2010: 50)	
	t͡ɬʰ	tlh	A lateral aspirated alveolar affricate	Skhosana (2010: 50)	

[23] The velar lateral affricate *k͡ʟ̝̊* is classified in the consonant chart as an ejecive sound (Msimang 1989: 111). Since all transcriptions in the example section are seen *without* ejective marking, but this is indicated for other words, I will analyze the affricate to not be ejective.

Northern Ndebele (S408)	ɬ ⁿɬ	hl nɬ	"ɬ is the fricative lateral represented by *hl* in the practical orthographies of *Zulu* and Xhosa" "*ɬ* is the voiceless fricative alveolar lateral … with nasal *nɬ*"	Ziervogel (1959: 17, 20)	
	ɮ, ⁿɮ	dl, ndl	"*dl*, with nasal *ndl*, is the voiced explosive alveolar lateral"	Ziervogel (1959: 17)	
	t͡ɬ'	tl'	"*tl'* is the voiceless ejective explosive elveolar lateral"	Ziervogel (1959: 20)	
	t͡ɬʰ	tlh	"*tlh* is the voiceless aspirated explosive alveolar lateral"	Ziervogel (1959: 20)	
	ɬ		Voiceless alveolar lateral fricative	Msimang (1989: 126)	Description based on qualities of the consonant chart.
	d͡ɮ		Breathy voiced alveolar lateral affricate	Msimang (1989: 126)	Description based on qualities of the consonant chart.
	ⁿɬ	nhl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿɮ	ndl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	t͡ɬ'		Voiceless alveolar lateral ejective affricate	Msimang (1989: 126)	Description based on qualities of the consonant chart.
	t͡ɬʰ		Not in consonant chart		
	ɬ	hl	A voiceless alveolar lateral fricative	Skhosana (2010: 60)	
	ɮ	dl	A voiced lateral alveolar fricative	Skhosana (2010: 60)	
	ⁿɬ		N/A		Skhosana (2010) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿɮ	ndl	N/A		Skhosana (2010) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.

	ꞎʰ	tlh	An aspirated lateral alveolar fricative	Skhosana (2010: 61)	
	ꞎʼ	tl	An ejective alveolar lateral affricate	Skhosana (2010: 61)	
Xhosa S41	ɬ	hl	"The lateral fricative, represented in Xhosa by **hl**, is the Welsh *ll* in *Llanelly*. It is pronounced somewhat like the *tlh* in *fifthly*, but with the tongue against the forn of the palate so that the breath is forced out by the sides of the mouth…"	McLaren (1952: 8)	
	ɮ	dl	"The corresponding voiced fricative [to ɬ] represented by **dl** (for **dhl**) sounds somewhat like the *thl* in *smoothly*, similarly modified…"	McLaren (1952: 8)	
	ⁿꞎ	ntl	"The lateral affricate **hl** when preceded by a nasal becomes **t-hl**, which by a convention is written **tl:** as **intlalo**, dwelling, from **hlala**, dwell." **Ntl** is pronounced nearly like **ntl** in *gently***,** modified as before…"	McLaren (1952: 8)	
	ⁿdɮ	ndl	"**Dl** becomes **ndl**, as in **amandla**, strength; **indlondlo**, a high position"	McLaren (1952: 9)	
	ɬ	hl	"a voiceless apico-alveolateral fricative"	Finlayson et al. (1990: 61)	See Finlayson et al. (1990: 56-58) for a description of places of articulation. Although "apico-alveolateral" is not discussed, "apico-alveolar" and "apicolamino-alveolarlateral" are discussed.
	ɮ̤	dl	"is an apico-alveolateral fricative with breathy voice"	Finlayson et al. (1990: 61)	See comment by the /ɬ/.
	ꞎʼ, ⁿꞎʼ	tl, ntl	"a voiceless ejective apico-alveolateral. It occurs in the nasal compound ntl [ntɬʼ] only"	Finlayson et al. (1990: 60)	This affricate only occurs in combination with a nasal preceding it, see section on Xhosa. See comment by the /ɬ/.
	dɮ, ⁿdɮ̤	ndl	"not indicated in the practical orthography; it is an apico-alveolateral affricte with beathy voice. It occurs in the nasal compound ndl [ndɮ̤] only"	Finlayson et al. (1990: 60)	This affricate only occurs in combination with a nasal preceding it, see section on Xhosa. See comment by the /ɬ/.
Zulu (S42)	ɬ	hl	*"hl* (radical fricative alveolar lateral). This sound (for which the phonetic symbol is	Doke (1947: 17)	

		ɬ) is pronounced very much as '*ll*' in the Welsh '*Llanelly*'. It is a voiceless fricative sound with the tongue-tip kept approximately in the same position as for *l*."		
ɮ	dl	"*dl* (voiced fricative alveolar lateral). Pronounced as *hl*, but with accompanying vibration of the vocal chords.	Doke (1947: 17)	
ⁿt͡ɬ	nhl	"*nhl, ndl*: (lateral alveolar affricates). Found only in conjunction with the nasal. The phonetic equivalent of the unvoiced form is *ntɬ*"	Doke (1947: 17)	
ⁿd͡ɮ	ndl	"(lateral alveolar affricates). Found only in conjunction with the nasal. The phonetic equivalent of the unvoiced form is *ntɬ*"	Doke (1947: 17)	
k͡ʟ̥̂' ~ k͡x' ⁿk͡ʟ̥̂	kl nkl	"(ejective velar lateral affricate"). This has been written variously hitherto as '*hx*', '*italic x*', '*rr*' and '*kl*'. It is produced in much the same way as the Zulu affricate in the combination *nhl*, only much further back in the mouth, the back of the tongue operating upon the velum ... A variant pronuncation of this sound is the ejective velar affricate (phon. *kx'*), pronounced over the centre instead of the side of the tongue. This sound has been mistaken for a click.	Doke (1947: 18)	
ɬ	hl	alveolar fricative, pulmonic, direction of airstream: side of mouth, voiceless	Poulos and Msimang (1998: 479-480)	Description based on consonant chart.
ɮ	dl	alveolar fricative, pulmonic, direction of airstream: side of mouth, voiced	Poulos and Msimang (1998: 479-480)	Description based on consonant chart.
ⁿt͡ɬ'	nhl	alveo-lateral ejective, glottalic, direction of airstream: side of the mouth, voiceless	Poulos and Msimang (1998: 479-480)	Description based on consonant chart. The t͡ɬ' is only found prenasalized.
ⁿd͡ɮ	ndl	alveo-lateral non-aspirated, pulmonic, airstream: side of the mouth, voiced	Poulos and Msimang (1998: 479-480)	Description based on consonant chart. The d͡ɮ is only found prenasalized

	kl͡ʲˀ	kl	palato-lateral ejective, glottalic, airstream: side of the mouth, voiceless	Poulos and Msimang (1998: 479–480)	Description based on consonant chart
Swati (S43)	ɬ	hl	"*hl* is a voiceless fricative alveolar lateral. The articulation is that of *s* pronounced with the side of the tongue against the side of the teeth"	Ziervogel (1952: 7)	Footnote 1: "The phonetic symbols are not used because of printing difficulties. They are the same sounds as those of Zulu written *hl* and *dl* (Ziervogel 1952: 7)."
	ɮ	dl	"*dl* is the voiced variety of *hl*"	Ziervogel (1952: 7)	Footnote 1: "The phonetic symbols are not used because of printing difficulties. They are the same sounds as those of Zulu written *hl* and *dl* (Ziervogel 1952: 7)."
	ⁿɬ ⁿɮ	nhl ndl	"*n* < B. *n* is an alveolar nasal which may stand alone or may appear as part of a nasal compound with alveolar consonants. In the latter positions it stands for B. *ni*"	Ziervogel (1952: 5)	Classified in the consonant chart as lateral fricatives, respectively nasal-radical (ⁿɬ) and nasal-voiced (ⁿɮ) (1952: 9)
	kx'	kx'	"*kx'* is an ejective velar affricate found in a few words. Its origin is not known."	Ziervogel (1952: 7)	
	ɬ	hl	"This is a voiceless lateral alveolar fricative"	Msimang (1989: 97)	
	ɮ̤	dl	"This is a breathy-voiced lateral alveolar fricative"	Msimang (1989: 97)	
	ⁿɬ	nhl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿɮ	ndl	N/A		Msimang (1989) does not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	kl͡ˀ	kl	"This is an ejective lateral velar affricate"	Msimang (1989: 98)	
	ɬ	hl	'a voieless alveolar lateral fricative; compare with **dl**; as in Welsh 'Llandudno'	Whelton (2013: xi)	

	ɮ	dl	'a depressant lateral fricative; with the tip of the tongue touching the gum behind the incisors; let the air escape of the sides of the tongue and vibrate the larynx; contrast this sound with **hl**, which has no voicing'	Whelton (2013: xi)	'depressants' are underlined in the dictionary
	k͡ɬ̰'	kl	'ejective velar affricate; raise tongue, clear the throat and release the air laterally'	Whelton (2013: xi)	
Zimbabwean Ndebele	ɬ	hl	"Similar to the Welsh sound "ll""	Pelling (1966: 6)	
	ɮ	dl	"no equivalent in English. Similar to "dl" in 'saddler', tongue is placed further back from the upper teeth"	Pelling (1966: 6)	
	k͡ɬ̰	kl	"combination of the non-aspirated "k" and "l"; no equivalent in English"	Pelling (1966: 6)	
	ɬ	hl	"Like the other fricatives, the voicing contrast between the lateral fricatives [ɬ] and [ɮ] is phonemic. The voiced fricative often has a slight stop onset when in a cluster"	Bowern and Lotridge (2002: 6-7)	
	ɮ	dl	"Like the other fricatives, the voicing contrast between the lateral fricatives [ɬ] and [ɮ] is phonemic. The voiced fricative often has a slight stop onset when in a cluster"	Bowern and Lotridge (2002: 6-7)	
	ⁿɬ	nhl	N/A		Bowern and Lotridge (2002) do not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.
	ⁿd͡ɮ	ndl	N/A		Bowern and Lotridge (2002) do not describe these prenasalized lateral obstruents as distinctive phonemes, see respective section.

Appendix B: Alveolar lateral obstruents as reflexes from Proto Bantu

The following sections contain Nguni alveolar lateral obstruent reflexes of Proto Bantu palatals. They are organized as they are in Chapter 3 (e.g., according to sound change).

*B.1: PB *ʧ> Nguni ɬ*

Appendix B.1 contains all Proto Bantu reflexes in my database that participated in the sound change *ʧ > Nguni ɬ.

#_a

***caca** 'tree' (9553, 9554) (3)		
Bhaca		
Phuthi		
Nhlangwini	*isi-ɬaɬa*	Msimang (1989: 114)
Lala	*síɬâɬa*	Msimang (1989: 265)
S. Ndebele	*isi-ɬaɬa*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 298)
N. Ndebele	*si-ɬaɬa*	Ziervogel (1959: 12)
Xhosa		
Zulu	*isi-ɬaɬa*	Doke (2014: 371)
Swati	*sí-ɬaɬa*	Whelton (2013: 302)
Z. Ndebele	*isi-ɬaɬa*	Pelling (1966: 139)

***cadɔ** 'bead' (1833) (5)		
Bhaca		
Phuthi		
Nhlangwini		
Lala		
S. Ndebele		
N. Ndebele	*bú-ɬálu*	Ziervogel (1959: 58)
Xhosa		
Zulu	*ubu-ɬalu*	Doke (2014: 26)
Swati	*ɓu-ɬalu*	Ziervogel (1952: 34)
Z. Ndebele	*ubu-ɬalu*	Pelling (1966:83)

***càná** 'day, daylight' (442)[24] (3)		
Bhaca	*námuɬa*	Msimang 1989: 313
Phuthi	*mu/mi-ɬá*	Donnelly (2007: 1067)
Nhlangwini	*námuɬa*	Msimang 1989: 321
Lala	*námûɬa*	Msimang 1989: 313
S. Ndebele	*némuɬa*	Msimang 1989: 321

[24] In the present day Nguni reflexes, the second syllable -na seems to have been lost. *namuɬa* or a variation there of appears to mean 'today', where -na and -mu are likely prefixes used to derive this form. Further research is needed to establish these forms with more certainty.

N. Ndebele	*mú-ɬa*	Ziervogel (1959: 112)
Xhosa	*um-ɬa*	McLaren (1952: 2333)
Zulu	*-ɬa*	Doke (2014: 700)
Swati	*umú-ɬa*	Whelton (2013: 298)
Z. Ndebele	*lamuɬa*	

***cànj** 'vomit' (458)		
Bhaca		
Phuthi	*kú-ɬáátà*	Donnelly (2007: 159)
Nhlangwini		
Lala		
S. Ndebele		
N. Ndebele	*-ɬáⁿta*	Ziervogel (1959: 81)
Xhosa		
Zulu	*ɬanza*	Doke (2014: 396)
Swati	*kú-ɬáⁿta*	Whelton (2013: 308)
Z. Ndebele	*-ɬaⁿza*	Pelling (1966: 141)

***càng, càngan** 'meet, find, mix, assemble' (462, 464)		
Bhaca		
Phuthi	*kú-ɬágə̀ə̀nà*	Donnelly (2007: 160)
Nhlangwini		
Lala		
S. Ndebele	*-ɬaⁿgana no-*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 237)
N. Ndebele		
Xhosa	*uku-ɬaⁿgana*	McLaren (1952: 233)
Zulu	*ɬangana na-*	Doke (2014: 210)
Swati	*ku--ɬáⁿgana*	Whelton (2013: 306)
Z. Ndebele	*-ɬaⁿgana*	Pelling (1966: 113)

***táànò, *cáànò** 'five' (2768)		
Bhaca	*-ɬanu*	Msimang (1989: 167)
Phuthi	*-ɬáánù*	Donnelly (2007: 145)
Nhlangwini		
Lala	*ɬanu*	Zungu (1999: 55)
S. Ndebele	*-ɬanu*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 40)
N. Ndebele	*-ɬánu*	Ziervogel (1959: 31)
Xhosa	*ɬanu*	McLaren (1952: 187)
Zulu	*-ɬanu*	Doke (2014: 712)
Swati	*-ɬanu*	Ziervogel (1952: 21)
Z. Ndebele	*-ɬanu*	Pelling (1966: 101)

#_e

***cèk** 'laugh' (522)		
Bhaca	*úkú-ɬeka*	Msimang (1989: 316)
Phuthi	*ku-ɬeka*	Donnelly (2007: 1132)
Nhlangwini	*uku-ɬeka*	Msimang (1989: 324)
Lala	*kú-ɬêka*	Msimang (1989: 316)
S. Ndebele	*-ɬeka*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 41)
N. Ndebele	*ɬekwa*	Ziervogel (1959: 192)
Xhosa	*uku-ɬeka*	McLaren (1952: 187)
Zulu	*-ɬeka*	Doke (2014: 716)
Swati	*kú-ɬeka*	Whelton (2013: 313)
Z. Ndebele	*-ɬeka*	Pelling (1966: 110)

#_o

***jico** 'eye' (3405)[25] (5/6)		
Bhaca	*ame-ɬo*	Msimang (1989: 104)
Phuthi	*éma-ɬó*	Donnelly (2007: 312)
Nhlangwini	*ili-ɬo*	Msimang (1989: 321)
Lala	*li-so/li-ɬo*	Zungu (1999: 44)
S. Ndebele	*-ɬo*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 41)
N. Ndebele	*má:-ɬɔ*	Ziervogel (1959: 25)
Xhosa	*ame-ɬo, ili-so*	McLaren (1952: 187)
Zulu	*-so, -ɬo*	Doke (2014: 119)
Swati	*ɛmɛ-ɬɔ*	Ziervogel (1952: 6)
Z. Ndebele	*ili-ɬo*	Pelling (1966: 99)

#_ʊ

***cóngú** 'pain, poison, bitterness' (680) (14)		
Bhaca	*úbú-ɬûᵑgu*	Msimang (1989: 315)
Phuthi	*bu-ɬugu*	Donnelly (2007: 1068)
Nhlangwini	*ubu-ɬuⁿgu*	Msimang (1989: 323)
Lala	*bú-ɬûⁿgu*	Msimang (1989: 315)
S. Ndebele	*-ɬuⁿgu*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 43)
N. Ndebele	*bú-ɬúⁿgu*	Ziervogel (1959: 58)
Xhosa	*ubu-ɬuⁿgu*	McLaren (1952: 233)
Zulu	*ubu-ɬuⁿgu*	Doke (2014: 241)
Swati	*bu-ɬuⁿgu*	Ziervogel (1952: 34)
Z. Ndebele	*ubu-ɬuⁿgu*	Pelling (1966: 117)

#_a_

***pácà** 'twin' (2348) (5/6)

[25] Wills (2022) suggests a better reconstruction would be *ico 'eye'.

Bhaca		
Phuthi	*lí-pʰáɬá*	Donnelly (2007: 111)
Nhlangwini		
Lala		
S. Ndebele	*-pʰaɬa*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 86)
N. Ndebele		
Xhosa		
Zulu	*i(li)-pʰhaɬa*	Doke (2014: 376)
Swati	*li-pʰaɬa*	Ziervogel (1952: 30)
Z. Ndebele	*ipʰaɬa*	Pelling (1966: 140)

See also 'tree' above.

*B.2: PB *ⁿʧ > Nguni ⁿɬ, ɬ*

Appendix B.2 contains all Proto Bantu reflexes in my database that participated in the sound change *ⁿʧ > Nguni ⁿɬ, ɬ.

***cóni** 'shame' (664) (9, 10, 11)		
Bhaca		
Phuthi	*i-ɬońí*	Donnelly (2007: 1068)
Nhlangwini		
Lala		
S. Ndebele	*-ɬoni*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 42)
N. Ndebele		
Xhosa	*iiⁿ-ʧɬoni*	McLaren (1952: 187)
Zulu	*-ɬoni*	Doke (2014: 724)
Swati	*-ɬoni*	Whelton (2013: 322)
Z. Ndebele	*iⁿɬoni*	Pelling (1966: 129)

***cóòkò** 'face, forehead' (680) (14/6)		
Bhaca	*íⁿɬóko*	Msimang (1989: 312)
Phuthi	*íɬɔɔkɔ*	Donnelly (2007: 95)
Nhlangwini	*iⁿɬoko*	Msimang (1989: 320)
Lala	*ɬoko*	Zungu (1999: 44)
S. Ndebele		
N. Ndebele	*ⁿɬɔ́gɔ̀*	Ziervogel (1959: 31)
Xhosa	*iⁿ-ʧɬoko*	McLaren (1952: 245)
Zulu		
Swati	*iⁿɬɔkɔ*	Ziervogel (1952: 5)
Z. Ndebele	*iⁿɬoko*	Pelling (1966: 105)

***ⁿce, *ce** 'all' (500, 499)		
Bhaca	*-ⁿke*	Jordan (1953: 23)

Phuthi	*-ọ̀ɬè*	Donnelly (2007: 798)
Nhlangwini		
Lala	*oⁿke*	Zungu (1999: 43)
S. Ndebele		
N. Ndebele	*-ɬe*	Ziervogel (1959: 215)
Xhosa		
Zulu	*-nke*	Doke (2014: 8)
Swati		
Z. Ndebele	*-ⁿke*	Pelling (1966: 80)

*B.3: PB *ⁿd͡ʒ > Nguni ⁿɮ, ɮ*

Appendix B.3 contains all Proto Bantu reflexes in my database that participated in the sound change *ⁿd͡ʒ > Nguni ⁿɮ, ɮ.

***jàdà** 'starvation, hunger' (1555) (9)		
Bhaca	*iⁿɮala*	Jordan (1953: 9)
Phuthi		
Nhlangwini	*iⁿɮala*	Msimang (1989: 318)
Lala		
S. Ndebele	*-ⁿɮala*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 73)
N. Ndebele	*ⁿɮala*	Ziervogel (1959: 20)
Xhosa	*iⁿɮala*	McLaren (1952: 230)
Zulu	*iⁿɮala*	Doke (2014: 165)
Swati		
Z. Ndebele	*iⁿɮala*	Pelling (1966: 21)

***janga** 'vulture' (8676) (9)		
Bhaca	*iɮaⁿga*	Jordan (1953: 8)
Phuthi	*li-/ema-d̪͡ɮ̪ʲàgá*	Donnelly (2007: 1158)
Nhlangwini		
Lala		
S. Ndebele	*-ɮaⁿga*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 20)
N. Ndebele		
Xhosa		
Zulu	*ili-ɮaⁿga*	Doke (2014: 397)
Swati		
Z. Ndebele		

***jèbé** 'ear, lobe' (7752)		
Bhaca	*iⁿɮeɓe*	Msimang (1989: 311)
Phuthi	*e-/ti-d̪͡ɮ̪ʲèbé*	Donnelly (2007: 1060)
Nhlangwini	*iⁿɮebe*	Msimang (1989: 319)

Lala	*iⁿʞɛɓɛ*	Zungu (1999: 43, 61)
S. Ndebele	*-ⁿʞebe*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 73)
N. Ndebele		
Xhosa		
Zulu	*iⁿʞebe*	Doke (2014: 104)
Swati	*-ⁿʞɛɓɛ*	Ziervogel (1952: 13)
Z. Ndebele	*iⁿʞebe*	Pelling (1966: 21)

***jìdà** 'path' (1593) (9/10)		
Bhaca	*iⁿʞela*	Msimang (1989: 311)
Phuthi	*ji-/ti-ʤ̍ʞ̈èlà*	Donnelly (2007: 1145)
Nhlangwini	*iⁿʞela*	Msimang (1989: 319)
Lala	*ʞela*	Zungu (1999: 43, 61)
S. Ndebele	*iⁿʞela*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 275)
N. Ndebele	*ⁿʞélà, ⁿʞílà*	Ziervogel (1959: 31)
Xhosa	*iⁿʞela*	McLaren (1952: 187)
Zulu	*iⁿʞela*	Doke (2014: 245)
Swati		
Z. Ndebele	*iⁿʞela*	Pelling (1966: 21)

***jògù** 'elephant' (1606) (9/10)		
Bhaca	*íⁿʞovu*	Msimang (1989: 310)
Phuthi	*i-/ti-ʤ̍ʞ̈òvù*	Donnelly (2007: 1060)
Nhlangwini	*iⁿʞovu*	Msimang (1989: 318)
Lala	*iⁿʞovu* (*S*)	Zungu (1999: 48)
	iⁿgrovu (*N*)	
S. Ndebele	*-ⁿʞovu*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 73)
N. Ndebele	*ⁿʞovu*	Ziervogel (1959: 60)
Xhosa	*iⁿʞovu*	McLaren (1952: 187)
Zulu	*iⁿʞovu*	Doke (2014: 107)
Swati	*iⁿʞovu*	Ziervogel (1952: 37)
Z. Ndebele	*iⁿʞovu*	Pelling (1966: 21)

***jò** 'hut, house' (9/10)		
Bhaca	*iⁿ-ʞu*	Msimang (1989: 310)
Phuthi	*i-/ti-ʤ̍ʞ̈ù*	Donnelly (2007: 1129)
Nhlangwini	*iⁿʞu*	Msimang (1989: 318)
Lala	*iⁿʞu* (*N*)	Zungu (1999: 49)
	iⁿgru (*S*)	
S. Ndebele	*-ⁿʞu*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 73)
N. Ndebele	*ńʞu*	Ziervogel (1959: 137)
Xhosa	*iⁿʞu*	(McLaren 1952: 21)

Zulu	*iⁿɮu*	Doke (2014: 163)
Swati	*iⁿɮu*	Ziervogel (1952: 5)
Z. Ndebele	*iⁿɮu*	Pelling (1966: 21)

***gànja** 'palm of hand; main' (1329)			
	'hand' (5/6, 7/8)	'strength, power'	
Bhaca	*ísáⁿɮa*	*ámá-ⁿɮa*	Msimang (1989: 313, 313)
Phuthi	*s-/t-àd̪͡ɮ̪à*	*-/em-àd̪͡ɮ̪à*	Donnelly (2007: 1126, 1141)
Nhlangwini	*isaⁿɮa*	*ama-ⁿɮa*	Msimang (1989: 321, 321)
Lala	*saⁿɮa*		Zungu (1999: 44)
S. Ndebele	*isaⁿɮa*	*-ⁿɮa*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 204, 73)
N. Ndebele	*sí-aⁿɮa, sáⁿɮa*		Ziervogel (1959: 56)
Xhosa		*ama-ⁿɮa*	McLaren (1952: 9)
Zulu	*isaⁿɮa*	*ama-ⁿɮa*	Doke (2014: 153, 343)
Swati			
Z. Ndebele	*isaⁿɮa*	*ama-ⁿɮa*	Pelling (1966: 105, 50)

B.4: Alveolar lateral obstruents with no palatal in PB

Appendix B.4 contains the examples of Table (24), of which there is no palatal in the Proto Bantu reconstruction but we do find lateral obstruents in the reflexes.

***di** 'eat' (944)		
Bhaca	*úku-ɮá*	Msimang (1989: 316)
Phuthi	*ku-d̪͡ɮ̪á*	Donnelly (2007: 1121)
Nhlangwini	*uku-ɮa*	Msimang (1989: 324)
Lala	*-ɮa*	Zungu (1999: 44)
S. Ndebele	*-ɮa*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 20)
N. Ndebele	*-ɮa*	Ziervogel (1959: 20)
Xhosa	*uku-ɮa*	McLaren (1952: 187, 230)
Zulu	*-ɮa*	Doke (2014: 105)
Swati	*ku-ɮa*	Ziervogel (1952: 26)
Z. Ndebele	*-ɮa*	Pelling (1966: 98)

***kombe** 'shoulder blade' (1922) (5/6, 7/8)		
Bhaca		
Phuthi	*li-/ema-kgéd̪͡ɮ̪á*	Donnelly (2007: 1148)
Nhlangwini		
Lala	*li-ɬoᵐbe* (*N*)	Zungu (1999: 51)
S. Ndebele	*-ɬoᵐbe*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 42)
N. Ndebele		
Xhosa		

Zulu	*ili-ɬo^{m}be*	Doke (2014: 318)
Swati	*li-ɬo^{m}be*	Ziervogel (1952: 30)
Z. Ndebele	*i-ɬo^{m}be*	Pelling (1966: 129)

Appendix C: widespread alveolar lateral obstruents of non Bantu reflexes

Appendix C contains the examples of Table (25) and some more words that are widespread in Nguni languages but do not appear to (currently) have a Proto Bantu reconstruction.

/ɬ/

'stab'		
Bhaca		
Phuthi	*kú-ɬààb-à*	Donnelly (2007: 167)
Nhlangwini		
Lala		
S. Ndebele	*-ɬaba*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 38)
N. Ndebele		
Xhosa	*uku-ɬaba*	McLaren (1952: 233)
Zulu	*ɬaba*	Doke (2014: 157)
Swati		
Z. Ndebele	*-ɬaba*	Pelling (1966: 120)

'sit'		
Bhaca	*úkú-ɬala*	Msimang (1989: 315)
Phuthi	*k'ù-ɬààlà*	Donnelly (2007: 70)
Nhlangwini	*uku-ɬala*	Msimang (1989: 323)
Lala	*-ɬala*	Zungu (1999: 45)
S. Ndebele	*-ɬala*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 39)
N. Ndebele	*-ɬálà*	Ziervogel (1959: 20)
Xhosa	*ɬala*	McLaren (1952: 8)
Zulu	*-ɬala*	Doke (2014: 322)
Swati		
Z. Ndebele	*-ɬala*	Pelling (1966: 130)

'beautiful'		
Bhaca	*ɬé*	Msimang (1989: 316)
Phuthi	*-ɬé*	Donnelly (2007: 110)
Nhlangwini	*ɬe*	Msimang (1989: 324)
Lala	*ɬe*	Zungu (1999: 44)
S. Ndebele	*-ɬe*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 41)
N. Ndebele	*-(n)ɬe*	Ziervogel (1959: 70)
Xhosa	*ɬe*	McLaren (1952: 233)
Zulu	*-ɬe*	Doke (2014: 26)

Swati	*-ɬe*	Ziervogel (1952: 21)
Z. Ndebele	*-ɬe*	Pelling (1966: 33)

‘shoe’		
Bhaca	*ísí-ɬaŋgu*	Msimang (1989: 313)
Phuthi		
Nhlangwini		
Lala	*si-ɬangu* (*S*)	Zungu (1999: 50)
S. Ndebele		
N. Ndebele		
Xhosa	*isi-ɬaⁿgu*	McLaren (1952: 233)
Zulu	*isi-ɬaⁿgu*	Doke (2014: 317)
Swati		
Z. Ndebele		

‘white’		
Bhaca	*mɬópʰe*	Msimang (1989: 316)
Phuthi		
Nhlangwini	*m-ɬopʰe*	Msimang (1989: 324)
Lala		
S. Ndebele	*-mɬopʰe*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 307)
N. Ndebele		
Xhosa		
Zulu	*-mɬopʰe*	Doke (2014: 405)
Swati	*m-ɬopʰe*	Ziervogel (1952: 36)
Z. Ndebele	*-mɬopʰe*	Pelling (1966: 143)

ⁿɬ

‘heart’		
Bhaca	*íⁿɬítíyo*	Msimang (1989: 314)
Phuthi	*iɬítíiyɔ*	Donnelly (2007: 87)
Nhlangwini	*itiⁿɬitiyo*	Msimang (1989: 322)
Lala	*ɬidiyo*	Zungu (1999: 44)
S. Ndebele	*-ɬiziyo*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 41)
N. Ndebele	*ⁿɬitiwo*	Ziervogel (1959: 57)
Xhosa	*iⁿɬɬiziyo*	McLaren (1952: 244)
Zulu	*iⁿɬiziyo*	Doke (2014: 157)
Swati	*iⁿɬitiyo*	Ziervogel (1952: 32)
Z. Ndebele	*iⁿɬiziyo*	Pelling (1966: 33)

ɮʒ

‘play’

Bhaca	*ɮala*	Jordan (1953: 11)
Phuthi	*ku-d̪ɮ́ála*	Donnelly (2007: 69)
Nhlangwini		
Lala		
S. Ndebele	*-ɮala*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 20)
N. Ndebele		
Xhosa	*uku-ɮala*	McLaren (1952: 8)
Zulu	*-ɮala*	Doke (2014: 256)
Swati		
Z. Ndebele	*-ɮala*	Pelling (1966: 21)

'bag'		
Bhaca		
Phuthi	*mu-/mi-god̪ɮa*	Donnelly (2007: 1111)
Nhlangwini		
Lala		
S. Ndebele	*um-goɮa*	Iziko Lesihlathululi-Mezwi Sesindebele (2006: 142)
N. Ndebele	*mú-goɮa*	Ziervogel (1959: 164)
Xhosa		
Zulu	*um-goɮa*	Doke (2014: 22)
Swati	*si-ʧoɮa*	Ziervogel (1952: 31)
Z. Ndebele	*um-goɮa*	Pelling (1966: 28)

Appendix D: A marginal non Bantu reflex: /k͡ʟ̥ˤ/

Appendix D contains the examples of Table (26) with the velar lateral ejective affricate.

	/k͡ʟ̥ˤ/	
Nhlangwini	*-k͡ʟ̥ˤ'wɛba* 'scratch'	Msimang (1989: 115)
Lala (N.)	*-k͡ʟ̥ˤ'ama* 'mark site'	Zungu (1999: 62)
Zulu	*ⁿk͡ʟ̥ˤ'iⁿk͡ʟ̥ˤ'iza* 'breathe with difficulty'	Doke (1947: 18)
	k͡ʟ̥ˤ'weba ~ k͡xweba 'scratch'	Doke (1947: 18)
Swati	*kuk͡ʟ̥ˤ'ɛt'a* 'to milk into the mouth'	Msimang (1989: 313)
Z. Ndebele	*k͡ʟ̥ˤeza* 'drink straight from the cow'	Pelling (1966: 42)

Appendix E: Sotho Tswana and Tsonga lateral obstruents

Appendix E.1 contains the Sotho Tswana reflexes mentioned in Table (28) and appendix E.2 contains the Tsonga reflexes mentioned in Table (30).

E.1 Sotho Tswana languages

	***cànj** 'vomit' (458)	
Kutswe (S302)	*ʧʰats'a*	Ziervogel (1954: 120)

Pai (S303)		
Pulana (S304)	*-k͡ǂ'ats'a*	Ziervogel (1954: 120)
Tswana (S31)	*ɬʰátsá*	Creissels (n.d.: 289)
Northern Sotho (S32)	*ɬatsa*	Kriel (1976: 188)
Southern Sotho (S33)	*ɬatsa*	Mabille and Dieterlen (1961: 145)

	***cáànò** 'five' (2768)	
Kutswe (S302)		
Pai (S303)	*ɬani*	Taljaard (1997: 121)
Pulana (S304)		
Tswana (S31)	*ɬʰánó*	Creissels (n.d.: 285)
Northern Sotho (S32)	*ɬano*	Kriel (1976: 71)
Southern Sotho (S33)	*-ɬano*	Mabille and Dieterlen (1961: 142)

	***cèk** 'laugh' (522)	
Kutswe (S302)		
Pai (S303)	*ɬeɦisa*	Ziervogel (1954: 121)
Pulana (S304)		
Tswana (S31)	*tsʰɛ̀χà*	Creissels (n.d.: 313)
Northern Sotho (S32)	*sega*	Kriel (1976: 101)
Southern Sotho (S33)		

	***jàdà** 'starvation, hunger' (1555) (9)	
Kutswe (S302)	*k͡ǂ'ala*	Ziervogel (1954: 136)
Pai (S303)	*k͡ǂ'ala*	Ziervogel (1954: 21)
Pulana (S304)	*k͡ǂ'ala*	Ziervogel (1954: 136)
Tswana (S31)	*ʇàlà*	Creissels (n.d.: 276)
Northern Sotho (S32)	*ʇala*	Kriel (1976: 87)
Southern Sotho (S33)	*-ʇala*	Mabille and Dieterlen (1961: 544)

	***jògù** 'elephant' (1607) (9/10)	
Kutswe (S302)	*k͡ǂ'óu*	Ziervogel (1954: 120)
Pai (S303)		
Pulana (S304)	*k͡ǂ'óu*	Ziervogel (1954: 120)
Tswana (S31)	*ʇòù*	Creissels (n.d.: 301)
Northern Sotho (S32)	*ʇou*	Kriel (1976: 61)
Southern Sotho (S33)	*ʇöu*	Mabille and Dieterlen (1961: 555)

	***jò** 'house, hut' (1610) (9/10)	
Kutswe (S302)	*ŋk͡ǂ'ô*	Ziervogel (1954: 120)
Pai (S303)	*ŋk͡ǂ'ô*	Ziervogel (1954: 120)
Pulana (S304)	*ŋk͡ǂ'ô*	Taljaard (1997: 43)

Tswana (S31)	*nʈʈo*	Creissels (n.d.: 183)
Northern Sotho (S32)	*nʈʈo*	Kriel (1976: 87)
Southern Sotho (S33)	*nʈʈo*	Mabille and Dieterlen (1961: 551)

E.2 Tsonga languages

	***cóòkò** 'face' (14/6)	
Tswa (S51)	*-ɬoko*	Persson (1932: 30)
Tsonga/Shangaan (S53)		
Ronga (S54)	*ⁿɬoko*	Quintão (1951: 109)

	***cáànò** 'five' (2768)	
Tswa (S51)	*ⁿk͡ɬ̠anu*	Persson (1932: 19)
Tsonga/Shangaan (S53)	*ⁿʈʈʰanu*	Baumbach (1987: 187)
Ronga (S54)	*ⁿʈʈʰanu*	Quintão (1951: 63)

	***cèk** 'laugh' (522)	
Tswa (S51)	*ɬeka*	Persson (1932: 201)
Tsonga/Shangaan (S53)	*-ɬeka*	Baumbach (1987: 10)
Ronga (S54)	*-ɬeka*	Quintão (1951: 91)

	***jàdà** 'starvation, hunger' (1555) (9)	
Tswa (S51)	*ⁿd͡ʒala*	Persson (1932: 204)
Tsonga/Shangaan (S53)		
Ronga (S54)	*ⁿd͡ʒala*	Quintão (1951: 57)

	***jògù** 'elephant' (1607) (9/10)	
Tswa (S51)	*ⁿd͡ʒovu*	Persson (1932: 189)
Tsonga/Shangaan (S53)	*ⁿd͡ʒopfu/tiⁿd͡ʒopfu*	Baumbach (1987: 82)
Ronga (S54)	*ⁿd͡ʒopfu*	Quintão (1951: 57)

	***jò** 'house, hut' (1610) (9/10)	
Tswa (S51)	*-ⁿd͡ʒu*	Persson (1932: 48)
Tsonga/Shangaan (S53)	*yiⁿd͡ʒu/tiyiⁿd͡ʒu*	Baumbach (1987: 84)
Ronga (S54)	*yiⁿd͡ʒu*	Quintão (1951: 94)