Xri: A study of contact, and phonetic and phonological change

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COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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Abstract

Xri is a Khoekhoe language spoken among the Griekwa people of the Northern Cape, South Africa, and was thought until recently to be extinct. Fieldwork conducted in 2018 and 2019 documented Xri spoken by 27 semi-speakers and rememberers, the last speakers of this dying language. The absence of satisfactory studies of the phonetic and phonological effects of language obsolescence and death in African languages, particularly the endangered Indigenous Click Languages, necessitates further investigation. I describe the phonetic and phonological effects on Xri of language contact with Afrikaans over 170 years and critique previous studies of Xri. Innovative data collection techniques used to obtain the data are detailed. Xri phonemes not found in Afrikaans are more likely to undergo change, and the production of key classes of phonemes—such as nasal vowels—are characteristic of informants with high spoken Xri proficiency. The distinctions between click types are unstable in the speech of most informants but there is minimal loss of click realisation, and click accompaniments are resistant to change. A metric developed for measuring speaker competency is also demonstrated. Informants' spoken Xri competency is measured based on their syntactic, morphological, phonetic, and tonological performance (50%), as well as overall lexicon size (50%). Informants are divided into three group case studies by competency score, which are shown to correspond to the degree of change in their realisation of Xri phonetic features. Click sounds have persisted in the speech of even informants with low Xri proficiency, and the findings support the hypothesised salience of clicks as a phonological class. The accompaniments of click phonemes, however, displayed greater resilience to change than the click phones themselves. The contextual biographical data obtained support the linguistic assessment of the estimated date of Xri moribundity by 1960. The metric developed to measure speaker competency has—with further testing—the potential to contribute to future research in critically endangered language research. The data collection methods used for this study are also recommended for future research in situations of language death.

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1. Introduction

The issue of language endangerment is by now familiar to anyone working in the field of linguistics, and to many beyond. What was viewed as a crisis 40 years ago is now accepted as a 'fact of life', and publications on language endangerment all need to motivate why the loss of languages remains critical (see Crystal 2000; Hagège 2009; Campbell and Belew 2018). The most recent edition of the *Catalogue of Endangered Languages (ELCat)* lists 45,6% of living languages as endangered—that is 3 138 of the 6 879 living languages listed in the *Ethnologue* (Simons and Fennig 2017; Campbell and Belew 2018:3).[1] Of the 6 728 languages listed as living in *Glottolog* (Hammarström et al. 2020), only 42% or 2 838 are categorised as not endangered. A total of 938 *documented* languages are extinct, and the real figure is no doubt far greater. If these alarming figures are not enough to inspire concern and action in the reader, then the impact of the loss of cultures, knowledge and wisdom should distress anyone who sees the building and preservation of human knowledge as critical, and indeed a central part of what being human is (see Evans 2009).[2] Because of the urgency of the work that defines any study of language obsolescence, people documenting highly endangered languages in the field need to "assume you'll be the last linguist ever to get there" (Dorian 1989:7). Particular attention *must* be paid to the socio-cultural and socio-political conditions of these languages, as languages do not die in a uniform, predictable way: "it is not usually possible to write a single cause on the death certificate for a language" (Crystal 2000:88).

[1] The most recent edition of *Ethnologue* (Eberhard, Simons and Fennig 2021) lists only 40,5% of living languages as endangered, but this is based on incomplete data.

[2] Some have seen the reduction in the number of languages as a positive development and return to a single 'universal language' (see Eco 1995; Borst 1957–59).

The initial impetus leading to endangerment and death of languages is, in abstract terms, simple: languages become endangered when there is contact between two or more languages and, for various reasons, speakers shift from one language to another. However, the contexts in which languages become endangered and die are far more complex and incredibly varied. That being said, the central cause of language loss is pressure (political, cultural, territorial, etc.) from one linguistic group on another, and by far the greater causes of these pressures are imperialism and colonialism—in their broad definitions—over the past several centuries, as well as globalisation (essentially a result of the former) (see e.g., Phillipson 1992, 1996).[3][4]

The so-called "Khoisan" languages of southern Africa (see 2.2.1 Nomenclature below) have been particularly hard-hit by the social, political, economic and cultural changes that have occurred in the area over the past 300 years (Traill 1996:161).[5] An unknown number of languages—estimated to be between 20 and 30—and dialects became extinct before being documented (König 2008; Brenzinger 2014:91). Of the 23 documented languages grouped together under the umbrella of "Khoisan" and catalogued by Güldemann (2014a:7), roughly half are extinct (eight) or moribund (three) and are not being transmitted to the next generation.[6] Brenzinger (2013a) records twelve "modern" languages that are still in use. All the surviving languages are endangered to some degree (Brenzinger 2007). Of the dozen Khoekhoe varieties likely spoken in the southern and western Cape in the 17th century

[3] Of the c. 407 languages families in the world, 96 (24%) are extinct, and two thirds of these have become extinct in the past 60 years (Campbell and Belew 2018:3).

[4] In southern Africa the social and linguistic pressures on endangered languages are from language groups originating both in and out of Africa (e.g., Tswana in Botswana, Afrikaans in South Africa and Namibia).

[5] For the historiographic perspective, see e.g., Elphick (1979), Legassick (1969, 1979), Penn (2005).

[6] The number is not comprehensive, and Güldemann subsumes !Ora and Xri under one "!Ora-Xiri" and includes Cape Khoekhoe—a continuum or cluster of languages and/or dialects—as a single language.

(Traill 2002:29), only one—Nama—survives as a healthy language, while two sister languages—Xri and !Ora—are critically endangered and will be extinct within a decade at most (Brenzinger 2007:185–186; K. Jones 2019; Mössmer 2019).

Xri [xii][7] is a Khoekhoe language of the Khoe family, formerly classified as a part of the "Khoisan phylum" (Greenberg 1963), spoken in the south-western Cape until the early 18th century, before its speakers gradually moved to the Orange and Vaal rivers in the interior of South Africa by the early 19th century. The language went into decline from (at least) this time owing to political and social pressures and contact with other languages.[8] It is likely that Xri was, to a large degree, moribund by the early 20th century and was therefore classified as extinct by Voegelin and Voegelin (1977a:201). However, in a few places the language persisted, with very limited inter-generational transmission likely occurring into the 1950s and 1960s.[9] Limited Xri data have been collected historically (Meinhof 1930; Beach 1938; Killian 2009; Haacke and Snyman 2019) and much of these data have significant problems.

This study documents the speech of the last three 'speakers' of Xri, as well as that of 24 partial speakers and 'rememberers', in Griqualand West.[10] This is the first time that the natural speech of Xri informants has been recorded without the selection of 'ideal forms' (e.g., Haacke and Snyman 2019), thereby capturing the effects of the processes of language death. The phonetic and phonological aspects of 'language decay' in Xri are examined in

[7] ISO 639-3 three-letter code.

[8] See Mössmer (2019) for a detailed discussion of the history of Xri.

[9] Based on the distribution and ages of informants with the best Xri knowledge and the data of Jan Snyman (Haacke and Snyman 2019).

[10] The complexities of last speaker typology are discussed later on, especially with relation to where the researcher draws the line between a 'speaker', 'partial speaker', 'semi-speaker', etc.

this study and represent the first attempt at describing the process of gradual 'phonetic decay' in any of the so-called "Khoisan", or Indigenous Click Languages (Shah and Brenzinger 2018:203) of southern Africa.

The aims of this study are to explain what phonetic (and phonological) changes Xri has undergone, and why, and to answer a number of questions that these changes raise. What does this study tell us about the classification of Xri within the Khoekhoe language cluster in previous studies? Are the sound changes observed in the data a result of language death? If so, which sounds are most affected by 'decay'? What do the changes and instabilities in click phonemes tell us about clicks as a phonetic/phonological class? What can this study contribute to the broader study of language death?

The study also examines the differences between the results obtained in previous studies with the present data, and how these differences help us evaluate contributions of rememberers when documenting a language undergoing severe attrition and death. It highlights the methodological flaws in previous studies and demonstrates that a dynamic approach to data collection is more effective, in the sense that the interviewer adapts the interview strategy to the competency, milieux and life experiences of the informant. I present the strategies used to collect data in challenging conditions and my process of assessing informants' Xri competence in the field. Lastly, the perspective taken in this study and its treatment of rememberers as informants contribute to the idea that individuals who have not acquired a language perfectly can still be valid informants in the scientific investigation of a language, and that notions of 'purity' hinder valuable work that could still be done.

2 Literature review contains a discussion of language death and endangerment, the classification of Xri and why the term "Khoisan" is scientifically inaccurate, and a sketch of the socio-political history of Xri speakers. The chapter reviews and critiques the known literature and data on Xri and examines previous work on phonetic change from the perspective of language death.

The process of locating informants is explained in 3 Methods, beginning with historical records and a preliminary field trip, and then describing the following three field trips in 2018 and 2019 and the challenges they presented, as well as the adaptation of interview methods to the particular social and linguistic situation of Xri.

The informants and their Xri competency are discussed in 4 Assessing informant competency, detailing a metric developed to score informants' Xri competency. Informants are grouped into three case studies—based on these competency scores and the Xri input they received. The characteristics of each of the groups is discussed. Some suggestions are offered as to where and how small groups of Xri speakers survived the extensive language loss in the wider Griekwa[11] communities.

The phonetic aspects of informants' competency are then examined in 5 Analysis of phonetic features. Analyses of phonemes and features that show variation and change are followed by a discussion of the significance of these changes, particularly in terms of identifying informants' competency levels, as discussed in the previous chapter. The wider phonological and theoretical implications of the results are also discussed.

[11] The group identity (in the 19th and 20th centuries) of communities in which Xri speakers predominantly lived. Also spelled 'Griqua'.

In the conclusion, this study suggests alternative approaches to data collection in situations of advanced language attrition in informants, as well as the scientific determination of the 'reliability' (i.e., competency levels) of such informants. Using the biographical data obtained in the interviews, the study attempts to determine where the last Xri speech communities were located and when inter-generational transmission of Xri as a mother tongue came to an end.

2. Literature review

In this study, I examine the phonetic and phonological changes in Xri brought about by the processes of language contact, shift and death.

First, I will discuss language death and how dying languages contribute to our understanding of language, including a brief description of Xri's level of endangerment. Next, I will describe the place of Xri in the Khoe language family, and its relationship to the other members of the Khoekhoe group of languages. The misconstruction of "Khoisan" as a (genetic) linguistic unit is clarified by examining its origins and explaining the known genetic relationships of the languages that have been grouped under the "Khoisan" umbrella term. Thereafter, I will review all the known literature on Xri. I will start with the reasons for language shift in the form of a sketch of the socio-political history of Xri speakers and their contact with Cape Dutch and Afrikaans. This will include the influences that speakers of Xri and other Khoekhoe languages had on the formation of Cape Dutch and Afrikaans, in particular Orange River Afrikaans. There is a brief discussion on the presumed death(s) of Xri, as they have been (repeatedly) reported over the past century, after only the most limited investigations in the field.

I will then review the literature on the Xri language itself. Limited available data on Xri—comprising three works, only two of them published—are compared and the inconsistencies within and between them contextualised and critiqued. Given these inconsistences, I will also review how these studies have approached the study of Xri: the identification of speakers, the selection of informants and how previous studies have handled the majority of

individuals with only partial knowledge of the language. As the only previous study that examined language attrition in Xri (and !Ora) has significant limitations, the discussion of phonetic and phonological change as a result of language obsolescence and death is discussed first in more general terms, before drawing parallels with other click-using languages.

2.1. Language death

The precise linguistic mechanisms of language death are not yet well understood, and the complex dynamics of linguistic interaction during language death have only recently begun to receive attention (e.g., Dressler 2018; Jones 2018). The study of language obsolescence and death is a developing field of linguistic theory. Sasse (1992a) identifies an interaction between three domains of social structure—political and economic, sociolinguistic patterns, and structural consequences—as the core factors in the analysis of language death. Sasse's (1992a) first formal framework for the study of language death describes the causes of attrition, obsolescence and death as a result of a complex network of social pressures and adaptations, which are never entirely the same for different languages.[12] The exact nature of these interactions has proved difficult to define because of the varying nature of factors and situations for each language undergoing obsolescence and death. Investigations into whether "the social conditions, processes, and activities that affect a language's form are the same as

[12] Batibo (2005:89–92) presents his "marked bilingualism model" of language shift—and consequent language death—as if in opposition to Sasse (1992a), although his model states that speakers need to be competent in an L2 before shifting to it from their L1, and that this happens in stages beginning with bilingualism (i.e., speakers need to be competent in another language before they can shift to it). Thus, Batibo's 'model' does not appear to add much to the understanding of the phenomenon but is a description of a process of language shift. Batibo further assumes that bilingualism is a necessary step in language shift, which is by no means the case, and tends to occur only in instances of the gradual death of a language (see Campbell and Muntzel 1989:185).

the social processes that encourage or discourage that language's continued use" have shown that the focus of investigating these processes should be the "human actors", rather than "personified languages" (Woolard 1992:355). Nevertheless, some (e.g., Aitchison 2001) have continued to describe language death in terms of interactions between languages (see below).

The theory of language death has been expanded and refined since Sasse's (1992a) first formal framework. Aitchison (2001) views the process less as one made up of complex individual choices by speakers than as one acted out by languages committing 'murder' or 'suicide', the products of broad social pressures.[13] The socio-political setting and linguistic structural changes of decaying languages have also been proposed as the "two aspects of obsolescence" by Jones and Singh (2005:81). More recently, a multicausal analysis, taking in dependent, independent and interdependent variables has been advocated, in combination with diachronic investigation of the dying language (Dressler 2018). This approach is essential in the descriptive study of language decay and death to avoid reaching false conclusions, particularly of monocausality (Dressler 2018:121), and has proved productive (e.g., Dal Negro 2004; M. Jones 2018). This newer approach, then, favours a multidisciplinary analysis approach from structural, diachronic and synchronic, and socio-political perspectives.

[13] Aitchison (2001) proposes two major types of death for languages: "language suicide", when a creole language is slowly supplanted by its base language (also applicable to other instances where the languages are "very similar"); and "language murder", when a dominant language overpowers (or "slaughters") a less prestigious one. There is certainly room for debate about the similarity that a creole has to its base language (see e.g., McWhorter 2018).

Language contact is a necessary prerequisite for language death[14] and Sasse (1992b) differentiates between 'normal' contact situations with contact-induced language change, and "language decay" which occurs in the final stage of language death, where contact is no longer the driving force. Sasse (1992b) further stresses the importance of thinking of language death and its description not only in terms of pressures from language contact but offers empirical evidence of a distinction between loss driven by language-internal ("language decay") and language-external ("contact-induced change") factors and causes. M. Jones has argued that linguistic change occurring during language death is—in broad terms—the same as linguistic change occurring elsewhere in 'safe' or 'healthy' languages, except that it differs dramatically in three respects: "the *rate*, *context*, and *amount* of change" (M. Jones 1998:1, her emphasis). Periods of change in languages are often initiated by external (socio-cultural and socio-political) factors, and in endangered languages the major external influences acting on them make them more likely to be changing more—and more continuously—than other, 'safe' languages are (Bradley and Bradley 2019:146). This means that internal change and divergence in an endangered language can be relatively rapid, resulting in substantial differences in the language between generations, within individuals' lifetimes, and between communities that have reduced contact with one another (Bradley and Bradley 2019:146).

The complex causes of a language's death are, in Aitchison's view "not because a community has forgotten how to speak, but because another language has gradually ousted the old one as the dominant language, for political and social reasons" (Aitchison

[14] With the possible exception of instances where languages die abruptly as a result of the destruction of all its speakers: accidentally through disease or conflict, or intentionally through genocide. Campbell and Muntzel (1989:182–183) categorise such instances as either "Sudden death" when the event is extremely abrupt, or "Radical death" when all speakers do not necessarily die but cease speaking the language in "self-defence".

2001:235). However, the 'ousting' of one language in favour of another is not perpetrated by a language—rather it is the choices of individual speakers that cause this change to come about. M. Jones (1996:45) cautions against focusing only on a language's internal linguistic processes "to such an extent that the speakers, who are […] the instigators of language change, become relegated to a secondary role", and that studies must necessarily include the speakers and their actions and choices. Previous studies have observed that endangered languages persist in the domains of the home and religion (e.g., Gal 1979:126; Dorian 1981:90; Romaine 1989:375), although Florey (1993:304) found that indigenous religion and sacred knowledge showed higher rates of attrition than other domains in Alune.[15,16] The unpredictability of situations and each community's linguistic responses to them requires careful gathering of systematic data in communities shifting from one language to another—with special attention given to the social pressures leading to this change—as noted by Swadesh (1948) over 70 years ago.

Mous (2003) and Brenzinger (2007) give overviews of language endangerment in Africa and southern Africa, respectively. Brenzinger (2007) includes a description of language death and the dire situation faced by the majority of the Indigenous Click Languages.[17] The importance of the effects of poverty as a potential catalyst for language shift cannot be ignored (see Brenzinger 2009). The most recent overview of African languages and linguistics (Güldemann 2018b) contains no section on language attrition or language death in its near-1 000 pages. Indeed, it is even suggested that language death in Africa is not a "dramatic issue", due to the few *known* cases documented in Africa (Wolff 2018:902).

[15] An Austronesian language. ISO 639-3 code [alp].

[16] Missionary Calvinist Protestantism in the 20th century reduced Alune language vitality in this important domain (see Floret 1993).

[17] The publication in 2007 precedes our joint discovery of one speaker and one semi-speaker of Xri in 2018.

Given the low level of reliable language documentation on the continent, surveyed in the same volume by Hammarström (2018:6), this is an unsubstantiated, and even irresponsible, claim.

2.1.1. Level of endangerment

At present, Xri can be formally described as "critically endangered" in terms of the *Language Endangerment Index* developed by the *Catalogue of Endangered Languages* (ELCat) (2021). This is calculated based on four factors—intergenerational transmission, absolute number of speakers, speaker number trends, domains of use—using the Language Endangerment Scale (LES) (see Table 2.1) developed by ELCat (2021).[18] The scale enables easy assessment of a language's vitality in broad terms, and a formula is used to calculate the level of endangerment, taking into account the level of certainty (i.e., whether some data are available or not). The formula is as follows, after Lee and Van Way (2018:71):

> Level of endangerment = {[(intergenerational transmission score × 2) + absolute number of speaker score + speaker number trends score + domains of use score]/total possible score based on number of factors used} × 100

[18] See also Lee and Van Way (2018) for a detailed discussion of the scale, its advantages and limitations. There are a number of other quantitative measures that have been developed for measuring language vitality, e.g., the nine-factor system for assessing language vitality developed by the UNESCO Ad Hoc Expert Group on Endangered Languages (2003), which is more sophisticated and also caters for assessing endangerment in languages that may seem vital at first glance; this scale includes all the factors in the ELCat scale as well as five additional factors, such as literacy materials and government policies. As the endangerment of Xri is undisputed and apparent, there is little need for a more detailed scale.

Table 2.1. The Language Endangerment Scale developed by ELCat (2021). The language is assigned a score for each of the four factors, determined by the criterion that best describes the language's status in that factor. See also Lee and Van Way (2018) for a discussion.

Level of Endangerment	***Critically Endangered***	***Severely Endangered***	***Endangered***	***Threatened***	***Vulnerable***	***Safe***
Score	**5**	**4**	**3**	**2**	**1**	**0**
A. Intergenerational Transmission	There are only a few elderly speakers.	Many of the grandparent generation speak the language, but younger people generally do not.	Some adults in the community are speakers, but the language is not spoken by children.	Most adults in the community are speakers, but children generally are not.	Most adults and some children are speakers.	All members of the community, including children, speak the language.
B. Absolute Number of Speakers	1–9 speakers	10–99 speakers	100–999 speakers	1 000–9 999 speakers	10 000–99 999 speakers	> 100 000 speakers
C. Speaker Number Trends	A small percentage of the community speaks the language, and speaker numbers are decreasing very rapidly.	Less than half of the community speaks the language, and speaker numbers are decreasing at an accelerated pace.	Only about half of community members speak the language. Speaker numbers are decreasing steadily, but not at an accelerated pace.	A majority of community members speak the language. Speaker numbers are gradually decreasing.	Most members of the community or ethnic group speak the language. Speaker numbers may be decreasing, but very slowly.	Almost all community members or members of the ethnic group speak the language, and speaker numbers are stable or increasing.
D. Domains of use of the language	Used only in a few very specific domains, such as in ceremonies, songs, prayer, proverbs, or certain limited domestic activities.	Used mainly just in the home and/or with family, and may not be the primary language even in these domains for many community members.	Used mainly just in the home and/or with family, but remains the primary language of these domains for many community members.	Used in some non-official domains along with other languages, and remains the primary language used in the home for many community members.	Used in most domains, including official ones such as government, mass media, education, etc.	Used in most domains, including official ones such as government, mass media, education, etc.

On the LES, Xri scores a "5" in each of the four factors in Table 2.1:

– A (there is no Intergenerational Transmission—there are only a few elderly speakers),
– B (Absolute Number of Speakers = three),
– C (the Speaker Number Trend is rapidly downwards, as speakers die),
– D (the Domains of Use of the language).

Thus, the level of endangerment for Xri, according to the formula above, is calculated at 100%,[19] the highest possible score in the "critically endangered" category.

2.2. Classification

The Xri variety is classified as a member of the Khoekhoe language cluster, historically the largest and most widespread language grouping in the Khoe language family (see Figure 2.3). The Khoekhoe cluster consists of an unknown number of extinct varieties collectively known as 'Cape Khoekhoe' (*cf.* Haacke, Eiseb and Namaseb 1997), two moribund varieties—Xri and !Ora,[20] each with a handful of speakers—and a number of northern varieties—collectively referred to as Khoekhoegowab—including Nama-Damara and Hai‖om-ǂAakhoe.[21] Based on historical accounts and limited Cape Khoekhoe lexical data, it has been claimed that the Khoekhoe languages once formed a dialect continuum, or even "several close-knit dialect continua" (Rapold 2014:158), stretching from the eastern Cape, around the Cape of Good Hope, and north through Namibia to Angola (Haacke 2002:1,12; Brenzinger 2007:185).

[19] Xri level of endangerment = {[(5 × 2) + 5 + 5 + 5]/25} × 100. According to the Language Endangerment Index (see Lee and Van Way 2018:71), 100–81% = Critically Endangered, and the level of certainty is 100%, as all four factors have been included (A = 10, B = 5, C = 5, D = 5, which adds up to the 25 points possible).

[20] ISO 639-3 code [kqz]. Also known as 'Kora(na)'.

[21] ISO 639-3 code [naq]. In this work, 'Khoekhoegowab' will be used in this sense after Haacke (2008), and 'the Khoekhoegowab cluster' is used synonymously. Khoekhoegowab has, more recently, also been employed as a blanket term for the entire Khoekhoe cluster, due to the extinction or moribundity of the other Khoekhoe varieties.

There is some difficulty in determining the relation of Xri to its sister languages—Khoekhoegowab, !Ora and the extinct Cape Khoekhoe varieties—owing to the limited and generally poor-quality data historically available for Cape Khoekhoe and Xri. For Cape Khoekhoe, the data are typically from travellers' and missionaries' accounts of the Cape in the 17th and 18th centuries; these data were recorded by laymen with no linguistic training, and before the development of orthographies to adequately represent click consonants (see Kolb 1727:430–435; Fauvelle-Aymar 2005; den Besten 2010a). The orthographies employed in such data typically represent clicks using either one or two characters (such as *k*, *q*, *tk*, *tq*) which do not accurately capture the realisations, although some attempts have been made to interpret the data and reconcile them with other more detailed 'modern' Khoekhoe data (den Besten 2010b; Haacke 2016).[22] Tentative classifications have been undertaken, based on the data in Meinhof (1930), although with little exactitude (e.g., Winter 1981).

Although more recent data have been collected by linguists (such as Jan Snyman in the 1970s, Don Killian in 2008), the data are inconsistent with those of Meinhof (1930) and Beach (1938). The data collected and analysed in Killian (2009) present some problems, which will be discussed below in 2.4 Studies of Xri. Snyman's data remained unanalysed and unpublished until recently (Haacke and Snyman 2019), presenting a lexical comparison of a corpus of 1 130 Xri items to Khoekhoegowab and determining a 69% rate of cognation.

[22] A comprehensive treatment of the representation of clicks is in publication (Brenzinger and Shah forthc.). See Maddieson (2018:554–561) for an up-to-date overview of click phonetics.

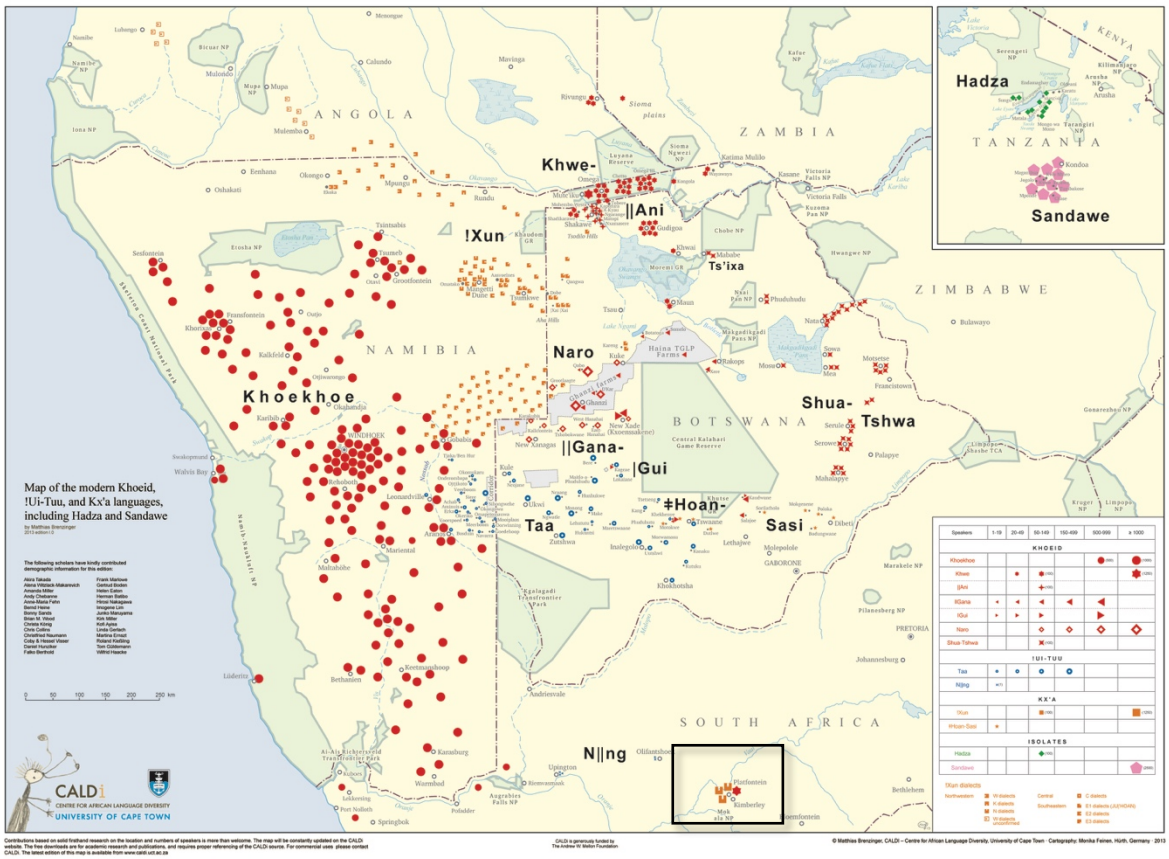

Figure 2.1. The distribution of speakers of Indigenous Click Languages in southern Africa (Brenzinger 2013b). The distribution of Xri speakers is highlighted by the rectangle on the lower edge of the map.

Figure 2.2. An enlargement of the map in Figure 2.1, showing the section most relevant to the present study (Brenzinger 2013b). This map predates the (re)discovery of Xri.

2.2.1. Nomenclature

The term "Khoisan"—coined by Leonhard Schultze-Jena (1928) for his racially motivated zoological and physical anthropological research[23]—has served as a term of convenience for the grouping of the non-Bantu-speaking peoples and languages of pre-colonial southern Africa (see Figure 2.1, Figure 2.2). Popularised first by Isaac Schapera (1930) and later Joseph Greenberg's (1950, 1963) influential language classifications, "Khoisan" has continued to be used as a convenient shorthand for the former hunter-gatherer and pastoral groups. The implication of "Khoisan" as a genetic language family or phylum by Greenberg was first rejected by Westphal (1971:387) and has since been shown to be invalid.[24] Brenzinger (2014) demonstrated both the inadequacies and the unsuitability of the term for linguistic discourse.

It has been suggested that 'Indigenous Click Languages' is a more suitable (and neutral) way to refer to this loose grouping of click-using languages (Brenzinger, pers. comm., July 2017; Shah and Brenzinger 2018), while avoiding the negative association of "Bantu" in the term "Non-Bantu Click Languages" (Brenzinger 2014) in South Africa. Minor orthographic adjustments to "Khoisan"[25] do not offer a true break with "Khoisan" as a linguistic grouping resulting from mass comparison, rather than the historical comparative method (Brenzinger 2014:89). Consequently, as a term of convenience "Khoisan" and its various

[23] Originally published in 1909, the work comprises representations of the "bodily characteristics" of indigenous people with the aim of providing a detailed supposed racial classification (including physiognomy, hair, genitals, etc.) and comparison of the "two races" of "Bushmen" and "Hottentots", complete with full-length naked images of his 'specimens'. Schultze-Jena (1928) classified the people he studied as a "single race" which he named "Koisan".

[24] Though it did displace the equally incorrect distinction between "Hottentot" and "Bushman" languages.

[25] For example, "Khoesan" (Nienaber 1990; Traill 2002), "Khoesaan" (Haacke and Eiseb 2002:iii).

guises, add no meaning or context that cannot be conveyed with ‘Indigenous Click Languages’. It does, however,

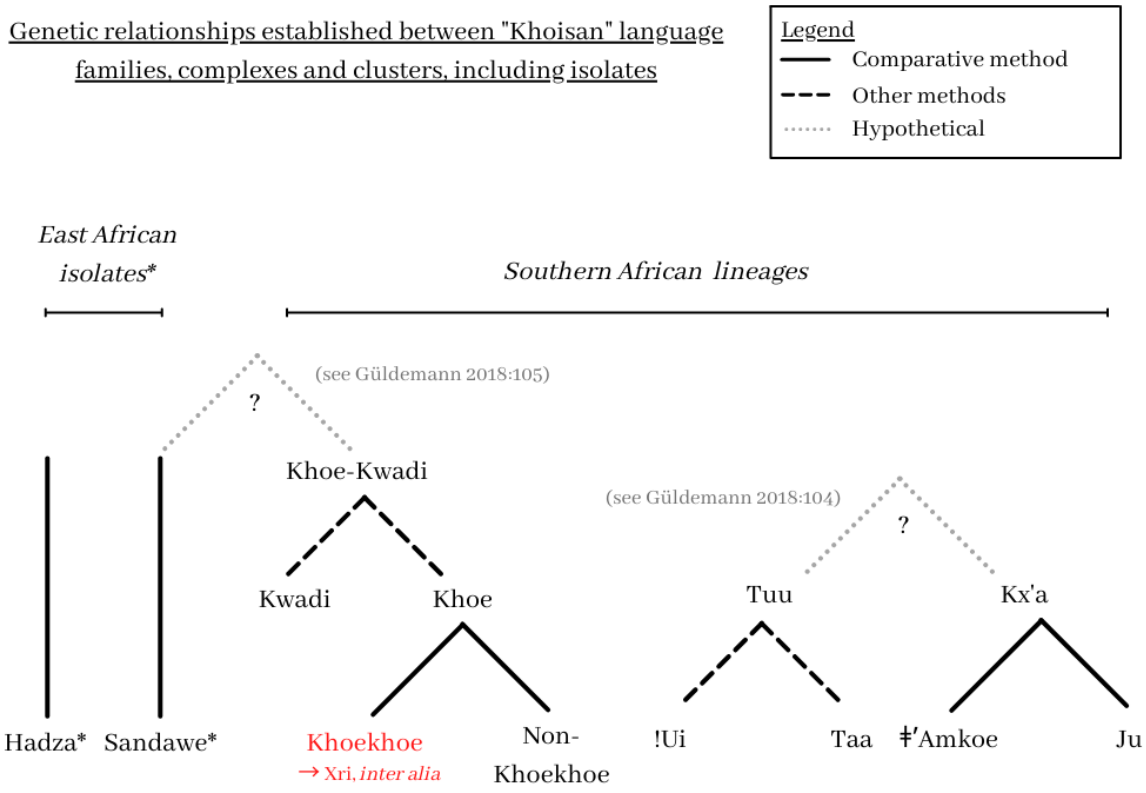

*Figure 2.3. Schematic representation of the current classification of the various language families and isolates that were included in the defunct “Khoisan” language phylum, including the East African isolates (marked *). Based on Güldemann (2018:98–107).*

add confusion by implying some form of unity within the grouping extending beyond the common feature of using click phonemes. Empirical evidence no longer supports Greenberg’s “Khoisan language phylum” or any conception of a single unifying unit that includes all the classificatory units in Figure 2.3 (Brenzinger 2014:97; Güldemann 2018:107). “Khoisan” as a linguistic unit is unlikely to ever be proved by either the comparative historical method or lexicostatistics (Güldemann 2018; Starostin 2021). The scholarship of Indigenous Click Languages classification has changed greatly over the past

three decades and is beyond the scope of the present study, thus only a brief summary is provided here. Figure 2.3 provides an up-to-date overview of the broader classificatory units and the strength of the evidence for the connections and classifications concerned.[26]

Scholars agree that the Khoe family—formerly known as "Central Khoisan" (Greenberg 1963)—includes a number of closely related languages, such as Naro, Khwe-‖Ani and G‖ana-G|ui (Honken 2013:16). The existence of a wider 'Khoe-Kwadi' language family has been proposed (Güldemann and Elderkin 2010; Güldemann and Fehn 2014) on the basis of certain typological similarities (Güldemann 2013), shared grammatical features (Güldemann 2004) and a limited number of lexical isoglosses (Güldemann and Elderkin 2010); yet (strictly speaking) it remains hypothetical as it has not been clearly demonstrated by the comparative method.[27]A higher grouping of Khoe or 'Khoe-Kwadi' as part of a 'macro-Khoisan' can only be said to exist as part of a Sprachbund—or area of linguistic diffusion and convergence—in the Kalahari Basin area and is not indicative of genetic linguistic relationships (Güldemann and Fehn 2017).

Recently, some have speculated that the Indigenous Click Languages—and click phonemes in particular—are as 'ancient' as some of their speakers' genetic markers, and that studies

[26] The East African isolates Hadza and Sandawe—both spoken in Tanzania—were grouped together with the Indigenous Click Languages owing to their extensive use of click phonemes, hence Greenberg's (1963) classification of them in his "Khoisan". Their genetic relatedness to the other Indigenous Click Languages is yet to be proven.[26] Of the three larger groupings—Khoe, Kx'a and Tuu—only Khoe (Vossen 1997), and Kx'a (Heine and Honken 2010) constitute language families that have been established by the comparative historical method. Hastings (2001) and Güldemann (2014a, 2014b) have presented limited lexical proto-forms and other reconstructions that motivate for Tuu as a language family, but attempts at using the historical comparative method have been hampered by the limited data available for the languages in this unit, as most are extinct and have little modern data (Güldemann 2018:98).

[27] Recently many scholars have treated the existence of such a family as given (e.g., Güldemann 2018), presumably on the basis of the substantial morphological evidence.

of their genomes can reconstruct linguistic prehistory, with the implication that clicks have disappeared from all but these supposedly 'most ancient' languages (Knight et al. 2003; Tishkoff et al. 2007).[28] Such assumptions have been criticised, stressing the importance of not viewing population groups and linguistic groups as contiguous (e.g., M. du Plessis 2014; Fehn 2020a; Wingfield 2020). Sands and Güldemann (2009:204–205) argue that clicks should be viewed as an areal phenomenon rather than a relic of some ancient linguistic precursor.

2.3. The social history of Xri[29]

Between 1657 and 1661 the first recorded contact was made between officials of the *Vereenigde Oostindische Compagnie* 'Dutch East India Company' (VOC) and two Khoekhoe groups known as the Grigriqua and the Chariguriqua in the area of modern Piketberg (see Figure 2.4) (Leibbrandt 1900:240–241; Mössmer 2019:49).[30] Over time and with increasing pressure from settlers—and their stock raids—these Khoekhoe groups moved further north. Following the devastating smallpox epidemic of 1713, severe drought in 1714 and rife stock disease, the rapid disintegration of the social fabric of Khoekhoe societies at the Cape is probable (Penn 2005:157–58), and indeed:

[28] Similar theories—also with little substantiation—have been proposed for the linguistic relatedness of the Indigenous Click Languages (e.g., M. du Plessis 2009).

[29] The social history of Xri and its speakers, and their historical distribution has been dealt with in some detail by Mössmer (2019), and only a brief summary of the (very) complex events is given here.

[30] The Grigriqua and Chariguriqua are interpreted as being two branches of one ethno-linguistic "-griqua" group, which later constitutes part of the "Griqua", or Griekwa, group. "The Chariguriqua can be understood as a group split off from the Grigriqua 'parent' group and consequently linguistically close, if not identical" (Mössmer 2019:48, see also Nienaber 1989:243–244; Bleek 1858:25).

> The result was either servitude and consequent assimilation into colonist society or trekking to the north in small groups, both towards the Orange River or as servants or herdsmen to the Namaqua … A third option was joining the amalgam Basterd[31] and detribalized Grigriqua groups like those of [Adam] Kok or the Barends (or Berends) clan.
>
> (Mössmer 2019:51)[32]

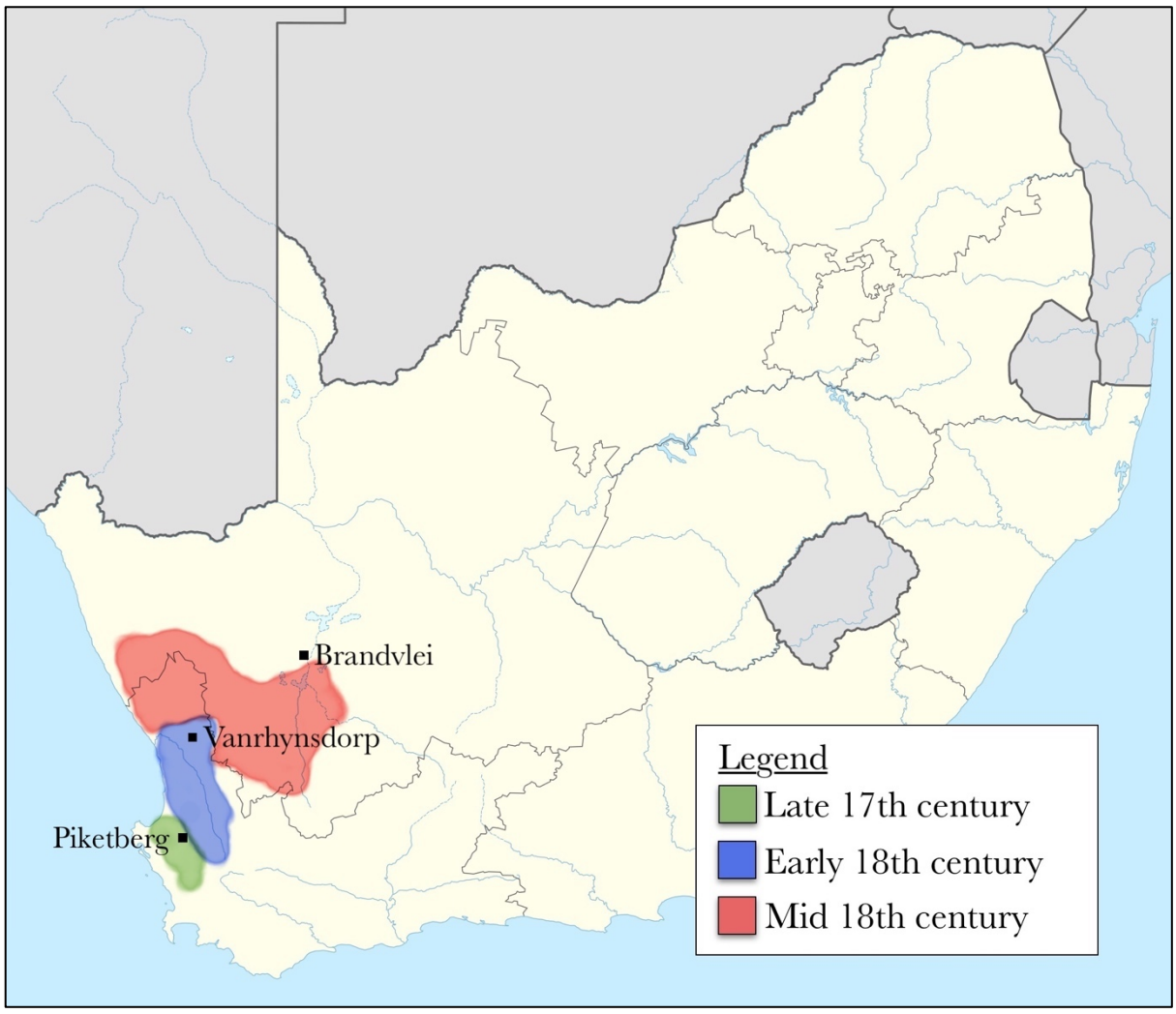

Figure 2.4. Distribution of Xri speakers in the first hundred years of European contact (Mössmer 2019:50).

[31] The *"Basterd"* groups included Khoekhoe-speaking people, runaways from the colony and their namesakes, the "sons of white fathers and Khoi or free black mothers," who "led a somewhat ambivalent and precarious existence on the fringes of white colonial society" (Schoeman 2002:10; Mössmer 2019:51).

[32] See also Schoeman (2002:10–12).

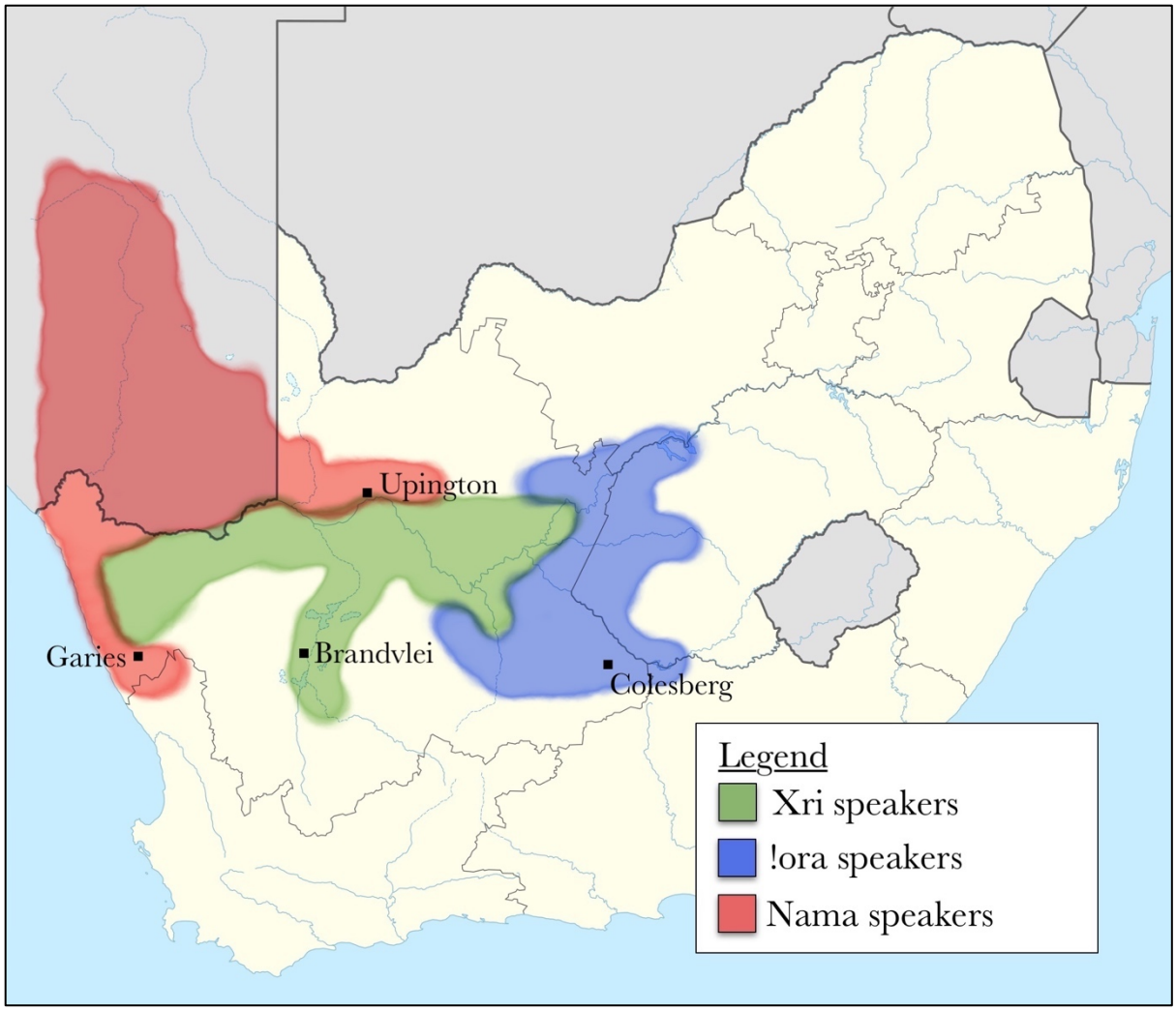

Figure 2.5. Known distribution of Khoekhoe languages in the late 18th century (Mössmer 2019:54). Note that the distributions are not exclusive but indicate the dominant linguistic group in the respective area.

Another smallpox epidemic in 1755 and further encroachment by white settlers by the 1770s meant the cultural and linguistic demise of the Khoekhoe societies around the VOC's Cape Colony (Ross 1976:13; Nienaber and Raper 1977:16).

Under the leadership of Adam Kok and others, groups calling themselves *"Basterds"* 'Bastards' (Nienaber and Raper 1977:18) incrementally moved towards the pastures along the Orange River, beyond the easy reach of the colonists—and later the British colonial

authorities—using their firearms and horses to establish themselves as regional overlords (Penn 2005:60) (see Figure 2.5). Most likely, the importance of Cape Dutch as a tool for

political power was already apparent to Adam Kok and others like him, and Penn (2005:60) states that many of the *Basterd* groups could speak Cape Dutch—or indeed, an early Afrikaans (Nienaber and Raper 1977:18)—by the mid-18th century. In addition, the fact that the Xri-speaking Grigriqua component formed only a part of these *Basterd* communities meant that some form of Cape Dutch was already a part of their society from this period onwards.

Pressures on *Basterd* groups to acculturate, settle, and adopt 'civilised' behaviour and speech intensified after the London Mission Society's (LMS) arrival in 1799 (Ross 1976:15), and language shift to Afrikaans was likely already underway. The involvement of the LMS in the affairs of the *Basterd* societies along the Orange River led to the name change to "Griqua", or "Griekwa", for the groups led by Cornelis Kok (Adam Kok's son) in 1813 (Campbell 1974:349).[33] The change of the group's autonym at the missionary John Campbell's behest demonstrates the influence and power that the mission society and its officers had over this community.[34]

[33] Henceforth 'Griekwa'.

[34] Campell argued that the word *"Basterd"* offended the European ear (and apparently his own sensibilities).

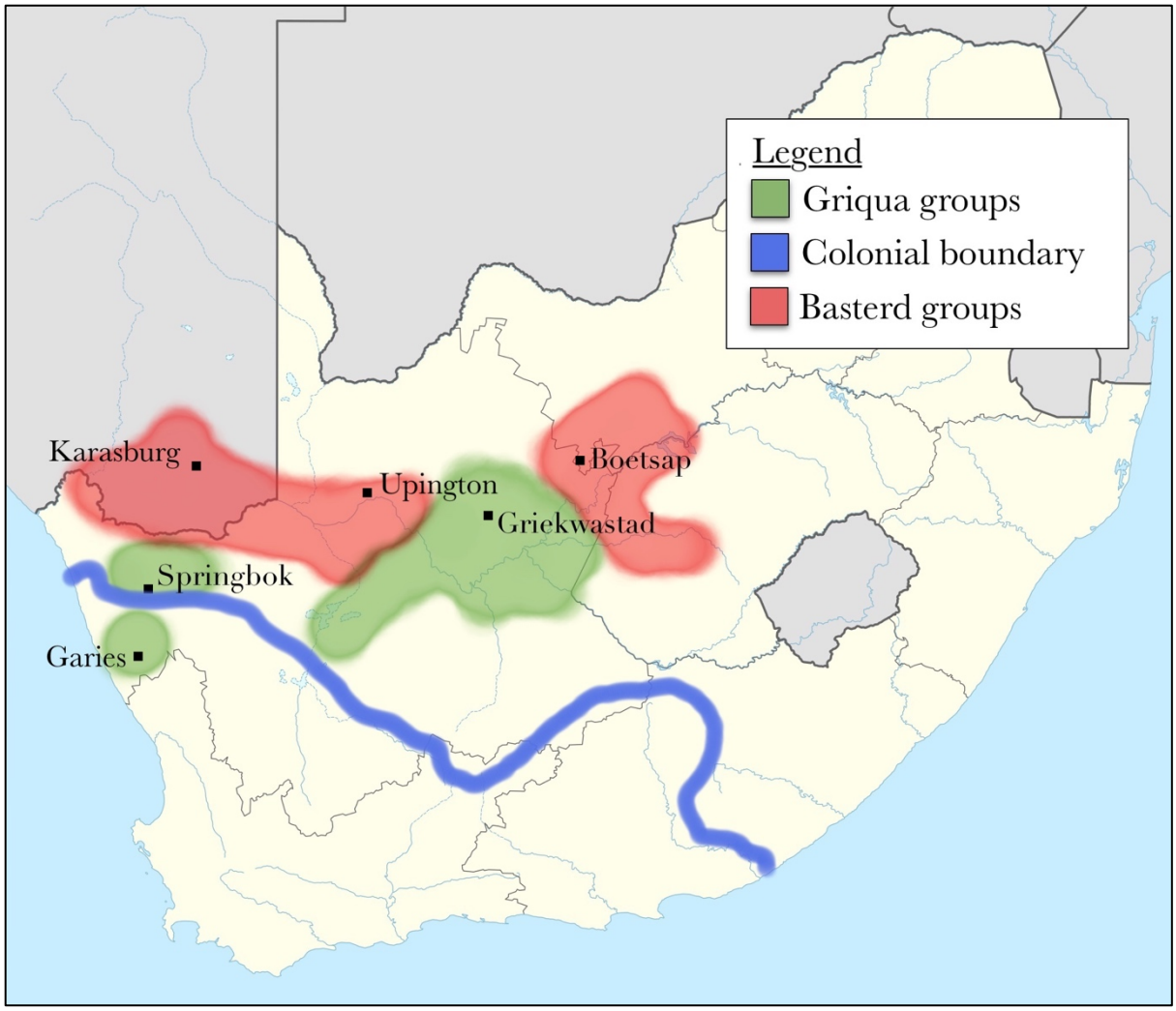

Figure 2.6. Griqua and Basterd groups in relation to the Cape Colony 'boundary', c. 1805 (Mössmer 2019:56).

The British colonial authorities treated the Griekwa as a 'civilised buffer' between the Cape Colony and the !Ora- and Tswana-speaking groups to the north (Penn 2005; see Figure 2.6), and consequently 'Dutch' proficiency became a marker of being 'civilised' (Nienaber and Raper 1977:19).[35] Following increasing tension from political interference by the LMS missionaries and colonial 'agents', growing anti-colonial sentiments, and internal Griekwa tensions, there were a series of political schisms in 1820, resulting in two large breakaways

[35] "*Kennis van Hollands het 'n teken van beskaafdheid geword, 'n statussimbool* [knowledge of Dutch [i.e., Afrikaans] became a symbol of being civilised, a status symbol]" (Nienaber and Raper 1977:19, my translation).

of *Basterds* under Berend Berends, and Griekwa under Adam Kok II[36] (Legassick 1979:391–392). These schisms and tensions increased over time, eventually leading to a (forced) trek of 2 000 Griekwa to "Nomansland"—renamed Griqualand East—around modern-day Kokstad (Mössmer 2019:59). Large numbers of trekboers[37] were moving into the eastern part of Griqualand West, bringing their own Afrikaans varieties with them and eventually settling in the area (Legassick 1979:397).

With the discovery of diamonds in Griqualand West after 1865 and the diamond rush beginning in 1870, there was an influx of diggers from the Cape. A dispute about the ownership of the diamond fields erupted between the Cape Colony, Orange Free State, Transvaal Republic, Griekwa, Bathlaping, and a short-lived state—the Klipdrift Republic—until the Governor of the Cape Colony awarded the fields to the Griekwa, before annexing Griqualand West in the name of Britain (see Figure 2.7) (Theal 1919:22–24; Manson, Mbenga and Peires 2007:159). From the 1870s, the rate of intergenerational Xri transmission likely decreased as a result of increased pressure to acculturate, social fragmentation due to increased poverty, and consequent increased language contact as Griekwa individuals sought work on farms. By 1890, Xri was spoken in Griqualand East by only a small minority of individuals (Schoeman 2002:107, 112; Besten 2006:42; Mössmer 2019:58). The Griekwa nationalist movement of the 1890s accelerated acculturation even further and increased the number of non-Xri-speaking members of Griekwa groups (Besten 2006:197, 240; Waldman 2007:104; Mössmer 2019:47). At the beginning of the 20th century, it is probable that only isolated groups were transmitting Xri, following a century and a half of socio-cultural and political pressure to acculturate.

[36] The grandson of Adam Kok.

[37] Nomadic pastoralist settlers from the Cape Colony (of both European and mixed Khoekhoe descent).

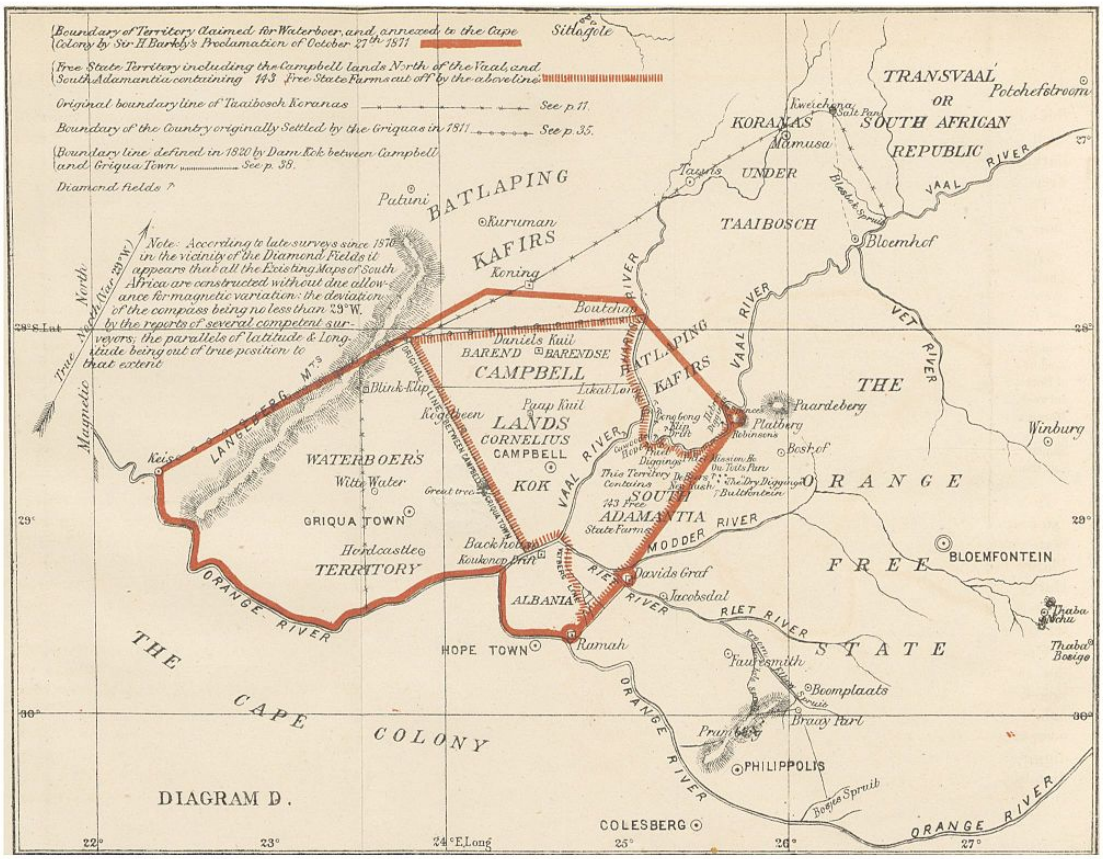

Figure 2.7. A pro-Orange Free State map depicting the boundaries of Griqualand West (Lindley 1873:358).

2.3.1. Contact, shift and loss

Over the course of approximately 360 years since the first recorded contact between Xri speakers and VOC officials, Xri speakers have had increased contact with newly introduced languages. During the period c. 1660–1780 at the Cape, before Xri speakers started migrating to the Orange River area, there was considerable linguistic contact between Xri and Cape Dutch varieties, as only the Grigriqua and Little Namaqua[38] appeared willing to accept outsiders, such as runaway slaves and sailors, and the disenfranchised children of settlers and Khoekhoe, and most of these individuals would have spoken (at least some) Cape Dutch (Elphick 1979:32; Mössmer 2019:49). In the mid-18th century, the level of Cape

[38] A smaller offshoot of the Great Namaqua, who lived north of the Orange River (Elphick 1979:32; Mössmer 2019:49).

Dutch proficiency among those *Basterd* groups that included Xri speakers (led by Kok and Berends) was a key factor in their ability to secure colonial support and carve out their respective territories along the Orange River (Penn 2005:60; Mössmer 2019:52–53).[39] In the arid interior, Xri-speaking groups had also come into close contact with hunter-gatherer groups who spoke Indigenous Click Languages unrelated to Khoekhoe (e.g., |Xam), some of whom were integrated into the *Basterd* societies, sometimes forcibly (Mössmer 2019:46–47).[40] Along the Orange River and beyond, there was considerable contact between the *Basterd* and Griekwa groups, and Bantu language-speaking groups such as migrant Xhosa and the Tswana-speaking Hurutse, Rolong, Taung, Thlaping, and others (see Legassick 1969, 1979).

The role of contact between Cape Dutch speakers and Khoekhoe speakers in the emergence of Afrikaans cannot be understated, and distinct (creolised)[41] varieties of Afrikaans began to emerge on the eastern and northern frontiers of the 18th-century Cape Colony (Roberge 2002, 2012; Carstens and Raidt 2019).[42] The role of Indigenous Click Languages—and Khoekhoe in particular—in the development of first Cape Dutch and later Afrikaans is now

[39] Adam Kok's substantial wealth in livestock and status as a *burgher* 'citizen' allowed him to purchase munitions and horses, which were the key to *Basterd* and Griekwa power well into the 19th century (Schoeman 2002:10–12; Mössmer 2019:50–51).

[40] *Basterd* men were typically included as part of Commandos that hunted down 'bushmen' and captured their children as plunder (see Legassick 1979:373; Penn 2005:119, 227).

[41] Semi-creoles—such as Afrikaans is argued to be—are typically mesolectal, and thus exist close to their lexifier(s) (primarily Dutch for Afrikaans), especially if there has been contact with the lexifier subsequent to initial lexifying, leading to decreolisation (McWhorter 2014). Thus, standard Afrikaans with its continued contact with Dutch is more decreolised than Orange River Afrikaans, which had limited regular contact with Dutch on the frontier.

[42] H. du Plessis (2003) provides a short sketch of the long contact between Afrikaans varieties and Khoekhoe varieties. The complexities of the roles of Khoekhoe varieties and other Indigenous Click Languages as substrates of varieties of Afrikaans is introduced by Luijks (2001), albeit with a number of misunderstandings and factual errors. Haacke (2015) provides evidence of "Dutch" and Afrikaans loanwords in Khoekhoegowab, as well as some syntactic loans from Khoekhoe to Afrikaans.

well recognised from the work of pioneers like Hans den Besten.[43] The close contact between Cape Dutch—later Afrikaans—varieties and Khoekhoe varieties lead to the emergence of a the distinct "Khoe-Dutch" (H. du Plessis 2003:131), which developed into Orange River Afrikaans (ORA)[44] and other similar varieties, primarily among *Basterd* groups such as the Rehoboth Basters, Oorlam and Griekwa (Rademeyer 1938). Traill (2002:35–36) contains some contradictions about the Khoekhoe proficiency of different groups of *Basterds* in the early 19th century, assuming that one group (later known as Griekwa) spoke almost no Khoekhoe, and another group (later known as Oorlam) was primarily Khoekhoe-speaking.[45] Rademeyer's (1938) data on the Afrikaans varieties spoken among Griekwa and Basterd communities in the early 20th century indicate that Traill (2002) is in error.[46]

As had occurred in the Cape in the 18th century following the collapse of the traditional Khoekhoe social order (Elphick 1979:21), 'Dutch' or Afrikaans varieties steadily—sometimes rapidly—displaced the Khoekhoe varieties (*cf.* Lichtenstein 1812:603; Nienaber

[43] See van der Wouden (2012) for a collection of den Besten's work on the roots of Afrikaans.

[44] The Afrikaans variety spoken by Griekwa communities, among others, is usually referred to as Orange River Afrikaans, as its distribution roughly corresponds to the course of the Orange River and extends northwards (see van Rensburg 1984a).

[45] Traill's contradiction clashes with Cluver's (2000:84–88) assertion that the introduction of "creolised Dutch" and Afrikaans varieties into Namibia's Khoekhoe-speaking communities began with Oorlam groups in about 1800, while Traill cites Cluver (2000) as the source of the information. See Penn (2005) for a thorough and indispensable treatment of the history of the northern frontier period.

[46] Indeed, the relationship between group identities (such as Basterd, Oorlam or Griekwa) and the linguistic choices of group members should not be conflated—such as in the (unusual) example of Ma'a where a "common language is not an immutable part of group identity" (Dimmendaal 1992:29). Dimmendaal further cautions that "language may not be as important a potential symbol of ethnic identity as some are led to believe" (Dimmendaal 1992:28), while le Cordeur (2011) argues that the varieties of Afrikaans *are* carriers of socio-cultural identity. Nevertheless, the complexity of individuals' and groups' identities and linguistic choices in the Griekwa communities is not as easily approached as le Cordeur might assume (see Waldman 2007).

and Raper 1977:16; Mössmer 2019:55). For how long the Khoekhoe communities in the Cape continued to speak and transmit their languages is not exactly known, although it is widely accepted that the languages went into a sharp decline within three generations of the establishment of the VOC refreshment station in 1652 (Traill 1996:161; Brenzinger 2007:185–186). By contrast, the varieties spoken by communities (who resettled) in the interior—such as !Ora and Xri—and the Khoekhoegowab cluster to the distant north survived for far longer and into (at least) the 20th century. Nevertheless, ORA steadily replaced and supplanted the Khoekhoe languages that had formed it, a shift that is now all but completed (Traill 1996:161; Brenzinger 2007:185–186).[47]

A detailed and thorough study of the ORA variety spoken by the Griekwa communities of Griqualand West was made in the 1980s (van Rensburg 1984a), including an analysis of the phonetics of the variety (van Rensburg 1984b). The variety is not restricted to use by individuals with a Griekwa identity but has been reported in the Afrikaans spoken by white historical (long-settled) inhabitants in the broader Northern Cape area (Verhoef 1988).[48]

2.4. Studies of Xri[49]

A number of assumptions are made in the literature regarding the group membership of individual speakers or informants that has caused considerable confusion and misinformation about the relationship of Xri and !Ora.

[47] For a detailed treatment of the shift of Xri speakers to ORA see Mössmer (2019).

[48] Henning (1983) is an indispensable guide to the vowels of the Afrikaans spoken by the Griekwa of Griqualand West, and an analysis of general variation in ORA can be found in Nieuwoudt (1990).

[49] The primary sources of Xri data are: Meinhof (1930), a short wordlist; Beach (1938), some phonological notes; Killian (2009), Xri and !Ora data (not listed separately); Haacke and Snyman (2019), extensive wordlist with phonological annotations.

The Xri data in Meinhof (1930) were not the result of a deliberate effort to find reliable Xri-speaking informants, but rather of his chance encounter with several partial speakers of Xri while collecting !Ora data.[50] His comments are as follows:

> *Alle Nachrichten waren recht schwankend und unsicher. … Das alles weist daraufhin, dass das Griqua bereits stark im Vervall begriffen ist. Wenn ich recht sehe, nennt man die Leute, die schon viel mit Europäern zusammengekommen sind und kein reines Hottentottisch mehr sprechen können, Griqua. So erklärt sich mir auch die Angabe einiger Nama, die ich in Lüderitzbucht sprach, dass sie das Korana besser verständen als das Griqua. Man sollte eigentlich das Umgekehrte erwarten, da ja das Griqua in Lautbestand und Grammatik dem Nama näher ist als Korana. Aber die Sprache ist offenbar schon stark verwildert und mit Fremdworten durchsetzt.*
>
> All communications [from the informants] were very hesitant and uncertain. … All of this [Meinhof's data] suggests that Xri is already in strong decline. If I understand it correctly, one calls the people who have significantly intermixed with Europeans and can no longer speak pure Khoekhoe, Griekwa [i.e., *Basterds*]. This also explains, to me, the statement of Nama [speakers] to whom I spoke in Lüderitz Bay, that they understood !Ora better than Xri. One would actually expect the opposite, since the phonetics and grammar of Xri are closer to Nama than to !Ora.

[50] On a farm near the Pniel mission station, along the Vaal River south of the town of Barkly West.

> But the language has clearly already degenerated and been interspersed with foreign words.
>
> (Meinhof 1930:146, my translation)

Meinhof acknowledges that the Xri linguistic performance of his informants was relatively poor, and he assumed that this was a characteristic—indeed a prerequisite—of being Griekwa. When Meinhof's Xri data are compared to those of Snyman, it becomes clear that the speech produced by his Xri informants was that of individuals who were at best 'rememberers'[51] of Xri, and did not contain some aspects of Xri phonology (discussed in 4 Assessing informant competency).[52] Table 2.2 contains selected examples of discrepancies between data from Meinhof (1930), those of Haacke and Snyman (2019) and my own. The examples have been selected to demonstrate differences that can be attributed to either phonological attrition in Meinhof's informants, or to faulty transcription by Meinhof.

Table 2.2. Select discrepancies between Xri data from Meinhof (1930) and those of Haacke and Snyman (2019) and the present study.

	Gloss	**Meinhof (1930)**	**Haacke and Snyman (2019)**	**My data**
(1)	'eight'	*xaisi*	*ǁxaisi*	*ǁxaisi*
(2)	'fight'	*/xam*	*!xam*	*!xam*
(3)	'house'	*k'um-mi*	*kx'om-mi*	*kx'om-mi*
(4)	'nose'	*dui-p*	*gǂui-p*	*gǂui-p*
(5)	'pray'	*/dore-b*	*g/ore*	*g/ore*

[51] A 'rememberer' is an individual who knows words, or even phrases, in an ancestral language (and may have known more of the language in the past) but is unable to use the language productively (see Grinevald 2003).
[52] Indeed, there are obvious lacunae in Meinhof's data, such as the items for 'water', 'food', 'eat', 'meat', 'fat', and 'sugar', which were some of the most common items I encountered during data collection.

Both (1) ‘eight’ and (4) ‘nose’ are recorded without clicks by Meinhof, and with clicks by Snyman and in my own data, while being the same in other respects (vowels, voicing). That clicks should be added into Xri by speakers after Meinhof’s fieldwork with forms that remained consistent over almost 50 years (between Snyman’s 1973 and my own fieldwork) is highly unlikely. In Meinhof’s data, (2) ‘fight’ is recorded with a dental click, rather than an alveolar click, and (3) ‘house’ is realised with an ejective velar stop and not the ejective velar affricate.[53] The click accompaniment *d* in (5) ‘pray’ is unattested in Meinhof’s phonological (1930:26) sketch of !Ora clicks and its realisation is not clarified.[54] In his lexical data it seems to be a peculiarity of the speech of informant Paul Kars.[55] These five examples either show poor transcription by Meinhof, or the speech of individuals who are

[53] Killian encountered the same contrast with the earlier data: “[kx’] should not exist in as much frequency as it did from my speakers. I did see some variation between an aspirated [kh] and a velar affricate [kx], but [kx’] stayed fairly distinct with all of my speakers, both as a click accompaniment and as an individual phoneme” (Killian 2009:59).

[54] It is possible that it represents a less clearly voiced realisation of the click. In addition, it includes the third person masculine singular suffix *-b*, and should probably be glossed as the noun ‘prayer’ rather than the verb ‘pray’.

[55] Meinhof’s (1930:145–146) Xri informants are listed as:

1. “Paul Kars”, a ‘Griqua’ born in Griekwastad, who called the language he spoke “*Hottentotisch*”.
2. “Kornelius Michel Waterbur”, who did not speak Xri (which Meinhof calls his mother tongue) as he lacked the opportunity to do so. He lived in Barkly West and claimed to be the grandson of ‘Kaptyn [Niklaas] Waterboer’.
3. “Dirk Kok”, apparently the nephew of ‘Kaptyn [Cornelius?] Kok’, who said he was 12 years old when the missionaries first came to Pniel and called the language he spoke “*Hottentotensprache*”.
4. Two old women at Gong-Gong on the Vaal River, due west of Barkly West. He obtained only a single sentence from them.

At least two of my own informants (LJ and SW2) referred to the language they spoke (Xri) as “*Hotnotstaal*”, ‘Hottentot’s language’, the same as “*Hottentotisch*” and “*Hottentotensprache*”. If this designation of the language by some of its speakers is consistent, it has significant implications for the interpretation of historical accounts which differentiate between “Coranna” and “Hottentot” being spoken among the Griekwa (e.g., Campbell ([1815] 1974:164, 182; Burchell 1822, 2:203–204). Recent research in nearby Prieska has located a variety (claimed to be a ‘new language’) which its speakers also called “*hottentots taal*” (sic, presumably “*hotnotstaal*”) ‘Hottentot language’ (Kilian 2020:1). Upon closer inspection, the Prieska variety appears to be a small lexicon of a combination of |Xam (!Ui) and !Ora (Khoe) items, with Afrikaans and Tswana and/or Xhosa (Bantu) admixture (Camilla Christie, pers. comm., January 2021), and further analysis of the data are necessary.

not entirely comfortable with producing Xri phonetics. The latter seems a more reasonable conclusion, given Meinhof's extensive fieldwork experience, and the relative absence of such 'errors' in the !Ora data contained in the same work. The competency of Meinhof's informants in producing 'typical' Xri is therefore shown to have limitations, based on the differences in phonetic realisation with those of data collected some 46 years later by Jan Snyman, and by me 90 years later. It is important to note, however, that Meinhof's informants were able to provide a number of Person, Number and Gender distinctions that are barely found in later data sets. Meinhof (1930:146) considers Khoekhoegowab and Xri to be more mutually intelligible than Khoekhoegowab and !Ora, but this is based on the (poor) data available to him.[56] His data are clearly the result of speech affected by language attrition.[57]

By contrast, Beach (1938:181–183) considers Xri to be a branch of !Ora, although he fails to explain the relationship in any great detail. "I have reached the conclusion that [Xri] has as its *basis* a dialect differing very little from [!Ora]. For our purposes, [Xri] may be considered a branch of [!Ora]" (Beach 1938:183, original emphasis). The "phonetic variations" he mentions are relegated to a note in the index (Beach 1938:326). Beach's conclusion about Xri is the inverse of Meinhof's, and that of Meinhof's Nama informants, who understood !Ora more easily than Xri. Consequently, Beach and Meinhof cannot both be correct and—bearing in mind that these were the only two sources of Xri data for many decades—this has led to significant problems in the classification of Xri. This dilemma is noted by Vossen (1997:94), who saw no potential for a resolution, given the lack of

[56] Obtained from speakers who were not fluent in Xri and seem to have had idiosyncratic pronunciation.

[57] It may also be the result of language contact with !Ora at the Pniel mission, as at the time of its foundation it was "occupied mainly by the Koranna, notably the Springboks under the leadership of Jan Bloem II. There were also Griqua, who had come to live with the Koranna" (Erasmus, Besten and Sauls 2008:1).

additional data. Traill's (2002:34–35) examination of the relationship adds no new insight and contains a number of misunderstandings, such as the assumption of a rapid shift to "Khoekhoe-Dutch" by !Ora and Xri speakers, "far advanced by 1801", which confuses the prevailing situation among Cape Khoekhoe speakers within the Cape Colony with the situation beyond its bounds (see Mössmer 2019:53–56).

Killian (2009:6) concludes that Xri and !Ora are in fact one language, which he names "Khoemana".[58] There are some weak points in this argument: a) the difficulty of distinguishing between Xri and !Ora based on speakers' self-identification as Griekwa or Korana, respectively; b) data collected by Meinhof (1930) and Beach (1938) were not necessarily typical and reliable; and c) the linguistic barrier(s) between Killian, interpreters and informants.[59, 60] As Killian (2009) has been the only a significant source of scholarship on Xri since Meinhof (1930), the three weak points are examined in detail below.

Killian's (2009) data were obtained from speakers with significant linguistic attrition. He reaches a number of conclusions about Xri but, as with the data discussed above, there are complications with data quality, interpretation and analysis. Rather than describing his data and situating them in the context of the historical data available (Meinhof 1930; Beach 1938; Maingard 1962), he classifies Xri and !Ora "as a single dialect cluster with possible

[58] He continues, "*Khoe* is a designation for 'person', used by all of my informants. *Mana*, meaning 'language' or 'speech' (it also functions as the verb 'to speak', a synonym of *koba*), was also a familiar word to all of my speakers, and they all used the word at various points as well. *Mana* exists already as both a word on its own, and as a compound in reference to other languages" (Killian 2009:14).

[59] Working with a community member (often a child or grandchild of the informant) with a limited knowledge of English as an interpreter, the chain of communication would follow a chain of translation: American English → South African English → Afrikaans (interpreted by Killian using German) → ORA → Khoekhoe variety (Xri or !Ora).

[60] This 'linguistic distance' between Killian and his informants is concerning. Reducing the 'distance'—by being a native Afrikaans speaker, in my case—made a considerable difference.

extensive variation" (Killian 2009:14), likely due to the challenges of reconciling informants' self-identification with the varieties they produced. It is impossible to comment on the methods used to determine whether or not potential informants were speakers of a Khoekhoe language—or indeed which variety they spoke—as the methods used are not detailed in Killian (2009). However, it appears that the distinctions between informants' varieties were not made based on comprehensive lexical and structural comparison of the data.[61] Killian is, at times, aware of this dilemma and notes that "[t]wo people who may identify themselves as a Griqua or Korana may not necessarily have the same dialect, or possibly even a mutually understandable dialect" (Killian 2009:13). Yet, owing to his (reasonable) understanding of the group identities of Griekwa and Korana as discrete groupings, he falls into some of the same traps as Beach did, but—in his defence—without the racial misconceptions and motivations of Beach (1938).

Killian's understanding of linguistic and social distinctions appears to be obscured by the contradictions contained in earlier researchers' referring to "the language as Korana […] as there are peoples with different cultural identities speaking either an identical or nearly identical language" (Killian 2009:13). Although the 'new' language ("Khoemana") is a simple solution to a complicated problem, Killian's lumping of !Ora and Xri—and the extinct varieties of Cape Khoekhoe—appears to be the result of interpreting inconsistent data from informants, Meinhof's (1930) and Beach (1938), and difficulties in separating informants' identities from the variety they speak (as discussed above for Meinhof and Beach):

[61] It appears that this was due to difficulties in untangling informants' identities, their claims about the varieties they produced, and their linguistic data.

> Initially I argued that what has been historically called *Cape Khoe[khoe], Korana, and Griqua are the same language*. As I was conducting fieldwork, I noticed that different speakers were identifying with different groups and language names […]. There seemed to be a distinct confusion on the linguistic issue. […] *I grew suspicious that these were different languages, particularly since so many words were similar*.
>
> (Killian 2009:59, my emphasis)

There are certainly problems with the motivation for "Khoemana", and inconsistencies regarding mutual intelligibility between informants' divergent idiolects (Killian 2009:59) and "dialectal variation" (Killian 2009:13). The degree of variation in Killian's informants—in terms of identity, speech and reliability—demonstrates the indefiniteness of "Khoemana" as a collective term; it should not be considered as anything more than a term of convenience for his dissertation.[62] I discourage adopting "Khoemana" in any further sense.

M. du Plessis (2018:2) distinguishes two genetic branches within Khoekhoe: "Western Khoekhoe", containing Xri[63] and the Khoekhoegowab cluster,[64] and "South-central and Eastern Khoekhoe", including other Khoekhoe varieties.[65] These classifications are based on geographical distribution and supported with predominantly historiographical information; du Plessis's (2018:15) limited lexical comparisons are based on Meinhof's (1930) Xri data (see above for their limitations), and lexical items from data in a !Ora notebook of Lucy

[62] *cf.* Haacke (2002:1,12), Brenzinger (2007:185) and Rapold (2014:158) for discussion of Khoekhoe as a dialect continuum, or cluster of dialect continua.

[63] "Cape West Coast Giri (Xiri)".

[64] "Northern Cape Nama; Namibian Nama; Dama; Hai‖om".

[65] "Cape Khoekhoe > Kora; Gona (Xona)".

Lloyd (1879), which du Plessis (2018:12) claims is in fact Xri.[66] Furthermore, when compared to the analyses based on lexical proximity in Haacke (2016) and Haacke and Snyman (2019), du Plessis's classification does not hold. Haacke (2016) establishes a rate of cognation of 80% between !Ora and Khoekhoegowab, while the Cape Khoekhoe varieties[67] have a cognation of 69% with both !Ora and Khoekhoegowab, presented in Figure 2.8.

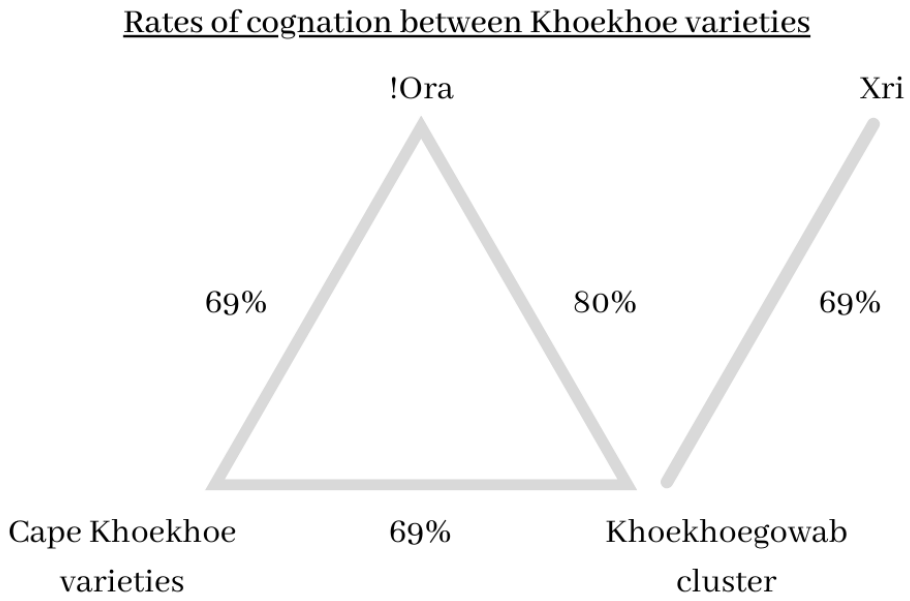

Figure 2.8. Rates of cognation established by lexical comparison between the Cape Khoekhoe varieties, !Ora, and the Khoekhoegowab cluster, and between Xri and the Khoekhoegowab cluster (adapted from Haacke and Snyman 2019:289; see also Haacke 2016).

Haacke's analyses (see Figure 2.8) indicate that the linguistic distance between Xri and Khoekhoegowab appears to be similar to those between both Cape Khoekhoe, and !Ora and

[66] No lexical comparison with other Xri data is provided by M. du Plessis. The data for the Khoekhoegowab comparison is also taken from a contemporary dictionary of standardised Khoekhoegowab, rather than historic data.

[67] In this instance 'the Cape Khoekhoe varieties' include all extinct varieties spoken in the southern Cape for which data were recorded and therefore includes M. du Plessis's (2018) 'South-Central' and 'Eastern' Khoekhoe groups, with the exception of 'Kora' (!Ora).

Khoekhoegowab (Haacke 2016; Haacke and Snyman 2019), all of which implies the inverse of M. du Plessis's classification. Haacke and Snyman (2019:288–289) cautiously conclude that !Ora may very well be closer to Khoekhoegowab than Xri is. While more work is needed to conduct a lexical comparison between Xri and other Khoekhoe varieties, Haacke and Snyman's (2019) analysis—showing that Xri is as close to Khoekhoegowab as Cape Khoekhoe is, but less close than !Ora is to Khoekhoegowab—is good evidence that Xri is a distinct member of the Khoekhoe group, rather than a 'branch of !Ora' (Beach 1938), and begins to establish its position within the Khoekhoe language cluster.

2.4.1. Note on the presumed death of Xri

Xri has been (repeatedly) presumed extinct since 1956 (Westphal 1956:159).[68] Westphal (1963:249) subsequently reports Xri as being spoken by a "few, isolated individuals".[69] Köhler (1981) maps Xri in several locations (Griekwastad, Kokstad and Karasburg), but with the provisos "*langue dont l'existence actuelle est incertaine* [the language's current existence is uncertain]", and "*localisation douteuse* [location uncertain]" (Köhler 1981:map, my translations).[70] Neither Grimes (1984) nor Mann and Dalby (1987) appear to contain any novel information on Xri. Sommer (1992:400) provides a useful summary of the overall status of the language, although based on sources with significant limitations. None of the works cited above obtained any new or additional information, but appear to repeat to a greater or lesser extent the assertions of Westphal (1956, 1963), in turn based on Meinhof

[68] In section (2.11) on the same page there are a number of serious errors in the understanding of the relationships between various Khoekhoe language-speaking groups and their origins (Westphal 1956:159).
[69] The description of the origins of Xri, or "Griqua", contained a few pages later (Westphal 1963:251) is entirely erroneous. See Mössmer (2019) for a detailed treatment of the topic.
[70] The body of the work to which the map belongs could not be accessed for this study. There certainly may have been speakers in Griekwastad in the 1970s. However, the existence of speakers in the locations of Karasburg and Kokstad is, as Köhler suspected, unlikely.

(1930) and Beach (1938), without further investigation of the language's status. The first known (published) mention of new data on Xri is Traill (1996:161), stating that Xri has a few scattered individuals with linguistic knowledge, although no speakers, and is "recently extinct", and estimating the start of language shift as mid-19th century. Traill further makes reference to a probable speaker of Xri in Colesberg.[71] The Xri data collected by Jan Snyman in about 1973, published posthumously 46 years later (Haacke and Snyman 2019), demonstrate that the language was *not* extinct, although likely moribund. Had the data been published closer to the time of collection, it is possible that more linguistic work could have been done with the speakers alive at the time.

2.5. Language death and phonetic change

'Rememberers' of a language differ from more fluent speakers in their substantially reduced lexicon, phonological instability, contracted grammatical paradigms, and heavy reliance on 'chunks' or memorised formulaic expressions (Tsitsipis 1989:119). This contrast between speakers has been observed across languages with radically different structures and socio-cultural situations, such as Arvanítika Albanian (Tsitsipis 1989), East-Sutherland Gaelic (e.g., Dorian 1981), Shoshoni (Miller 1993), Welsh (M. Jones 1998) and Yuki-Wappo (Elmendorff 1981).

[71] Based on personal communication with Michael de Jongh; see de Jongh (2012:199) for a biography of Jas 'Verroei' van Rooy, who was quite possibly the last person in Colesberg with Xri knowledge.

In the case of Quapaw,[72] Rankin (1978:45–46) observed that all of his non-fluent informants possessed phonemic systems truncated by one or more 'groups' of phonemes (Table 2.3).[73] These 'groups' include, for example glottalised stops /tˀ, kˀ/ realised as tense stops [tː, kː], or velar fricatives /x, x̌ˀ/ realised as [h] (Table 2.3). Each of Rankin's non-fluent informants therefore used a slightly different and incomplete phonemic inventory for Quapaw, and their

Table 2.3. Phonemic inventory of Quapaw (Siouan) adapted from Rankin (1978:45) and Rankin (1982:125–126). The phonemes most affected by phonological instability are marked in red.

		Bilabial	Dental	Alveolar	Postalveolar	Velar	Glottal
Plosive	voiceless	p pː	t tː			k kː	ʔ
	aspirated	p^h	t^h			k^h	
	glottalized		$t^ʔ$			$k^ʔ$	
	voiced	b	d				
Fricative	voiceless			s (ʂ)	ʃ	x	h
	glottalized			$š^ʔ$ ($ʂ^ʔ$)	$ǰ^ʔ$	$x̌^ʔ$	
	voiced			z (ʐ)	ʒ		
Nasal		m		n			
Approximant		w					
Vowels		Oral		Nasal			
		i	o	ĩ	õ		
		e	a		ã		

level of phonological attrition inversely correlated with age, that is, their competency was reduced in each successive generation (Rankin 1978:46). While sound change is a part of 'normal' change in language, when combined with phonological instability it is considered a typical index of language contraction, shift and death (Tsitsipis 1989:119; Traill and Vossen 1997:28). No investigations of Khoe languages—or indeed Indigenous Click Languages—

[72] Quapaw is a Siouan language; ISO 939-3 code [qua].

[73] He had only two fluent Quapaw informants, one of whom died before his fieldwork began but whose voice had been recorded by family members, and another who suffered a stroke shortly after fieldwork began and was unable to continue (Rankin 1978:46).

have been conducted in the manner of Rankin's (1978) study on attrition in Quapaw.[74] The few available unpublished studies seem somewhat flawed, given how data are approached and claims of new languages (Killian 2009; Kilian 2020).[75] And, while the study of systematic click loss and substitution has received much attention (e.g., Snyman 1979; Traill 1986; Vossen 1991; Traill and Vossen 1997), these studies do not examine click loss from the perspective of phonological attrition. Indeed, recent work by Fehn (2020a) has continued this trend in viewing socio-cultural factors as only peripherally relevant to the process of click instability (Fehn 2020a:331).[76,77] The majority of the studies cited above are primarily concerned with the implications of click diffusion or loss as it pertains to genetic classification of the Indigenous Click Languages, and are not investigations of language endangerment, obsolescence and death.[78]

Ladefoged and Traill (1994:45) assert that "as a class [of consonants] clicks are probably the most salient consonants found in a human language", and although click phonemes are considered rare cross-linguistically, they are no more susceptible to change or loss than other sounds (Fehn 2020a:292). Click instability and loss in an obsolescent language should, however, not be confused with more systematic and gradual changes.[79] However, some phonological aspects of Sesfontein Damara—a cluster of Khoekhoe varieties spoken in the

[74] Or at least no such works have been published.

[75] Kilian (2020) presents data from a "new language" that more closely resembles a |Xam–!Ora–Afrikaans contact-based idiolect in advanced stages of attrition (Camilla Christie, pers. comm., January 2021). See also K. Jones (2019:4) for a brief discussion.

[76] This gap in the published data available is particularly concerning given the level of endangerment of nearly all the Indigenous Click Languages, as detailed in Brenzinger (2007) and more recently K. Jones (2019) for the South African context.

[77] However, Fehn (2020b) does propose that click-loss may have its origins in the integration of L2 speakers (L1 speakers of Bantu languages) into Kalahari Khoe speech communities, which goes some way to addressing the gap.

[78] See Swiggers (2007) for a cogent discussion of language obsolescence and language death in general terms.

[79] See, for example, Traill and Vossen (1997), Sands and Gunnink (2019) and Fehn (2020a).

far north-west of Namibia—are of interest as they exhibit changes similar to those that have occurred in Xri, such as loss of click consonants (without loss of the click accompaniment), lenition of consonants, and raising and lowering of vowels (Haacke 1999; Job 2014; Fehn 2020a:327–329).

2.6. Summary

Research on the phonetic and phonological processes of language obsolescence and death has—to my knowledge—not been undertaken on any of the Indigenous Click Languages, all of which are either endangered, moribund, or extinct (Brenzinger 2007:185–190; Güldemann and Fehn 2017:18).[80] Work on N|uu[81] is the only research that appears to have dealt explicitly with language death (and revitalisation) in this context.[82] It is particularly surprising, given the volume of documentation and description of these languages in the past 50 years, that it has been—and continues to be—to a large degree preoccupied with genetic classification.[83] Indeed, the socio-cultural and socio-political situations that have led to the endangerment of these languages are under-researched, with the exception of the extinction of |Xam[84], owing to its extensive documentation in the late 19th century (e.g., Traill 1996, 2002).

[80] The only possible exception is Khoekhoegowab, which has approximately 200 000 speakers (Brenzinger 2013), and a wider range of domains of use (e.g., medium of instruction at schools, university) (Brenzinger 2007:168). Nevertheless, the Khoekhoegowab cluster is still viewed as endangered (e.g., Haacke and Eiseb 2002:iii; Brenzinger 2007:168).

[81] A !Ui language; ISO 639-3 code [ngh].

[82] See Sands, Miller and Brugman (2007), Brenzinger and Shah (2016) and Shah and Brenzinger (2018).

[83] See, e.g., Westphal (1963), Snyman (1979), Güldemann and Elderkin (2010) Güldemann (2014a, b).

[84] Another !Ui language; ISO 639-2 code [xam].

The existing research on Xri appears to be an inaccurate representation of the variety (Meinhof 1930; Beach 1938) and the socio-cultural and socio-political situation of Xri (Killian 2009). Most recently, it has been limited to lexical data without adequate metadata and contextual information (Haacke and Snyman 2019). The aim has often been to work with 'ideal speakers' rather than representing the reality of a language in the final stages of language death.

Intentionally gathering data from informants with a wide range of Xri competency has shed new light on the context of Xri and the progression of language death, while also gathering additional linguistic data. In the following chapters, recommendations will be made for the methods used in the research of critically endangered languages and language death, based on experiences in the field. The study will also provide a better understanding of the nature of language death by examining the phonetic changes that have occurred in Xri as a result of language decay. It will demonstrate the structural attrition that has occurred in Xri phonology—with particular attention to click phonemes—and attempt to reconcile the attrition with a typology of last users of the language. The study builds on previous research in Mössmer (2019) to give a more complete understanding of the state of the Xri language, and how it has come to the point where it is now.

3. Methods

This chapter describes how I located informants by first consulting historical records, then taking a preliminary field trip to the most likely locations to determine whether there were any speakers or rememberers of Xri. It briefly recounts three further field trips to the Northern Cape, and the challenges and barriers that I encountered when accessing informants and how I dealt with these problems. I explain the process used to determine whether individuals had Xri knowledge and provide a list of the informants interviewed. I also discuss the interview methods employed and how they changed during the course of the fieldwork, adapting them to the socio-linguistic situation of Xri and presenting an innovative approach to elicitation interview methods in language death situations.

3.1. Locating informants

3.1.1. Establishing historical distribution

The search for surviving speakers of Xri follows on from Mössmer (2019), which established the approximate historical distribution of Xri speakers from the late 17th century to the latter half of the 20th century. By determining that Xri was spoken by people calling themselves Griekwa, earlier research (e.g., Meinhof 1930; Beach 1938) made the mistaken assumption that Xri was the language of a homogenous Khoekhoe 'Griekwa tribe'. This contributed to the conjecture that the language was moribund, as many of the Griekwa individuals approached by Carl Meinhof and Douglas Beach had little or no knowledge of Xri. My investigation (Mössmer 2019) of how Xri came to be spoken in the ethnically and linguistically mixed Griekwa group showed that Xri speakers formed the ethno-linguistic core of the group later known as Griekwa, but that not all members of the Griekwa group

were Xri-speaking. Individuals' use of the ethnonym 'Griekwa' was therefore not a reliable indicator of their linguistic knowledge of Xri.

Haacke and Snyman (2019) and Mössmer (2019) reconstructed the linguistic connection between the Khoekhoe groups named in the early Cape records as the 'Grigriqua' and 'Chariguriqua'[85] and the later *Basterd* group that adopted the ethnonym 'Griqua'[86] in 1813, at the behest of LMS missionary John Campbell (Campbell 1816:236–237). The use of 'Griqua' as a homogeneous ethnonym for the group under the leadership of the Koks has obscured the diversity within the Griekwa group. The Griekwa were composed of the remnants of the Xri-speaking Grigriqua and Chariguriqua groups, a smaller proportion of other Khoekhoe-speaking individuals from groups such as Namaqua and Korana, individuals of mixed ancestry (e.g., European–Khoe, Slave–Khoe, European–Slave), a number of runaway slaves and sailors, former hunter-gatherers speaking Indigenous Click Languages, and Xhosa- and Tswana-speaking individuals. The ethnonym Griekwa is therefore something of a linguistic palimpsest, retaining a resemblance of the Khoekhoe origins of the mixed Griekwa community. Consequently, finding Xri speakers within the Griekwa group is not guaranteed in any one place. This is evidenced by Beach's (1938:181–185) struggle to find what he calls a "true Griqua", especially as his criteria for 'Griekwa-ness' were substantially based on racial stereotypes.

Conducting exploratory fieldwork for this study in the Northern Cape was indicated by possible Xri data obtained by Don Killian in 2008 in Kimberley and Douglas (see Killian 2009), and the limited speaker information in Jan Snyman's field notes from data collected

[85] Reconstructed as meaning the Great-*gri*-men and Little-*gri*-men (Nienaber 1989:437, 444; Haacke and Snyman 2019:269–271).

[86] I use the spelling 'Griekwa'.

in Campbell, Douglas, Griekwastad and Kimberley in the 1970s (Haacke and Snyman 2019). Killian's and Snyman's data from towns in Griqualand West are supported by remarks in van Rensburg (1984:669), and correlate with the reconstructed historical distribution of Xri speakers in Mössmer (2019). Therefore, the towns of Campbell, Douglas, Griekwastad and Kimberley were essential locations to visit to find out if anyone remembered elders speaking the language—or a few words of it—in the past. Traill (1996:161–162) notes a probable partial speaker—Jas Verroei[87]—encountered and recorded in the Colesberg district.[88] Colesberg was therefore another town worth investigating, as was Philippolis,[89] as it was an important town in Griekwa history. Particular research locations were then chosen based on the contacts made and speakers and rememberers located during each field trip, as detailed below.

3.1.2. Targeting research areas

The focus area for locating informants for this study is based on previous research, and the locations determined to be the most likely locations for individuals with a memory of Xri (Mössmer 2019:67). The locations in which Jan Snyman (Haacke and Snyman 2019:268), Don Killian and Michael Besten (Killian 2009:53–54; D. Killian, pers. comm., 16 March 2017) found informants formed the focus of fieldwork.[90] Douglas, Campbell and Kimberley—together with Griekwastad—proved to be the only places in which speakers or rememberers were successfully located.

[87] Possibly 'van Rooy' rather than 'Verroei', which is consistent with the pronunciation of 'van Rooy' in Griqualand West.

[88] Based on information from Michael de Jongh at some point before 1995.

[89] In the southern Free State, where Adam Kok II and his followers settled in 1826.

[90] In the case of Killian's and Besten's informants, whether the informants spoke Xri or a different Khoekhoe variety was—and in most instances remains—uncertain.

A focused strategy of asking members of the public for assistance was followed, targeting points of interest (such as museums) and local centres (such as supermarkets and municipal offices). In Douglas, Campbell and Kimberley—where informants in previous studies had been located—they could be asked after by name. In most instances, members of the public were able to assist either with information directly relevant to the informants or with information leading to other individuals who would be better placed to help me. In other cases, I would ask members of the public whether any speakers of the 'old Griekwa language' were known to them, or whether they knew anyone who might be able to give me information about speakers. Approaching local leaders was an important step in obtaining information, even though they were typically less helpful than community members (see below). Nevertheless, the approval and nominal support of local leaders reinforced the legitimacy of the fieldwork, and in Griekwastad it was impossible to conduct any fieldwork without permission.

3.2. Field trips

Four field trips were conducted over a period of 14 months, from February 2018 to April 2019. Table 3.1 lists dates and locations and Figure 3.1 contextualises locations mentioned.

Table 3.1. Field trips conducted, including dates and locations.

Field trip	Dates of field trip	Locations visited
1	7–11 February 2018	Bethulie, Philippolis, Colesberg, Douglas, Campbell, Griekwastad, Daniëlskuil, Kimberley (Colville)
2	14–21 July 2018	Douglas, Kimberley
3	6–18 September 2018	Douglas, Kimberley (Roodepan, Colville), Campbell
4	19 March–2 April 2019	Douglas, Kimberley (Roodepan, Colville, Greenpoint), Campbell, Griekwastad

Figure 3.1. Context map of South Africa showing locations visited during fieldwork.

3.2.1. Rationale for the first field trip

Following on from the reconstruction of the historic distribution of Xri, it was decided that a field trip to the areas described in Mössmer (2019:66–67) would contribute to the understanding of more recent Xri distribution and take in as many locations as possible. The trip would probe whether any descendants of Xri speakers survived, so as to obtain contextual data about when the last speakers may have died. An additional aim of the field trip was to determine whether any of Snyman's named informants from the 1970s survived (Haacke and Snyman 2019:268). As Snyman's three named informants were the only

confirmed Xri speakers recorded in the past 50 years, locating the informants or their relatives was a reasonable step in determining more recent linguistic distribution of Xri.

3.2.2. First field trip

The first field trip—from 7 to 11 February 2018, together with Matthias Brenzinger—was a preliminary exploration of the research area to establish whether Xri was extinct or moribund, as previously believed (e.g., Westphal 1956), and whether any of the informants documented in the 1970s by Jan Snyman remained alive. The three informants named in Jan Snyman's field notes formed the point of departure for locating potential informants (Haacke and Snyman 2019:268).[91] We contacted and spoke to individuals in each of the towns visited on the trip (see Table 3.1)[92] and recorded two interviews, one each in Douglas (BV) and Kimberley (LJ). During this trip, the primary approach to locating potential informants and obtaining information was to stop at a central public place in the town, such as a museum or supermarket, and enquire about any individuals who might speak 'the old Griekwa language', or ask after the names from Snyman's fieldwork. Using any information obtained, we would locate and speak to the individuals named, who were sometimes able to give us information about another individual or individuals. Through a series of referrals and conversations, we were successful in Douglas and Kimberley and located one 'rememberer' and one speaker of Xri.

[91] Snyman had approximately eight informants, but only three legible names could be found in Snyman's data: Katrina Brouers in Douglas, and Gert Maerman (or possibly 'Maarman') and Jan Kok in Campbell. Over the course of fieldwork, attempts were also made to locate Don Killian's and Michael Besten's informants for whom metadata were available.

[92] One individual in Bethulie, two in Philippolis, one in Colesberg, four in Douglas, one in Campbell, one in Griekwastad, one in Daniëlskuil, and two in Kimberley.

The obstacles (to accessing individuals) that we encountered during this short trip would continue to pose problems in later trips, for example, breached trust by other fieldworkers and politicians, resistance from political leaders, and mistrust of outsiders perceived as 'rich'. The time-consuming process of following up on leads, from one individual to another, seemed to be the most effective and reliable approach for locating potential informants. Minimal (if any) information could be obtained from institutions (such as museums).

This first field trip determined that, at the very least, one speaker[93] (LJ) and one rememberer[94] (BV) of Xri survived. It also established that it was highly unlikely that any individuals with knowledge of Xri would be found in Philippolis, Bethulie and Colesberg, and that Campbell and Griekwastad would be difficult research areas with a lower probability of having speakers or rememberers. The existence of BV and LJ meant that another field trip was necessary, both to conduct formal linguistic elicitation interviews with them and to undertake a more targeted survey of Douglas and Kimberley for potential Xri speakers and rememberers.

3.2.3. Second field trip

A second field trip from 14 to 21 July 2018, was intended to focus on LJ in Kimberley, but circumstances[95] meant that fieldwork was restricted to work in Douglas and the surrounding area, including the Bucklands settlement (see Figure 3.2). I contacted 17 people and conducted seven recorded interviews with 12 informants. During the first few days of this

[93] That is to say, an informant with substantial Xri knowledge.

[94] A 'rememberer' can be understood as an individual with partial (fragmented) knowledge of the language.

[95] Violent protest action in Kimberley had made LJ, and much of the town, inaccessible.

trip, I searched for individuals that we had been told about and followed up on information obtained during the first field trip. I spoke to any individuals who volunteered information about possible speakers of the *ou Griekwataal* 'old Griekwa language' or claimed to speak the language themselves. I followed the process outlined in Figure 3.3 (in 3.3.1 Identifying informants as speakers) to determine whether or not the person was providing information useful to the investigation, and whether they could indeed speak any Xri if they claimed that they could.[96]

I located and interviewed one more speaker of Xri (SF), as well as six other informants with Xri knowledge (RL, SB, EH, JH, NR, RR) in addition to BV. Locating seven new informants in Douglas during the week-long trip was encouraging as it showed that BV and LJ were not complete outliers, but rather part of a last generation of individuals who had been exposed to Xri to varying degrees. As fieldwork in Kimberley was out of bounds, I dedicated a substantial portion of the field trip to searching for new informants and establishing a relationship with community members in Douglas, which laid the groundwork for future fieldwork. NR, a local leader, became indispensable to my work in Douglas and helped me locate a significant number of informants in subsequent field trips, acting as a community liaison and guide.

3.2.4. Third field trip

The third field trip, from 6 to 18 September 2018, was based in Douglas to avoid any further disruption in Kimberley and because of the central location of Douglas (see Figure 3.2). Fieldwork was conducted in Douglas, Campbell, and Colville and Roodepan in

[96] This is discussed in more detail below, in Identifying informants as speakers.

Kimberley (see Table 3.1). Many of those interviewed in Douglas were located by NR's enquiries since the second field trip. One new speaker (SW) was located in Roodepan,[97] as well as seven new informants with Xri knowledge (BS, AV, KD, JB, MJ, EB, JE). A total of 20 interviews were conducted with 31 individuals, including 10 rememberers and three speakers. Nine of the interviews were conducted with individuals with low—or no—Xri competency in order to obtain cultural and socio-historical background data on the language and the communities, as many of these individuals had family connections to people who spoke Xri in the past. The autobiographical data obtained during this field trip provided significant insights into some of the factors that have contributed to the death of Xri.

This field trip gathered a considerable amount of data in recorded interviews with both new and existing informants. It also substantially increased the number of known individuals with Xri competency of varying levels and obtained rich data on Xri and its position in the community in the past 60–70 years. The research area was extended into Campbell, and unsuccessful attempts were made to include Griekwastad. The most substantial amounts of Xri data were obtained from SW and LJ. SW is probably the most fluent speaker alive (see 4.4.3 Group case study) and took to the interviews with an enthusiasm and energy that was commendable for her 80 years of age.

[97] SW was recommended by Don Killian, as a past informant of his. The only information I had to go on was her name and that she lived in Roodepan, as he had not recorded an address in his field notes. In Roodepan, I asked around for SW and, after several hours of driving around and asking passers-by, I (rather unexpectedly) managed to find her. She and her brother JB both spoke Xri at home as children, and she still speaks Xri every day.

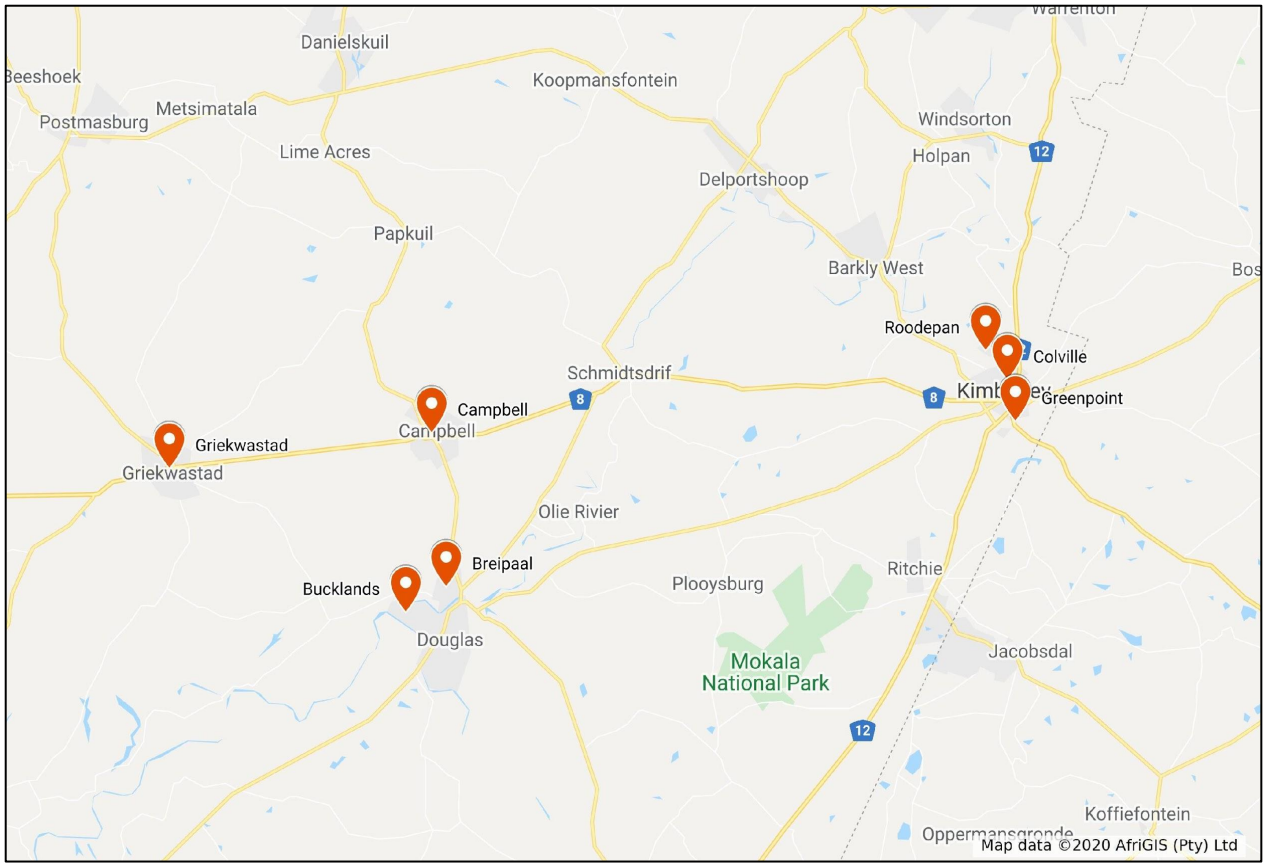

Figure 3.2. Map indicating locations where recorded interviews were conducted with informants.

3.2.5. Fourth field trip

A fourth and final field trip, from 19 March to 2 April 2019, was based first in Kimberley and later in Douglas. My intention with this field trip was to attempt another investigation of Campbell and Griekwastad and to determine whether any individuals with knowledge of Xri existed in these towns.[98] Another priority was to spend as much time as possible with the two most productive Xri speakers (SW and LJ) to obtain reliable linguistic Xri data. I located a total of 11 new informants with Xri knowledge during this field trip—in Griekwastad (AG, MP, VP, AK, TV, KV), Campbell (TW), Douglas (SS, SF2), and Greenpoint, Kimberley (LL, PG)—and conducted 18 interviews with 30 informants, including three speakers and 16 rememberers.

[98] During the third field trip only one individual with very marginal Xri knowledge was located in Campbell.

After finally obtaining permission from *koning* 'king' Johannes Waterboer to collect data in Griekwastad, I was surprised to locate six rememberers, but only one (VP) displayed a substantial Xri lexicon with some phrases. The same was true for the one rememberer in Campbell (TW), who had by far the largest lexicon of individuals encountered in Campbell.[99] The field trip was successful in obtaining a substantial amount of speaker data, with almost eight hours of recorded interviews with SW and LJ.[100]

3.2.6. Obstacles and considerations during fieldwork

3.2.6.1. Navigation

Two of the most difficult challenges in conducting fieldwork for this study were navigating in the townships where informants lived, and following directions given by community members. Street names were signposted in only some neighbourhoods, and the street names were invariably absent from GPS databases and online map platforms (e.g., Google Maps) and could not be looked up.[101] When information was provided by community members, directions were given either using street names, or by proximity to landmarks or the homes of familiar people, for example, "She lives near auntie Sampie's house". Thus, even when one had an exact address for a potential informant, finding the house was often very difficult. Community members usually only knew the name of their own street, and perhaps one or two others around their home, and so asking for addresses and directions yielded

[99] She is the last known resident of Campbell with a knowledge of Xri extending beyond four or five items. The two informants (LL and PG) in Greenpoint, Kimberley, were sisters who grew up in Campbell and told me that their grandfather, Jan Jacobus Balie (d. 1955), spoke the language fluently and that after his death nobody spoke it as much anymore.

[100] A substantial amount when informants are aged 80 and 91, respectively.

[101] In a minority of areas, like parts of Roodepan in Kimberley, houses had a small plaque on the wall with the house number and street name.

limited results. The unplanned—and often complex—layout of some areas in the townships, the lack of visible street names, and absence of navigational resources meant that navigating alone was not straightforward.

Many of the more urban areas could be (and were) navigated alone, but in the smaller towns the knowledge and assistance of local 'guides' were indispensable.[102] Guides were community members who volunteered to help me find potential informants or locate a street address where further information might be obtained. As the smaller communities in the Northern Cape still tend to be close-knit, the guides knew local families by name and could help locate them in a fraction of the time it would take if I had driven around asking after the same person by name.[103] The assistance of these local guides also helped to create a feeling of trust between the fieldworker and potential informants. Another contributing factor to the success of the field trips was the general friendliness of community members in Griqualand West and their willingness to go out of their way to help.[104] I was able to rely, in many cases, on the assistance of members of the public who volunteered to show the way to the homes of potential informants.

3.2.6.2. Following up on information

All the information obtained from community members had the potential to lead to new informants or a new contact in a community. Following up on such information—no matter how trivial—from one person to the next, one town to another, was central to locating potential informants. Passers-by could contribute information in the same way, and

[102] One such guide, NR, was also an informant.

[103] Which I had had to do in numerous cases!

[104] After the first field trip, Matthias Brenzinger commented that he had never encountered such helpful and receptive communities in all his decades of fieldwork.

community members were frequently eager to help me find potential informants. Following up on the information obtained in this way was productive, and regularly led to more information about potential informants (at the very least). If informants did not speak any Xri, they could still provide information about whether their parents or elders did, or whether any other speakers were known to them. Inversely, leads that produced a negative result—an absence of potential informants—provided data about the absence of speakers and rememberers in those areas. Elderly pedestrians, informal traders, and older community members sitting outside their homes were good sources of local information, and sometimes could provide information on potential informants in neighbouring towns. Following up on such information required diversions from planned fieldwork and were often postponed to later field trips.

3.2.6.3. Political control

In the smaller towns of Campbell and Griekwastad local politics posed a substantial obstacle to fieldwork. The situations in the two towns were very different, but in both cases a local leader, or *koning* 'king', exercised political control and restricted access to residents. In Campbell, one local leader dismissed the possibility of finding anyone with Xri knowledge, saying that they had all been dead for many years. He redirected me to an informant in Kimberley and as a result I did not pursue fieldwork in Campbell until the third field trip. The situation in Griekwastad was more difficult, as no residents would speak to me without approval from the *koning*, which proved particularly difficult to obtain. Arranging a meeting with the *koning* (that he would come to) was especially challenging. Repeated attempts to meet with him—travelling many hundreds of kilometres on consecutive field trips—were unsuccessful. The *koning* was either not there, or simply "unavailable".

To resolve the problem of access to Griekwastad residents and following my many attempts to arrange a meeting with the *koning*, I needed to change tactics. I arrived at his home without prior warning and—fortunately—he was there and in a meeting with his *Griekwaraad* 'Griekwa Council'. I explained the purpose of my research and the potential benefits for the community, and formally requested permission in front of his council. He agreed and offered to help me the following day but did not keep to the arrangement. After this, I stopped expecting input from him and the Council, and relied on other sources.[105]

In Campbell, I decided to make my own enquiries and spoke to other residents—notably a leader who was a descendant of Cornelius Kok II—after I encountered negative reactions from people when I mentioned a different leader from Campbell's name.[106]

3.2.6.4. Access to participants

In some instances, I encountered resistance to my enquiries. The most common cause was bad experiences community members had had in the past, when scholars or activists had visited and made promises they did not—and often could not—keep. Commitments to bring money into the community (and to individuals), assistance with land restitution, and promises of government funding had been made in the past, and the typical perception was that these individuals used the information provided to benefit or enrich themselves (see 3.2.6.6 Trust and managing expectations below). Conducting fieldwork in this context was challenging, and I dedicated a lot of time to explaining the objectives of my research,

[105] Older informants in Griekwastad said that they were displeased about the way the *koning* had treated them in the past and said that they would not help him again.

[106] For example, one family in Colville, Kimberley, declined to speak to me after I mentioned that this particular leader in Campbell had referred me to them.

stressing that the work I was doing had nothing to do with money or any tangible gain beyond the Xri–Afrikaans–English wordlist I had determined to construct for the communities. LJ was especially wary, as she said that she had been exploited too many times. Her family had become protective of her and arranging to meet her telephonically was impossible. To make any progress, I had to appear (announced) in person, though she was often absent.[107] Typically, each interview with LJ took several days of negotiations (with the family and with her), but once the interviews were under way, she always enjoyed telling stories and folk tales, and would continue for far longer than I had asked her to.

3.2.6.5. Age and infirmity

Perhaps the largest challenge in obtaining data was the advanced age of many informants. Some had suffered mild strokes, impairing their speech or recall of memories. Others appeared to suffer from degenerative neurological conditions, which had impaired their linguistic and experiential memory. [108] Others still suffered from conditions that caused physical pain, quite apart from the discomfort associated with advanced age. The informal interview approach I developed over the course of my fieldwork proved to be very helpful in setting informants at ease, and thereby obtaining more data than in a formal elicitation style interview (see 3.3.3.2 Developing a new approach). By using informants' early memories and reminiscence, informants tended to forget about the presence of a camera while telling their stories. In these contexts, memories of Xri lexical items would sometimes become 'unlocked'. Sometimes though, informants' memories were irretrievable after a

[107] She still acted as a midwife (at the age of 90!) for many births in the community and could be called away at short notice.

[108] Such informants who participated in the study did so with the full knowledge and consents of their family members. Potential informants who were incapable of giving fully informed consent were *not* included. The infirmities mentioned here are in the interests of transparency. The data provided by these informants can be used to confirm and support the data provided by other informants.

stroke, and they could only recollect fragments. The only way to determine this was by trying to help them remember, which partially explains the large number of interviews conducted. Accessing these early memories through storytelling, songs, recalling early life experiences, or relating other cultural information (such as botanical knowledge) became a central part of putting informants into a frame of mind where their memories were 'activated' or 'unlocked'.

3.2.6.6. Trust and managing expectations

As one might expect in historically side-lined communities, community members were often mistrustful of outsiders. In the context of ill-treatment and marginalisation during—and after—Apartheid, it was also very important that informants felt that they were being treated as respected members of society by the (white) fieldworker.[109] Questions of money, payment and ownership were difficult to negotiate, typically due to historic exploitation of the limited literacy of older community members by unscrupulous visitors, and indeed researchers. The behaviour of previous researchers was often discussed by community members and, unfortunately, the connotations were usually negative—as some researchers had created expectations of long-term material benefit (either financial or in the form of land), promised unrealistic outcomes (such as tourism), or simply never returned and did not share research outcomes with the community.[110] One informant even told me about the theft of written Xri materials by individuals claiming to be researchers. These researchers worked in fields ranging from linguistic and cultural to botanical and medical research.

[109] The mark of experiences during Apartheid (exploitation, repression, marginalisation, physical violence) and post-Apartheid (more marginalisation) are clearly visible in the townships where Griekwa communities largely live. See Waldman (2001) for a comprehensive discussion.

[110] That is to say that these are the versions of events as conveyed by community members. The researchers' own versions of events may differ, but the impression created remains the most pertinent point.

Some community members expected spectacular results from the research being conducted, such as the revitalisation—or rather, 'resurrection'—of Xri and the creation of a school to teach it to local children, or a sudden influx of government spending in the area. While such an outcome would indeed be truly wonderful, the limitations of the Xri linguistic data available, as well as socio-political factors (locally and nationally), make this outcome highly improbable. Managing any such expectation was vital, as the disappointment at them not coming to fruition could be directed at the fieldworker.

Observing customs such as gift-giving (tea, milk and sugar) on arrival at a home helped to establish a relationship of trust with informants.[111] I explained the purpose of the research, in clear and simple terms, reassuring informants that no papers needed to be signed as recorded verbal agreement was sufficient, because of the barriers of literacy (and the suspicion that a stranger asking for signatures might elicit). Because of the (unrealistic) promises made by some previous researchers I made it clear, before any data collection, that the research was not about money and that no money would be made from the data. The emphasis of the data collection was on the preservation of language and culture, and the result that the research would have for the communities was the production of a trilingual Xri–Afrikaans–English wordlist, to be given to the communities at no cost.

Portrait and context photographs were taken of informants and guides (with consent), and all were given prints of these photographs as a gift of reciprocation for the time they contributed to the research.[112] Returning to informants at a later date—either during the

[111] This was included in the ethics approval application.

[112] While it may seem a simple gesture, many individuals had never owned a photograph of themselves, or at least not since they were married in their early twenties.

same field trip, a later field trip, or both—helped to reassure informants and community members. Building a lasting relationship between the fieldworker and the informants with reduced power disparity was therefore actively pursued, and I promised informants that I would not make any promise or commitment that I could not keep. Maintaining a positive relationship of trust was central to the fieldwork approach, as any good—or bad—feelings would spread quickly through the community.[113]

3.3. Field methods

3.3.1. Identifying informants as speakers

To determine the extent of an individual's knowledge of Xri, I employed a series of criteria each following on from the last (see Figure 3.3). This system was developed after the first field trip to accommodate the high degree of language attrition in the community and help make decisions about potential informants without expending too much time on less fruitful lines of enquiry.

The first criterion was to determine whether an individual had any knowledge of an Indigenous Click Language. Individuals would be asked whether they knew a language with click consonants that was spoken by more people in the past. If they did, the second criterion would ask what name they called the language or the way they spoke (if any). Typically, the answer to this question would either tell me about the group of people the language was associated with—in the informant's view—or the word they knew for 'speak' or 'talk'. For example, the informant could answer in Afrikaans, *Griekwataal,* 'Griekwa

[113] The Xri–Afrikaans–English wordlist promised to the communities is near completion and will be distributed to local centres and individuals who are concerned with preserving Xri as a heritage marker, in hard copy and free of charge.

(people's) language', in which case it was the language they associated with Griekwa people. Alternatively, they might refer to the language in Afrikaans (Xri words in bold) as, *ons sê* ***kowa***, 'we say **talk**', and the word for 'talk' would identify the language as certainly Khoekhoe, and more likely Xri *(kowa)* than !Ora *(koba)* or Khoekhoegowab *(goba* or *gowa*, 'language, faculty of speech')[114].

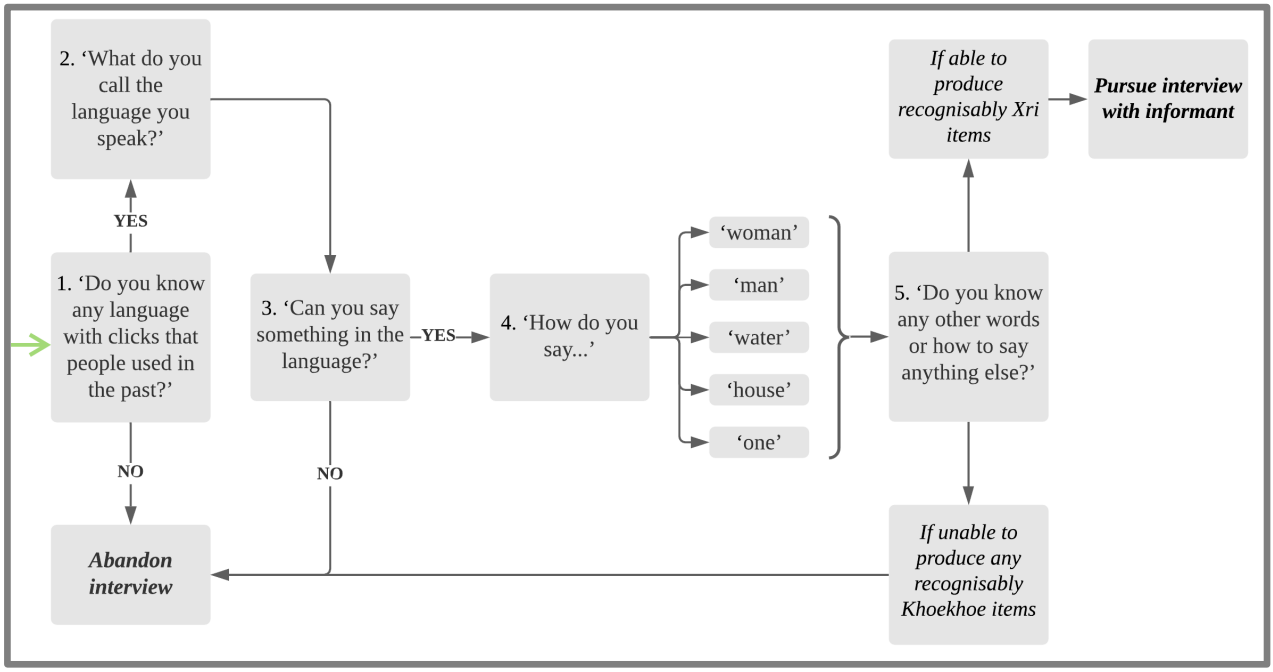

Figure 3.3. Simplified representation of the process of determining a potential informant's Xri competence.

The third criterion was whether they could produce a few words or a phrase in the language, to better distinguish whether the language the informant knew was identifiably Xri. As the fourth criterion, I would also ask them to produce five basic vocabulary items; if they did, it allowed me to determine the extent of their retention of basic morphological aspects of Khoekhoe, and whether the language was consistent with documented Xri items (as the previous question was open-ended). By asking for both 'woman' and 'man', I could

[114] *cf. !hoa* 'to speak' (Khoekhoegowab).

establish whether the informant was able to produce Khoekhoe items differentiated with grammatical gender affixation, below in (1), or whether different stems are used to make a lexical differentiation between ‘man’ and ‘woman’, as in (2):

(1)	*khoe-p*	vs.	*khoe-s*	(2)	*khoe-p*	vs.	*tara-s*
	person-M.SG		person-F.SG		person-M.SG		mother-F.SG
	‘man’		‘woman’		‘man’		‘woman (who has borne children)’

The next two lexical items (‘water’ and ‘house’) were selected as they are part of core vocabulary and therefore lexical items that partial speakers were likely to retain. They also help to distinguish an informant’s variety based on phonetic contrasts between the Khoekhoe varieties (see Table 3.2).

Table 3.2. Phonetic contrasts between Xri, !Ora and Khoekhoegowab. Compiled from data from Beach (1938) ‘B’, Haacke and Snyman (2019) ‘H’, Meinhof (1930) ‘M’, Maingard (1932) ‘Mg’, and M. du Plessis (2018) ‘P’. Items without indication are from my own data.

	Xri	**!Ora**	**Khoekhoegowab**
‘house’	*kx’om-mi* *k’um-mi* (M) *kx’om-da-n*	*kx’om-i* (M, P) *kx’om-s* (P) *kx’om-a* (M) *kx’um-ma* (M, B)	*om-s* (H) *om-mi* (H)
‘water’	*ǁ’am-a* *ǁ’am-mi* *ǁ’am-da-n*	*ǁam-ma* (M) *ǁam-mi* (M, P) *ǁam-da-na* (M) *ǁkam-ma* (B, M) *ǁkam-mi* (B, Mg) *ǁkam-ba* (B, Mg) *ǁgam-mi* (P)	*ǁgam-a* (H) *ǁgam-mi* (H)

The likelihood of encountering individuals with knowledge of !Ora or even Khoekhoegowab could not be ruled out.[115] It was therefore possible that potential speakers encountered could be non-Xri Khoekhoe language speakers.

(3)	*//ˀam-mi*	(4)	*/ui*
	'water'		'one'

Note that in Xri tokens, the lateral click in 'water' (3) is followed by a glottal stop, which contrasts it from the release of the click in !Ora. The Khoekhoegowab lateral click is voiced, and so more easily distinguishable. The ordinal number 'one' (4) was included on the list as an indicator of retention of click differentiation between the lateral click in 'water' and the dental click in 'one'.[116]

Following the list of five items, potential informants were also asked for any other words or phrases they might remember (as the fifth criterion), even if they were not able to produce any of the five items. If informants produced no Xri or produced speech or items that were unrecognisable—or recognisably *not* Khoekhoe—then the interview would be abandoned. If, however, they produced some of the items asked for, the decision of whether or not to conduct a recorded interview would be based on the nature or quality of the answers. If an individual provided, for example, only one or two lexical items and was unable to provide any spontaneous data, then the interview would be more likely to be abandoned. The more

[115] !Ora was known to have a handful of last speakers and rememberers (see M. du Plessis 2018:53–57), and Khoekhoegowab has a significant number of speakers (c. 200 000) in Namibia and in the Richtersveld (Haacke, pers. comm., cited in Brenzinger 2014:92).

[116] It was also particularly useful as it correlated well with vocabulary size, so could be used to distinguish between those informants who knew c. 10 words and those who knew c. 100 (see Assessing informant competency).

reliable and natural the answers were, the more likely it was that an interview would be pursued.[117]

3.3.1.1. Criteria not used for identifying speakers

Of the criteria used to identify potential speakers in the past, even if only as subsidiary criteria, a number were expressly *not* used.

The appearance of an individual was not taken into account as it was, for example, by Douglas Beach (1938). The (racial) "characteristics", or indeed stereotypes, used by Beach to sort the "true Griqua" from the "impure", are wholeheartedly rejected by this work and its author, not only for their overtones of racial purity, arbitrariness and unacceptability in the 21st century, but also as they have no bearing on linguistic competence or performance. Similarly, using cultural characteristics or social identity in identifying speakers is not appropriate and has been avoided by the present study, not least due to the complexity of social identity in the Griekwa community (see 2.3 The social history of Xri). The history of racial and cultural stereotyping in the broader field of Indigenous Click Languages has been documented in Brenzinger (2014) and is discussed in 2.2.1 Nomenclature.

Individuals' confidence in their own Xri language competency was also not used as a factor as it may be misleading. Individuals may think that they have a level of competency in the

[117] By way of example, I followed up on a series of leads and rumours (from both community members and colleagues) that there were two speakers in a particular location. After several hours and many kilometres of searching, I encountered two women who were adamant that they were speakers. I applied the criteria described above, and by step four of the process it became apparent that it was highly unlikely that they were speakers. They both produced utterances when asked for each item, but these items sounded dissimilar. I asked them to repeat some of the items they had given me, and they both provided me with entirely different items to the ones they had provided the first time. In addition, none of the items they provided were recognisable as belonging to a Khoekhoe language, nor was the morphology. This demonstrates how, using very little time, it was possible to determine that these two individuals were indeed *not* speakers of Xri.

language that is not reflected in their performance, and produce clicking 'words' and 'phrases', but without any recognisable (Khoekhoe) content. It is not possible to say whether they did this out of a true belief that they were speaking a language, a desire to mark themselves as 'authentic' members of a (formerly Xri-speaking) Griekwa community, or the hope of a material reward if they could satisfy the visitor's curiosity (as extreme poverty is a common reality in the research areas).[118] Such individuals may in the past have had some knowledge of the language, but their confidence in their performance does not correspond to their ability to speak the language. Inversely, an individual may believe that their competency is very low, and hardly worth mentioning to the fieldworker, but using a simple test (see Figure 3.3) may demonstrate that their performance exceeds their own belief in their ability. Therefore, individuals were not asked how 'good' their Xri was, and their performance was determined through empirical testing.

3.3.2. Informants

From the 56 informants interviewed, 27 were selected for inclusion in this study. Those selected are the three last known L1 speakers of Xri, and 24 semi-speakers and rememberers (see Table 3.3). An additional 26 informants were interviewed for context and background of the communities, and to provide a broader understanding of the place of Xri and its loss over time. These 26 informants were, however, not included in this study (see last column of Table 3.3). Informants' names have been withheld to protect their identities.

[118] A few weeks after I had encountered a pair of such 'Xri speakers' in Bucklands, Douglas, I was informed by a colleague performing a survey of 'Click Languages' in South Africa that they had encountered two speakers of 'Griekwa' and provided me with a description of the pair, in the exact same location.

Table 3.3. List of all interviews conducted, with date, informant names, sex and age, location, length of interview, and whether interviews are included in the study. All interviews were recorded in both audio and video, excluding the first two interviews, which are audio only.

Date (dd.mm.yyyy)	**Informant code(s)**	**Sex**	**Age (y)**	**Location**	**Length (min.)**	**Data used**
08.02.2018	BV	F	70	Breipaal	41	yes
10.02.2018	LJ	F	90	Colville	106	yes
17.07.2018	BV MF1	F F	70 64	Breipaal	140	yes
17.07.2018	NJ	M	69	Breipaal	28	no
18.07.2018	BS AS	F M	68 75	Breipaal	51	yes
18.07.2018	RR NR	F M	61 65	Breipaal	66	yes
18.07.2018	SF1	F	76	Breipaal	48	yes
19.07.2018	JH EH	M F	72 70	Breipaal	99	yes
19.07.2018	RL SB	F F	72 71	Breipaal	49	yes
08.09.2018	BS	M	45	Bongani	47	yes
10.09.2018	AV	F	84	Breipaal	32	yes
10.09.2018	MD KD	F M	61 71	Breipaal	67	yes
10.09.2018	RL SB	F F	72 71	Breipaal	32	yes
10.09.2018	FF MF2	M F	79 72	Breipaal	12	no
10.09.2018	GB MB CR MF1 BV MM	F F F F F F	65 68 61 64 70 60	Breipaal	76	no
12.09.2018	SW	F	80	Roodepan	91	yes

Date (dd.mm.yyyy)	Informant code(s)	Sex	Age (y)	Location	Length (min.)	Data used
	JB	M	99			
13.09.2018	LJ	F	90	Colville	76	yes
13.09.2018	MJn JK	M M	60 58	Campbell	61	yes
13.09.2018	GP	M	83	Campbell	32	no
14.09.2018	KB	F	82	Breipaal	33	no
14.09.2018	MJ	F	80	Breipaal	17	no
14.09.2018	NJ	M	70	Breipaal	19	no
15.09.2018	GG AM	M F	47 58	Bucklands	25	no
15.09.2018	EB	F	74	Breipaal	19	yes
15.09.2018	LA	F	72	Breipaal	10	no
15.09.2018	RD	F	96	Breipaal	46	no
15.09.2018	SF1	F	76	Breipaal	30	yes
15.09.2018	EE JE	F M	67 74	Breipaal	19	yes
16.09.2018	SW	F	80	Roodepan	58	yes
21.03.2019	SW	F	81	Roodepan	167	yes
22.03.2019	SW	F	81	Roodepan	110	yes
22.03.2019	LJ	F	91	Colville	95	yes
24.03.2019	AG	F	83	Griekwastad	39	yes
24.03.2019	MBn	F	79	Griekwastad	19	no
25.03.2019	GL, MJt, MJs, MH, MJj DJ	F M		Griekwastad	34	no
25.03.2019	MP	F	70	Griekwastad	46	yes
25.03.2019	VP	F	84	Griekwastad	35	yes
25.03.2019	TW	F	85	Campbell	85	yes
26.03.2019	SS SF2	F F	92 86	Breipaal	61	yes
27.03.2019	BV WV	F M	71 80	Breipaal	48	yes
27.03.2019	SF1	F	77	Breipaal	48	yes

Date (dd.mm.yyyy)	Informant code(s)	Sex	Age (y)	Location	Length (min.)	Data used
28.03.2019	MJc, AK, MJs, MH, GL JHs, ML, MJf, CE DJ	F F M		Griekwastad	21	no
28.03.2019	TV KV	F F	62 60	Griekwastad	24	yes
28.03.2019	JH EH NR RR	M F M F	72 70 65 62	Breipaal	46	yes
30.03.2019	LL PG	F F	82 90	Greenpoint	19	yes
30.03.2019	HLB	M	58	Greenpoint	7	no
30.03.2019	SW	F	81	Roodepan	102	yes

3.3.2.1. Selection criteria

To be included in this study, an informant needed to have some degree of spoken competency of Xri, ranging from being speakers to rememberers. The 27 informants were selected for their range of Xri competency (Table 3.3),[119] in order to give an overview of the levels of linguistic change in Xri realisation due to contact with Afrikaans. Informants were excluded for one of two reasons: insufficient Xri competency (producing too few items, or *no* Xri knowledge), or for possible interference in Xri competence from another Khoekhoe language.[120] The remaining informants were included in the study.

When documenting a language in the advanced stages of language death, many (if not all) informants are likely to have only partial acquisition of the language being studied, such as

[119] Informants' competency is discussed in detail in Assessing informant competency.

[120] Activists had distributed Khoekhoegowab handbooks to some community members.

a small lexicon and perhaps a few phrases learned as lexical chunks. The problem of the (un)reliability of the last speakers of a language—also described as "semi-speakers" and "imperfect terminal speakers"—is clearly described for Scottish Gaelic in Dorian (1997), in particular the likelihood of reduction and loss in the language preceding its death. Elmendorf (1981:36) uses the term "last speakers" to describe individuals who are the only remaining members of a former indigenous speech community to retain "[a] 'reasonable' degree of linguistic performance". In Elmendorf's (1981:36–37) usage, however, 'last speakers' may "in extreme cases" also have reduced linguistic competence and performance in the variety, where speakers are only able to produce a limited range of lexical items. The former usage of 'last speakers' fits far better with the term than the latter: 'last speakers' are able to speak the language with some degree of confidence, rather than being limited to recalling isolated phrases and lexical items. A more appropriate way of describing such individuals with limited linguistic competency (in a given variety) is proposed by Knab (1980:232), who calls them "rememberers". These are individuals with fragmentary competence in a variety—and insufficient competence to be productive speakers—who can only be considered to possess a passive knowledge or fragmentary intentional learning of the language.[121] Such "rememberers" are nevertheless potential sources of data as

[121] Campbell and Muntzel (1992:181) misinterpret Elmendorf's 'last speakers' as referring to "weak semi-speakers", perhaps due to the lack of clear parameters in his classification of speakers. Indeed, Elmendorf's (1981:36) description of 'last speakers' stresses that these individuals need to have—or once have had—a 'reasonable fluency' in the language, whereas Campbell and Muntzel's (1992:181) 'weak semi-speakers' have a "more restricted speaking competence". It is difficult to extract the precise nature of these distinctions from the scant definitions provided, and the category of 'semi-speakers' as a continuum has been noted by Sasse (1992a:62): "The most detailed classification (though still extremely simplifying because it is not easily possible to quantify a continuum) is given in Campbell and Muntzel (1989). They distinguish between 'nearly fully competent', 'imperfect but reasonably fluent', 'weak' and 'rememberers' (1989:181). Unfortunately, this classification captures only the degree of competence without specifying where the differences lie. In particular, it does not take account of the difference between 'rusty speakers' and 'semi-speakers proper'. It is reasonable to assume that speakers found at the upper end of the continuum, the 'nearly fully competent

informants, while the fieldworker must necessarily be fully aware of the likelihood of their performance deviating from that of more fluent informants (e.g., phonological attrition, reduced lexicon, grammatical simplification).

Dorian (1982) and Grinevald (2007:49) stress the importance of targeting a wide sample of the speech community when documenting and describing an endangered language, taking in as many different types of speakers as possible (i.e., not only the most fluent speakers). Grinevald's typology of speakers includes "fluent speakers" (of both traditional and changed forms of a language), "semi-speakers" (with good receptive skills, but variable production skills), and "terminal speakers and rememberers" (individuals with very limited production who have a more passive knowledge of the language) (Grinevald 2007:51).[122] Yet Dorian (1982:32) highlights the difficulty of establishing the level of linguistic competency in the language being studied (in this case East Sutherland Gaelic) in low-proficiency "semi-speakers", and those with a near-passive knowledge[123] of the language. Some suggestions have been made about ways of approaching the elicitation of (spontaneous) data from such informants (e.g., Grinevald 2007:53–56) but the suggested techniques—bringing informants together, visual stimuli—have definite limitations in contexts where informants have physical impairments related to age (such as deafness, blindness, memory loss or stroke damage).[124]

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speakers', are typically 'rusty speakers', while 'imperfect/reasonable fluent' and 'weak' speakers are typically semi-speakers proper. 'Rememberers' may represent the terminal stage of both."

[122] Grinevald and Bert (2011) give an overview of the kinds of speakers in the end stages of language attrition and death in their typology of speakers of endangered languages. This overview is particularly useful given the array of different speakers described in the literature.

[123] That is to say, they understand the language to some degree but are unable (or reluctant) to speak in the language.

[124] They also do not allow for the very real possibility of informants disliking each other.

The selection of informants in most previous studies of Xri were not guided by the principle of targeting a wide range of informants (Dorian 1982; Grinevald 2007) discussed above. Instead, the informants were selected by:

a) chance, those who happened to approach Meinhof (1930),
b) ideas of 'language purity' in the case of Beach (1938),
c) highest language competency, presumably the case for Snyman's (Haacke and Snyman 2019) informants as there are proportionally few errors in the data.

This has limited the effectivity of research and represents a series of lost opportunities to adequately document Xri and its slow death. In addition, the informants one selects do—in this sense—equal the data one gets and using only the 'best' informants who provide 'good' data means that one's results are not representative and offer a skewed perspective of the language in question.

3.3.3. Interviews

A total of 47 interviews were conducted during four field trips (see Table 3.3), constituting over 40 hours of recorded data. The data will be housed in part at the Endangered Language Fund (ELF),[125] and in part at the Centre for Curating the Archive (CCA).[126] Audio, video, and transcribed textual data, as well as comprehensive metadata will be housed on the online repository of the South African Centre for Digital Language Resources (SADiLaR) and will be accessible upon request.[127] Full transcriptions of the interviews, as well as translations into English, will accompany the data and are currently in progress.

[125] Lexical data only.
[126] Selected interviews and transcriptions.
[127] The data may also be housed on or linked to other sites and platforms in the future.

The interviews were conducted with 56 informants: the last three L1 speakers of Xri, 27 semi-speakers and rememberers of Xri, and 26 additional elders (for background data on history and culture, as well as any history of Xri knowledge in their families). Data from 33 interviews conducted with 27 informants were selected for this study.

3.3.3.1. Initial intentions and setbacks

At the outset of the second field trip, I was intent on documenting Xri in the way described in the textbooks I had consulted, centred around formal elicitation interviews. In preparation for the second field trip in July 2018, I had equipped myself with an extended 207-word Swadesh list[128] and the Xri wordlists from Meinhof (1930) and Haacke and Snyman (2019). During the first interview with BV and MF, I started with a brief introductory biographical interview. I then moved on to eliciting the terms contained in the (English) Swadesh list. This immediately presented problems, not only with the terms in the list, but also with the responses and reaction of my two informants. In translation to Afrikaans—our common language—many of the items on the list proved impossible to communicate to my informants. Indeed, while standard Afrikaans could express most of the items without duplication, I struggled to communicate other items in the local variety of Afrikaans without resorting to analogies.[129] Analogies were far from ideal, as participants often misunderstood what it was that I was asking for.[130] Many of the terms also were not relevant in the environment of Griqualand West, and were therefore highly unlikely to have survived in a

[128] Taken from Bowern (2008), see Appendix 2: Extended Swadesh 207-word list.

[129] For example: 'husband' and 'man' are both *man* (std. Afr. and Griekwa Afr.), 'big' and 'old' are both *groot* (Griekwa Afr.). Inversely, *loop* can be 'walk', 'leave', and 'go', and *been* is 'leg' and 'bone'.

[130] For example, trying to distinguish between *lank* 'long', and *lank* 'tall' by using an analogy. Informants often responded by giving Xri words directly translated from the analogy, rather than the word I was trying to elicit.

situation of language shift and death, such as that of Xri.[131] Other terms in the list were also not helpful, such as colour terms (ever problematic),[132] and some of the general nouns like 'animal' or 'plant'. The informants also simply did not know a substantial proportion of the items on the list.

I continued the interview with the wordlist from Haacke and Snyman (2019), in an effort to determine the reliability of the list and to prompt the informants with the Xri words rather than Afrikaans. I had hoped that they might respond better and feel more at ease after being able to answer a few of my questions. In some respects, this list was more helpful—the terms were more often things they might know—but it was simply too long (>1 100 items) and with too many items that they did not know or had forgotten. In comparison to the first visit to BV in February 2018, she produced far fewer Xri items and was more withdrawn. With each successive item that they did not know—especially with words they clearly felt that they *should* know, like 'blood'—the informants withdrew more and more from the process, and often would make up or repeat other words, just so that they had something to say. They appeared to be distressed—and even embarrassed—and kept telling me that they *should* know a word, but that they had not learnt it, or had forgotten it, or that they would remember it another time. These two informants were on the younger end of the scale of informants (64 and 70 years old) and were evidently exhausted by the two and a half hours of interviewing. They appeared to be disheartened and depressed at realising how much they did not know. The static nature of the list, combined with the pressure to recall items, appeared to hamper their confidence and ability to recall items. It became clear to me that

[131] No informants could provide the following terms, and often didn't understand why I could possibly be asking for them: forest, freeze, lake, sea, fog, snow, ice. It is dubious whether some of them ever existed in the language.

[132] The meanings 'pale', 'yellow', and 'bright' are all encompassed by */ǂhai* depending on the context.

using a formal elicitation interview technique on other—especially older—informants would not yield good results, and that it may alienate those community members whose help and cooperation I needed most.[133]

3.3.3.2. Developing a new approach

I realised that the approach of conducting a formal linguistic interview, using the Swadesh list and 'classic' elicitation, was not ideal and that it would not yield desirable results. The results in the previous field trip had been in a different setting with a more informal interaction, closer to a conversation, and I speculated that this approach might be more accessible to the informants and yield better data.[134] I decided to stop using the wordlists, at least until informants were more comfortable with me, and I had gauged their level of Xri competency. I realised, during the next few interviews, that when informants felt more comfortable, they were able to provide more information and remember things that they did not when they were tense. It was necessary to reduce the feeling of being under pressure for the informants and to be able to interview them in a more natural and relatable way.[135] In Douglas, the assistance and presence of NR—a respected and well-known figure in the community, but not an authority figure—proved to be a perfect combination for the fieldwork as he helped informants feel comfortable with me, the camera and voice recorder, and my questioning, without creating an atmosphere of formality as an 'important visitor'

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[133] It also occurred to me that sitting with a sheaf of papers highlighted the difference in literacy between me and informants, most of whom were either peripherally literate or illiterate.

[134] The only informants who I could—to some degree—use wordlists with were SW and LJ. As I had no access to LJ during the second field trip (see Second field trip) and had not yet met SW, I had to rely on informants with a less extensive knowledge of Xri.

[135] It is important to remember here that most of the informants only partially acquired Xri, and also had not used the language for many years. Thus, recall of specific items on demand was sometimes difficult, especially when they knew a word but could not recall it, making it a stressful experience, which further hampered their performance.

may have done. In this more conversational atmosphere, I could occasionally ask for specific items without informants feeling under pressure. I also discovered that often when informants could not remember items, they later spontaneously used them when telling stories or chatting to NR.

I experimented with this informal style of interview, where the situation was more like a social interaction (albeit with a camera pointing at them) than being questioned. The best data I obtained during the second field trip were from informally structured interviews. Once I had returned from the field and was watching the recordings of the interviews, I noticed that a greater proportion of Xri items would be used during storytelling—especially about the informants' younger days—and relating traditional activities, and that the words they recalled were often ones I did not get from informants in other situations, such as direct elicitation. I speculated that 'deeper' memories might be setting informants at ease, as they knew the stories well and telling them was a 'normal' thing to do, as opposed to the abnormal setting of an interview. Another possibility was that tapping into these older memories was in some way activating dormant aspects of informants' memory.[136]

Almost all of my informants were older individuals (over 70 years old) who had not used the Xri language for decades. In this context, the isolated recall of words is artificial, especially in an 'on demand' setting. For older people—some of whom have suffered strokes or have other difficulties with remembering—who have not spoken the language for a long time, the kind of language production in a formal interview was very difficult, not

[136] A loose comparison could be made with the work of Oliver Sacks (1982) and using music to (re)activate the motor function of individuals with advanced Parkinson's Disease. I did ask informants whether they could remember any old songs, and those who felt comfortable to perform them invariably had a rush of memories and associations, and very often a number of Xri items they had not been able to remember earlier.

least with a white visitor in their home. Most also had only partially acquired the language, often from individuals who had only partially acquired it themselves.[137] In this context, my original expectation to conduct formal interviews was, at best, misguided and the techniques I wanted to use were impracticable and inappropriate. Instead, my focus shifted to providing contexts that would activate memory, and keep informants relaxed.

In the later interviews of the second field trip, and those of the third and fourth field trips, I spent more time asking informants to tell me about their lives, where they lived when growing up, and the things they did in the veld as children. I asked them about cultural phenomena, like the *Waterslang*, a supernatural 'water snake' being and the */'habasaas* or *hokmeisie* 'female initiation' rituals and activities.[138]

3.3.3.3. Language and interaction

Being able to speak to informants and community members in Afrikaans was a crucial factor in data collection, as only one informant spoke rudimentary English. Indeed, being familiar with the Orange River Afrikaans variety and its differences from standard Afrikaans (which I speak) was essential for mutual understanding. Other recent fieldwork by Killian (2009) demonstrated the gap in understanding and serious communication problems (see 2.4 Studies of Xri for a discussion). During interviews, paying full attention to informants and taking minimal notes was essential in establishing rapport, by focusing on the informants while they were speaking and not appearing distracted, and letting the camera and recorder do the 'note-taking'. The majority of informants were not literate, or

[137] Based on the historical research in Mössmer (2019) it is highly likely that the majority of individuals with any level Xri competence (excluding those few who were L1 speakers) acquired or learnt Xri from individuals with only partial acquisition of Xri, going back at least to the 1880s.

[138] See van Vreeden (1955) and Waldman (1989) for details.

had low literacy levels, and were distrustful of outsiders writing things down. I showed an interest in the informants and their lives, their stories, and their culture, asking for details of rituals, or about particular supernatural entities.

3.4. Ethics

Ethical clearance for the research project was obtained on 7 February 2018 from the Ethics Subcommittee of the Linguistics Section of the School of African and Gender Studies, Anthropology and Linguistics, at the University of Cape Town, and is included as Appendix 1: Ethical clearance letter. I am listed as the Secondary Investigator. Informed consent was obtained verbally from all informants before data were collected, and the consent was obtained again at the beginning of the recorded interview. Consent forms were not used, due to the low literacy levels among informants.

4. Assessing informant competency

In this chapter I examine and quantify the spoken competencies of my Xri informants. The aim of quantifying informants' spoken competencies is, firstly, to create a metric guide to the reliability of informants' contributions; secondly, to convey the complexity of the variations in competency between individual informants; and thirdly, to propose a metric model for defining informant competency. Similar to the various scales used to determine a language's level of endangerment (see 2.1.1 Level of endangerment), the proposed metric aims to refine distinctions such as the confusing labels[139] that are used dissimilarly by different scholars and publications (see e.g., Dorian 1977, 1992; Sasse 1992a; Aitchison 2001; Jones and Singh 2006). This chapter attempts to add to the disciplinary typology (or typologies) of last speakers and rememberers of critically endangered and dying languages. As far as I am aware, no such metric exists at present.

I begin by giving an overview of the speakers, and—where possible—where and how they acquired or learnt Xri. The informants are divided into three groups based on their Xri competency and the Xri input they received (either as children or adults). These three groups reflect distinct levels of competency. I provide descriptive case studies of each group that will help refine the typology of last speakers and rememberers.

I support these case studies with a measurement metric of informants' productive Xri competence using ten criteria (see 4.2 Categories of assessment and assessment scale) that take into account syntactic, morphological, phonetic, tonal, and lexical performance. These

[139] Such as 'semi-speaker', 'partial speaker', 'rusty speaker' etc.

criteria are used to calculate a score that measures an informant's competency relative to either the most fluent informant or to a hypothetical 'ideal' fluent speaker, based on a normal distribution, with a lexicon size of 5 000 items as the average (see 4.3 Xri speakers' competency scores).

These scores aid in data analysis by indicating which informants' production is more typical of the language. The scores have the potential to help fieldworkers working on critically endangered and dying languages to target data collection to particular informants, based on the results of a preliminary survey using the metric of ten criteria, adjusted to the language in question. This precise measurement avoids grouping speakers into difficult-to-define categories such as "terminal speaker" or "imperfect speaker" (Sasse 1992a:18), instead offering an approach in which informants' competency is rated empirically while also taking their circumstances of acquisition or learning into account. This approach also allows the researcher to accommodate situations in which intergenerational language transmission may have been interrupted at various stages in a language's recent past, rather than viewing the (first) interruption of transmission as the 'beginning of the end' and all subsequent speakers as "semi-speakers" or "terminal speakers".

This attempt at a more balanced approach to informant categorisation and rating is aimed at enabling fieldworkers to evaluate data from a larger range of informants with a lower competency, as often even speakers whose overall knowledge extends to only a few dozen lexical items can reliably contribute items that are not recalled by informants with higher competency.

4.1. Overview – knowledge and use of Xri

All individuals with Xri knowledge encountered during fieldwork displayed an advanced level of language attrition. Based on informants' accounts of the Xri competence of family members of their parents' and grandparents' generation, all informants (with the *possible* exception of SW, LJ and JB) were at least the second or third generation with significant Xri language attrition. This is hardly surprising, given the extent of linguistic pressures discussed in 3 Methods. Only two informants—siblings JB and SW—reported speaking *only* Xri in the home as children but using mainly Afrikaans outside their home. Ten further informants—AG, BV, LJ, SF1, SF2, SS, TW, VP, and siblings LL and PG—reported one older family member using Xri regularly at home. The remaining informants acquired their Xri knowledge from more distant sources: extended family living outside their main home, neighbours, or through deliberate learning as adults. Those individuals who deliberately learnt Xri as adults did so at their own initiative, and not as part of a community/organised initiative. In the recent past, activists from Cape Town have visited the communities and encouraged people to learn Khoekhoegowab, handing out textbooks to community members. One informant (MF) was excluded from the study as she had been using one of these textbooks to "sharpen up her Xri".

The domains of use of Xri are now very limited. In those informants who have a working command of some Xri, the language is used to display their 'true Griekwa-ness' to other community members, and they are viewed as the last repositories of certain traditional knowledge. Xri is no longer used as a language for day-to-day interaction, and is barely used at all by most informants, with the partial exception of siblings JB and SW. However, older brother JB appears to suffer from memory loss that affects his language and according to his sister SW, he only responds to her in Xri on some days and speaks Afrikaans the rest

of the time.[140] SW uses Xri words and phrases when interacting with friends and neighbours, and some have learnt a little Xri from her. LJ uses Xri in her daily activities as a midwife and prayer leader in her church. SF1 usually denies having any knowledge of Xri, but sometimes says she will only speak Xri if the fieldworker speaks Xri to her; she only used Xri comfortably and at length on one occasion when she was in a relaxed frame of mind.

4.2. Categories of assessment and assessment scale

The assessment is aimed at capturing the full range of speaker competency and therefore includes scores based on informants' syntactic, morphological, phonetic, tonal, and lexical performance. The categories are grouped accordingly and each targets a particular aspect of language—both general and Xri-specific—that is easily identifiable, whether in the field or during transcription and analysis. These categories are laid out in Table 4.1, together with a short description, the scale according to which a score is given, and the weight that different categories contribute to the final competency score.

A score on a six-point scale (detailed in Table 4.2) is given for categories (A) to (I), based on an informant's production in a given category, ranging from not producing anything in that category (0 points), to production similar to a 'fluent speaker', with few (if any) inaccuracies (5 points). The hypothetical 'fluent speaker' is based on an interpretation of Haacke and Snyman's (2019) data—complemented by data from my informants with the

[140] SW found it upsetting when JB could not reply to her in Xri, even after repeated attempts to engage him. SW said that on some mornings they would sit outside under a tree and chat in Xri, but on most days he could not remember the Xri words. The presence of the fieldworker no doubt also had some effect on his preparedness to speak the language, and Don Killian (pers. comm.) had the same experience when interviewing him in 2007.

Table 4.1. Schematic of the scoring scale used in the informant competence score calculation, including descriptions of the categories and point scales.

	Category	Description	Scale	Score
Syntax	(A) Produces longer sentences	More complex phrases using more than three lexical items	0–5	50%
	(B) Produces simple sentences	Phrases with a simple structure of three lexical items	0–5	
	(C) Produces noun phrases	Noun phrases containing more than one lexical item	0–5	
Morphology	(D) Produces derived forms	Lexical items derived from nouns or verbs by suffixation	0–5	
	(E) Produces PGN distinctions	Person, gender, number distinctions by suffixation	0–5	
Phonetics	(F) Produces click and accompaniment	Click phoneme with its accompaniment	0–5	
	(G) Produces non-Afrikaans phonemes	Phonemes not found in Orange River Afrikaans	0–5	
	(H) Produces nasal vowels	Nasal vowels, not post-/pre-nasalisation	0–5	
Tonology	(I) Produces tone	Consistent tonemes	0–5	
Lexicon	(J) Speaking vocabulary size	Total number of lexical items produced by informant	actual	50%

highest competency levels—viewed in the context of other well-documented Khoekhoe languages—!Ora and Khoekhoegwab. There is, unfortunately, a certain level of uncertainty that accompanies such an assessment, but as there is no existing example of fluent Xri there is no alternative.[141] This is further discussed in 4.3 Xri speakers' competency scores. While no fully fluent speaker survives, the scale is constructed in such a way that an informant's inconsistencies and errors in production are a sufficient indicator.[142] The matter is discussed further below, and an alternative approach using the most fluent of the informants as the benchmark 'fluent speaker' is also put forward. If one takes category (H), production of

[141] In terms of Syntax, for example, I had to rely heavily on data from the other languages, as the few phrases in Haacke and Snyman (2019) show clear signs of attrition. In my own informants, only SF1 produced a long utterance (of several minutes) which appeared to be more or less syntactically sound.

[142] It is also unclear whether any of the informants in previous studies were indeed fluent, but it must be assumed that they were not, given the nature of the data obtained.

nasal vowels, as an example to illustrate the approach, scores would be allocated as shown in Table 4.3.

Table 4.2. Six-point scale for estimated competency, relative to a 'fluent' speaker.

Six-point scale for estimated competency	
Score	**Production**
0	no production
1	produces occasionally, but not more than by chance
2	produces occasionally, more than attributable to chance
3	frequently, with inaccuracies
4	habitually, but with some inaccuracies
5	fluent, with very few inaccuracies

Table 4.3. An example of score assigning on the six-point scale for estimated competency, for category (H), Production of nasal vowels.

Six-point scale scoring for (H) Produce nasal vowels	
Score	**Production**
0	zero production of nasal vowels, or nasalisation associated with vowels;
1	very occasional production of nasal elements associated with vowels (on either nasal or oral vowels), usually as pre- or post-nasalisation, with errors;
2	occasional production of nasal vowels (on either nasal or oral vowels), often as pre- or post-nasalisation, with errors;
3	frequent production of nasal vowels (only some on oral vowels), sometimes as pre- or post-nasalisation, with errors;
4	produces most nasal vowels, only very few as pre- or post-nasalisation, with occasional errors;
5	produces nasal vowels with high degree of accuracy, none as pre- or post-nasalisation, with few errors.

In category (J), the score is equal to the actual number of lexical items produced by an informant; thus, an informant who produced 52 Xri items is given a score of 52 points. During the design of the metric, the conversion of lexicon size into a six-point scale was determined to be impractical, as it flattened the curve of the end scores, and did not

differentiate between different levels of competency at the lower end of the scale. Category (J) is given a weight of 50% of the total score. The weighting of categories (A)–(I) as 50% and category (J) as 50% represents the importance of the size of an informant's lexicon when determining competency in a situation of language attrition and 'decay', as is the case with Xri. The data in the next section will show that the size of the informant's lexicon is a good predictor of their overall competency, but not sufficient on its own.

4.3. Xri speakers' competency scores

Two different targets were used as standards against which to score informants' competency, one hypothetical and the other based on the data obtained. The first target (see Table 4.4) was a hypothetical fluent speaker of Xri with fully competent production in all of the categories, assuming a lexicon of 5 000 items. This number is based on word frequency studies which show that a vocabulary of 1 000 items accounts for 85% of speech, and that 4 000–5 000 items account for 95% of written text (Rayson and Davies 2020:vii). The use of this figure must carry the caveat that it is based on texts from written languages—which Xri is not—and that there is a general lack of data on word frequency and vocabulary size in languages other than English (Tschirner, Hacking and Rubio 2018:58).

Plotting the lexicon size on a normal distribution (based on a 'fluent' lexicon size of 5 000 items) meant that all but five informants scored a (1) for a lexicon of 1–110 items, and the other five a (2) for a lexicon of 111–680 items. As all informants fall on the lower end of the normal distribution of lexicon size (with a hypothetical fluent native speaker of a 'healthy' Xri being the average), such a scoring on the six-point scale is not helpful for representing the range of difference between the speakers. The scores assigned to

informants in each category can be seen in Table 4.4, together with their age, sex, and overall competency score.

*Table 4.4. Scores of informants relative to a hypothetical fluent speaker with a vocabulary of 5 000 words. The total score is calculated with a weight of 50% given to categories (A) to (I), and 50% given to the vocabulary score (J). (*Ages are as reported by informants.)*

Hypothetical Xri competency scores of informants														
				Syntax			Morphology		Phonetics			Tonology	Lexicon
Informant	Sex	Age* (y)	Score (%)	Produce longer sentences	Produce simple sentences	Produce noun phrases	Produce derived forms	Produce PGN distinctions	Produce click and accompaniment	Produce non-Afrikaans phonemes	Produce nasal vowels	Produce tone	Speaking vocabulary size
				(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
KD	M	79	**3,4**	0	0	0	0	0	2	0	0	0	3
JE	M	74	**3,4**	0	0	0	0	0	1	1	0	0	7
MJ	M	61	**3,5**	0	0	0	0	0	1	1	0	0	15
BSt	F	70	**4,5**	0	0	0	0	0	1	3	0	0	5
BSn	M	45	**4,8**	0	0	1	0	0	1	2	0	0	32
JH	M	72	**5,7**	0	0	1	0	1	1	1	0	0	16
NR	M	65	**6,8**	0	0	1	0	1	1	3	0	0	14
AV	F	85	**11,3**	0	0	3	0	1	3	3	0	0	14
RL	F	72	**11,6**	0	0	3	1	1	2	2	1	0	53
JB	M	99	**12,3**	0	0	0	0	1	3	1	1	4	10
RR	F	61	**13,6**	0	0	2	1	1	3	3	1	1	22
KV	F	60	**14,0**	0	1	1	0	1	3	3	2	1	69
MP	F	70	**15,0**	0	1	3	0	0	2	3	3	1	52
EB	F	74	**15,8**	0	1	1	1	1	3	3	2	1	24
SS	F	92	**16,8**	0	1	3	1	2	3	3	0	2	13
LL	F	82	**17,1**	0	0	3	1	1	3	3	3	1	43

Hypothetical Xri competency scores of informants													
				Syntax			Morphology		Phonetics			Tonology	Lexicon
Informant	Sex	Age* (y)	Score (%)	Produce longer sentences	Produce simple sentences	Produce noun phrases	Produce derived forms	Produce PGN distinctions	Produce click and accompaniment	Produce non-Afrikaans phonemes	Produce nasal vowels	Produce tone	Speaking vocabulary size
				(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
EH	F	70	**19,2**	0	1	3	1	2	3	3	2	1	36
SB	F	71	**19,4**	0	1	2	1	2	3	4	2	1	51
PG	F	90	**20,3**	0	0	2	0	2	4	3	4	2	31
AG	F	83	**20,8**	0	0	2	0	3	3	3	3	3	75
SF2	F	86	**23,1**	0	0	3	2	2	3	3	3	3	87
BV	F	70	**23,5**	0	1	3	2	3	3	3	3	2	129
VP	F	84	**26,1**	1	3	4	3	2	3	4	1	2	56
TW	F	85	**29,1**	1	2	4	3	3	2	4	4	2	130
SF1	F	76	**40,0**	3	4	4	3	3	4	4	4	4	110<
LJ	F	90	**40,9**	3	4	4	3	3	4	4	4	2	420<
SW	F	80	**42,7**	3	4	4	3	3	4	4	4	4	600<

Informants' overall scores relative to the hypothetical fluent speaker have been plotted in Figure 4.1, showing a clear grouping of the three most fluent informants (SW, LJ, SF1) with a score of greater than 40% and a gap of over ten percentage points between them and the next informant. However, the graph also shows that an additional seven informants (TW, VP, BV, SF2, AG, SB, PG) scored between 20% and 30%, despite most having relatively small lexicons.

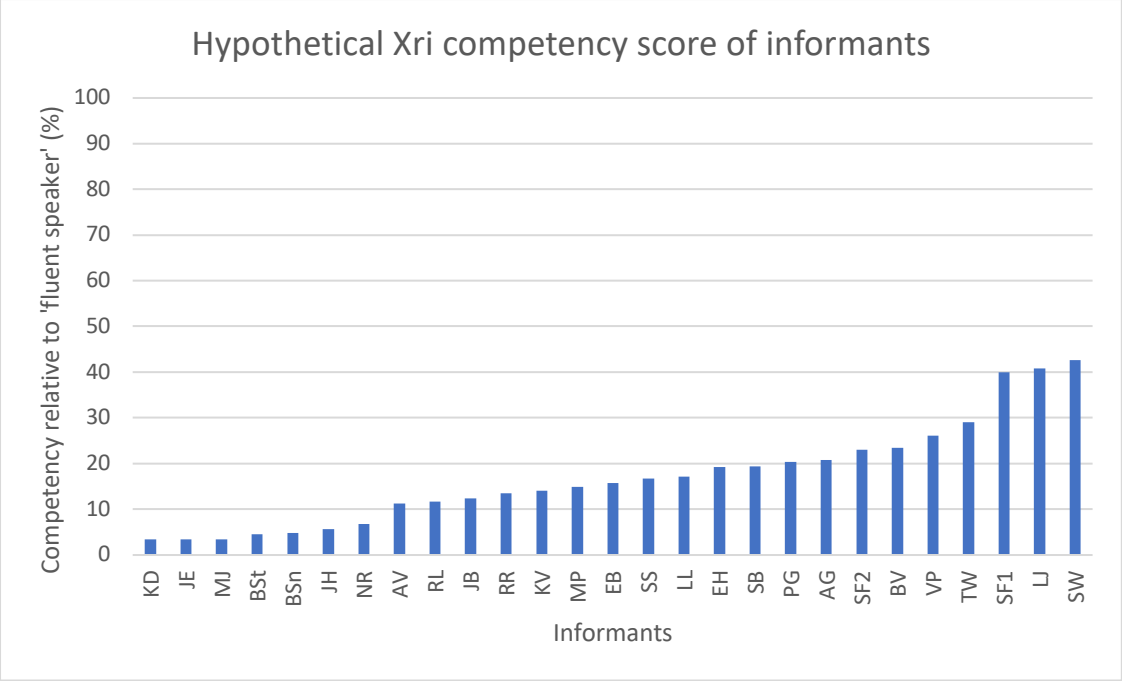

Figure 4.1. Xri competence score of informants relative to a hypothetical fluent speaker with a vocabulary of 5 000 words. Scores are plotted on a linear scale. The score is calculated from a composite of scores in ten categories.

Although the comparison to a hypothetical fluent speaker is useful for a general impression of speaker competency, it does not give a clear impression of the differences between individual informants, as they all score relatively poorly. To better convey the more detailed differences between the informants themselves, a second set of scoring was done, with the most fluent informant (SW) as the target against which the other informants were scored (see Table 4.5). In this round of scoring, SW was interpreted as (5) 'fluent' in the scale set out in Table 4.2, and all informants' scores were given relative to SW's performance (which was scored at 100%). This approach allowed for finer distinctions between informants on the six-point scale, as they were not predominantly grouped towards the lower end, as Table 4.5 shows.

*Table 4.5. Scores of informants relative to the most fluent living speaker, SW. The total score is calculated with a weight of 50% given to categories (A) to (I), and 50% given to the vocabulary score (J). (*Ages are as reported by informants.)*

Relative Xri competency scores of informants													
				Syntax			Morphology		Phonetics			Tonology	Lexicon
Informant	Sex	Age* (y)	Score (%)	Produce longer sentences	Produce simple sentences	Produce noun phrases	Produce derived forms	Produce PGN distinctions	Produce click and accompaniment	Produce non-Afrikaans phonemes	Produce nasal vowels	Produce tone	Speaking vocabulary size
				(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
KD	M	79	**2,5**	0	0	0	0	0	2	0	0	0	3
JE	M	74	**2,8**	0	0	0	0	0	1	1	0	0	7
MJ	M	61	**3,5**	0	0	0	0	0	1	1	0	0	15
BSt	F	70	**4,9**	0	0	0	0	0	1	3	0	0	5
JH	M	72	**5,8**	0	0	1	0	1	1	1	0	0	16
BSn	M	45	**7,1**	0	0	1	0	0	1	2	0	0	32
NR	M	65	**7,8**	0	0	1	0	1	1	3	0	0	14
AV	F	85	**13,4**	0	0	3	0	1	3	4	0	0	14
JB	M	99	**14,2**	0	0	0	0	1	3	2	1	5	10
RR	F	61	**16,3**	0	0	2	1	1	3	4	1	1	22
EB	F	74	**17,6**	0	1	1	1	1	3	4	2	1	24
RL	F	72	**17,8**	0	0	3	1	1	3	3	1	0	53
MP	F	70	**19,9**	1	1	3	0	0	2	3	3	1	52
KV	F	60	**20,2**	0	1	1	0	1	3	4	2	1	69
SS	F	92	**23,3**	0	1	3	2	3	4	4	1	2	13
PG	F	90	**24,8**	0	0	2	0	3	5	4	4	2	31
SB	F	71	**26,5**	0	2	3	1	2	4	5	2	1	51
LL	F	82	**26,9**	0	0	4	2	2	4	4	3	2	43
EH	F	70	**27,4**	0	1	4	2	3	3	4	3	2	36

Relative Xri competency scores of informants													
				Syntax			Morphology		Phonetics			Tonology	Lexicon
Informant	Sex	Age* (y)	Score (%)	Produce longer sentences	Produce simple sentences	Produce noun phrases	Produce derived forms	Produce PGN distinctions	Produce click and accompaniment	Produce non-Afrikaans phonemes	Produce nasal vowels	Produce tone	Speaking vocabulary size
				(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)
AG	F	83	**30,7**	0	0	2	0	5	4	4	4	3	75
SF2	F	86	**36,1**	0	0	4	3	3	4	4	4	4	87
BV	F	70	**36,3**	0	1	3	2	4	4	4	3	2	129
VP	F	84	**41,3**	1	4	5	5	3	4	5	3	3	56
TW	F	85	**47,5**	2	2	5	3	4	4	5	5	3	130
SF1	F	76	**59,2**	5	5	5	5	5	5	5	5	5	110<
LJ	F	90	**82,8**	5	5	5	5	5	5	5	5	3	420<
SW	F	80	**100,0**	5	5	5	5	5	5	5	5	5	600<

Informants' overall scores relative to SW have been plotted in Figure 4.2, showing that there is in fact a significant gap between each of the informants in the close grouping of the three most fluent informants (SW, LJ, SF1) in Figure 4.1. When assessed relative to SW, their scores differ from each other by roughly 20 percentage points, which is primarily due to their differences in lexicon size. The number of informants with a score greater than 20% increases to ten (excluding the three most fluent speakers). Each of these informants (TW, VP, BV, SF2, AG, EH, LL, SB, PG, SS) was a good source of lexical data, and even SS (with a lexicon of 13 items) contributed previously unattested lexical data. Those informants with a score of 20% or lower were less likely to provide 'new' lexical data.

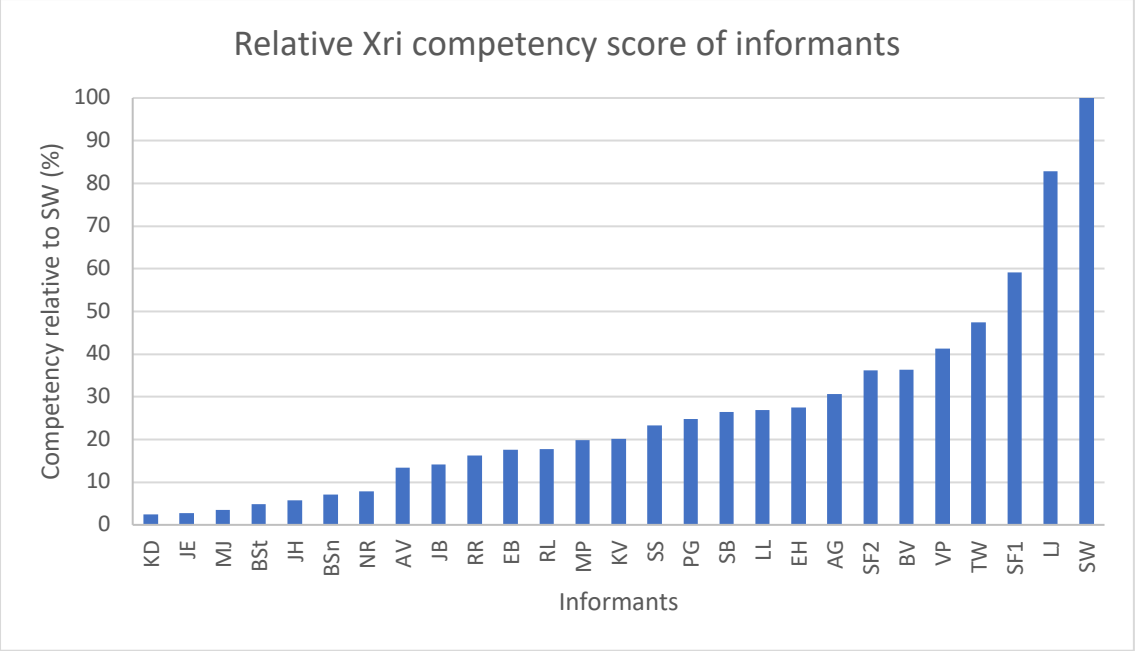

Figure 4.2. Xri competence score of informants relative to SW, the highest scoring informant. Scores are plotted on a linear scale. The score is calculated from a composite of scores in ten categories.

4.4. Group case studies in three groups

By using the data and analyses above, I could separate the informants into three groups, based on their performance scores in Table 4.4 and Table 4.5. Those who scored (4) in no more than one category, as well as all who did not score a (4) at all, constitute Group 1. Those who scored (0)–(1) in category (B) and lower than 25% in Table 4.4, and lower than 40% in Table 4.5, constitute Group 2. The remaining informants constitute Group 3, and have the highest Xri competency scores. Within each group, there are similarities between the informants in spoken competency as well as in the Xri input they received.

In the three group case studies below, I describe each group, detail the Xri input they received, and give a description of the group's overall competencies drawn from the analyses above.

4.4.1. Group case study 1

The first group of 14 informants contains an equal number of males and females—seven of each—with ages ranging from 45 to 99,[143] and a mean age of 70,5 years. The informants in this group received their Xri input from a range of sources—mostly parents and grandparents—who had either a limited knowledge of Xri or limited contact with the informant.[144] Half (i.e., seven) of these informants grew up in and around the Bucklands settlements, at the confluence of the Orange and Vaal rivers. These informants can be labelled 'rememberers', as their Xri knowledge is—or has become—very limited. They produced few phrases, typically recalled as 'chunks', and their phonetic production was heavily influenced by their L1, Afrikaans. Few produced tonal distinctions.

Table 4.6. Scores from both the hypothetical (Table 4.4) and relative (Table 4.5) scales for the 14 informants in group case study 1.

Case study group 1														
Relative	**Informant**	KD	JE	MJ	BSt	JH	BSn	NR	AV	JB	RR	EB	RL	MP	KV
	Score (%)	2,5	2,8	3,5	4,9	5,8	7,1	7,8	13,4	14,2	16,3	17,6	17,8	19,9	20,2
Hypothetical	**Informant**	KD	JE	MJ	BSt	BSn	JH	NR	AV	RL	JB	RR	KV	MP	EB
	Score (%)	3,4	3,4	3,5	4,5	4,8	5,7	6,8	11,3	11,6	12,3	13,6	14,0	15,0	15,8

The informants in this group are characterised by low scores (between 0 and 1) in categories (A)–(I), and mostly low scores in category (J), as summarised in Table 4.6. In categories (A) and (B)—the production of sentences—almost all scored 0; EB, MP and KV scored very low (1), as they produced some phrases and longer utterances in which the Xri content was linked together by Afrikaans grammar and morphology. Some produced

[143] Based on the ages provided by informants (often after an informant had to ask a younger family member what their age was) and/or their South African Identity Documents. Neither of these sources is entirely reliable and should be accepted with caution.

[144] JB is an exception as he acquired Xri as L1 from both parents in and around the home (*cf.* SW), but his low score is the result of problems with memory and recall.

longer noun phrases (C), but typically with many errors. The informants in this group did not produce the morphological distinctions (derived forms, PGN) in categories (D) and (E) with a more than chance likelihood, if at all. Their production of clicks and click accompaniments (F) scored no higher than 3, and an incorrect click was often produced with the (approximately) correct accompaniment. They tended to produce non-click phonemes that are not found in Afrikaans (G) (e.g., [kx']) with a higher degree of accuracy than click phonemes, but many of the informants in this group did not produce them with reliable accuracy and regularity. Most did not produce nasal vowels at all, and only three informants (KV, MP, EB) scored higher than 1. Only one informant in the group (JB) scored more than 1 for tone production, while most scored 0 as they produced no distinguishable tonal distinctions. In category (J), lexicon size, the group ranged from 3 to 69 items, with a mean lexicon size score of 24 items and a median score of 16 items.

4.4.2. Group case study 2

The eight informants in the second group are all female, with ages ranging from 70 to 92 years old, and a mean age of 80,5 years. These informants received more Xri input than those in the first group, predominantly from a grandparent(s) (or sometimes a parent) who had a practical knowledge of Xri (as reported by the informants). Four of the eight informants (SS, SB, EH, SF2) grew up in and around the Bucklands settlements, at the confluence of the Orange and Vaal rivers. Several informants (SS, PG, LL, AG, SF2) had a parent who spoke Xri to their own parents (possibly L1 speakers) in Xri. This group could be described as 'rememberers' who produce Xri with a higher degree of phonetic fidelity than Group 1, while their spoken Xri's syntax and morphology are not currently very productive and relies heavily on Afrikaans to fill in the gaps in their knowledge.

Table 4.7. Scores from both the hypothetical (Table 4.4) and relative (Table 4.5) scales for the eight informants in group case study 2.

Case study group 2									
Relative	**Informant**	SS	PG	SB	LL	EH	AG	SF2	BV
	Score (%)	23,3	24,8	26,5	26,9	27,4	30,7	36,1	36,3
Hypothetical	**Informant**	SS	LL	EH	SB	PG	AG	SF2	BV
	Score (%)	16,8	17,1	19,2	19,4	20,3	20,8	23,1	23,5

The informants in Group 2 are characterised by higher scores than those of Group 1 in categories (A)–(I), and mostly low scores in category (J); Table 4.7 shows their overall scores. All informants in this group scored 0 in category (A). Four informants (SS, SB, EH, BV) scored 1 to 2 in category (B) for the production of simple sentences, as they produced some short utterances in which the Xri content was linked together by Afrikaans grammar and morphology. All produced longer noun phrases (C), scoring 2 to 4, with a greater degree of accuracy than Group 1, but still with significant errors. This group of informants sometimes produced derived forms—category (D)—and most scored 2 or 3, with only one 1 for SB, and 0 for PG and AG. Their production of PGN distinctions (E) was more reliable than that of the informants in Group 1. Click and click accompaniment (F) production scores were consistently higher than 3, and informants made fewer errors with selecting the correct click phonemes. They produced non-click phonemes that are not found in Afrikaans (G) with a higher degree of accuracy than click phonemes—as did Group 1—and produced them with a relatively high degree of accuracy and regularity. This group's production of nasal vowels was variable between informants, ranging from 2 to 4, with the exception of SS, whose low score can be attributed to her producing only one token that contained a nasal vowel.[145] All informants in this group produced tone distinctions (I), but SB, LL and

[145] Given her overall score, it is likely that she may have scored (2) or more if she had produced a larger number of tokens. SS was 92 years old at the time and had some difficulty hearing.

EH produced them far less frequently than the other informants, who scored 2 to 4. Group 2's lexicon size (J) ranged from 13 to 129 items, with a mean lexicon size score of 58 items (more than double that of Group 1) and a median score of 47 items (three times higher than that of Group 1).

4.4.3. Group case study 3

As in Group 2, all five informants in Group 3 are female. They range from 76 to 90 years of age, with a mean age of 83 years. This group of informants received significantly more Xri input than those in the other groups, and all except SF1 had a parent who spoke the language to them. SF1 acquired her Xri knowledge from her great aunt (SW's mother). Both of SW's parents spoke Xri at home to their children, and she and her brother (JB) can be seen as the last two individuals who may have grown up with Xri as their L1. Two of these informants (SF1, and to a lesser extent SW) grew up in and around the Bucklands settlements, at the confluence of the Orange and Vaal rivers. This group can be described as 'partial speakers' (VP, TW, SF1) and possibly 'rusty semi-speakers' (LJ, SW), who produced Xri with the highest degree of competency, while their spoken Xri did still sometimes use Afrikaans morphology and syntax to fill in the gaps in their knowledge. Both LJ and SW produced Xri that was significantly more fluent than that of all other informants. SF1, however, produced the longest single Xri-only utterance of any informant, which included Afrikaans loanwords with Xri morphology.

Table 4.8. Scores from both the hypothetical (Table 4.4) and relative (Table 4.5) scales for the five informants in group case study 3.

Case study group 3						
Relative	**Informant**	VP	TW	SF1	LJ	SW
	Score (%)	41,3	47,5	59,2	82,8	100,0
Hypothetical	**Informant**	VP	TW	SF1	LJ	SW
	Score (%)	26,1	29,1	40,0	40,9	42,7

The informants in Group 3 are characterised by the highest scores of all three groups—as Table 4.8 shows. They obtained high scores in categories (A)–(I), and mostly high scores in category (J). All informants in this group scored between 1 and 5 in category (A), with SF1, LJ and SW scoring the highest (3 or 5). The group scored 2 to 5 in category (B) for the production of simple sentences, as all except TW produced short utterances with little to no Afrikaans grammar and morphology. All produced longer noun phrases (C), scoring 4 or 5, with a greater degree of accuracy than Groups 1 and 2, but still relying on Afrikaans morphology and making errors at times. This group of informants fairly reliably produced both derived forms (D) and PGN distinctions (E), and although hardly any dual[146] Number forms were attested, they made fewer errors distinguishing Person and Gender. Only TW seemed to struggle with accurate click and click accompaniment (F) production (likely as she is the last person in Campbell with good Xri knowledge); the other informants' scores were consistently higher than 3 and they made few errors with selecting the correct click phonemes. The group's production of phonemes in category (G) scored either 4 or 5 (hypothetical and relative scores, respectively), and showed a high degree of accuracy. VP's production of nasal vowels (H) was weaker (1 or 3) than other informants in the group, who scored 4 or 5 and produced nasal vowels more consistently (only occasionally realising an

[146] As in other Khoekhoe languages, Xri makes a three-way morphological Number distinction between Singular—Dual—Plural.

oral vowel with pre- or post-nasalisation). Tonal distinctions (I) were less homogeneous, and VP, TW and LJ produced them less consistently than SF1 and SW; nevertheless, their production of tone was far clearer than most other informants'. The group's lexicon size (J) ranged from 56 to more than 600 items. They had a mean lexicon size score of 263 items (four and a half times greater than that of Group 2) and a median score of 130 items (nearly three times higher than that of Group 2).

4.5. Conclusions

The figures from the three case studies are summarised in Table 4.9, demonstrating the overall trends in the groups: firstly, female informants are overall more likely to have a higher competency, and, secondly, the more competent informants tend to be older. Only two informants grew up in a Xri L1 home with both parents speaking the language. A few informants may have grown up with a single Xri L1 parent, but the majority acquired or learned Xri from more distantly related L1 individuals orfromL2 relations. In addition, there is a strong representation in the overall group of informants of 13 individuals linked to the Bucklands settlements—almost half of the total group of 27—which suggest that, for one reason or another, a Xri-speaking community persisted in the area for longer than such communities survived elsewhere. Naturally, it is possible that such a difference could be marked by only a decade (long enough for a generation of speakers do die), but it is nonetheless interesting. The majority of informants in Groups 1 and 2 displayed both of Sasse's (1990b:70–72) main phonological characteristics of 'rememberers': "extreme phonological variations and distortion" and "phonological hypercorrection" (see also Jones and Singh 2006:86).

*Table 4.9. A summary of the number of informants in each group, the number of informants from Bucklands, the mean age, mean lexicon size, median lexicon size, and ratio of female to males, as mentioned in the three case studies. (*The Bucklands settlements are located between the Orange and Vaal rivers, near their confluence. The informants either grew up in Bucklands, or spent a substantial part of their childhood there.)*

Summary of case study figures						
	No. of informants	No. from Bucklands*	Mean age (y)	Median lexicon size	Mean lexicon size	Sex (F : M)
Group 1	14	7	70,5	16	24	7 : 7
Group 2	8	4	80,5	47	58	8 : 0
Group 3	5	2	83	130	263	5 : 0

I have examined and quantified the spoken competencies of my Xri informants in this chapter by creating a metric guide to the reliability of informants' contributions. The two applications of the metric—comparing informants to a hypothetical fluent speaker, and relative to SW, the most fluent informant—have helped to convey the complexity of the variations in competency between individual informants. The presentation of data, both in tabular form and as graphs, has made the three groupings transparent, as opposed to the more opaque classifications used by other studies of language endangerment and language death. The categories in this metric can potentially be adapted to the language under investigation, substituting categories for those appropriate to the language, while maintaining the same structure and approach. Whether or not this would be a reliable framework in other situations and for other languages would have to be determined by future fieldwork and analyses. I hope that the development of this metric measure can contribute to a more empirical, data-driven framework for a typology of last speakers and rememberers of critically endangered and dying languages and how to evaluate the data they produce.

The data compiled in the ten-category metric have been interpreted in the three group case studies, where data from informant biographies (such as who in their families spoke Xri) has been combined with the empirical scoring of informants' competency. The group case studies have also shown that there are different levels—or layers—of competency and that these tend to coincide with the production and non-production of certain phonetic (as well as syntactic, morphological, tonal and lexical) features. The production of tone, for example, coincides narrowly with the most fluent of the informants. Similarly, the production of nasal vowels is present—and more accurate—in the speech of informants with a higher spoken Xri competency, and the same can be said for click phonemes (i.e., clicks and their accompaniments), and those phonemic consonants that are not present in Afrikaans. These three broad phonetic categories are examined—with phonetic data—in more detail in the next chapter.

5. Analysis of phonetic features

This chapter presents the Xri phonetic data collected for this study and compares them to previous Xri data (see 5.1 Note on the presentation of data below). Representative examples (lexical items) from the data have been selected to illustrate phonetic variations observed in items containing the relevant phoneme(s). For each lexical item used as an example, all variations produced by informants have been included in the relevant table. Preference was given to the lexical items produced by the largest number of informants wherever possible. No preference was given to data from any particular informants, as the data are intended to give a comprehensive overview of phonetic change in Xri. The data are not presented in their entirety, owing to the volume of data obtained. Each phonetic feature where significant variation occurs is presented, beginning with click phonemes (clicks and their 'accompaniments');[147] this includes the convergence of click types, loss of clicks and insertion of clicks. The aspiration of unaspirated velar stops, and affrication of aspiration after voiceless velar stops are presented, followed by data on the presence of the voiceless velar affricate with glottal release—previously thought to be characteristic of !Ora—and several other consonant variations. Next, the attrition of nasal vowels and nasalisation of adjacent features are examined, before moving on to an examination of shifts and variations in the production of oral vowels and oral vowel sequences. The data presented on each feature is briefly discussed at the end of each section, and the data are discussed more generally at the end of the chapter.

[147] The additional articulations that occur before, during or after the articulation of the click 'type', and 'accompaniments' do not "describe a natural class of speech gestures but refers to various laryngeal, nasal, dorsal and other gestures that may occur before, during, or after the release of the anterior click closure" (Sands 2020:22).

5.1. Note on the presentation of data

The tables below contain data from Carl Meinhof (1930) (where available), Jan Snyman (Haacke and Snyman 2019), and my own data collected from 2018 to 2019. The three studies are presented chronologically, from left to right, to allow the reader to easily observe the changes that have occurred in Xri over 90 years. I also provide the glosses from Meinhof (1930) and Haacke and Snyman (2019). However, Meinhof sometimes misinterpreted the Afrikaans provided by informants as he spoke no (or *very* rudimentary) Afrikaans and interpreted Afrikaans via German. The glosses in Haacke and Snyman (2019) were translated from Snyman's Afrikaans field notes by Wilfrid Haacke—who had not participated in the data collection over four decades earlier—and therefore some of the translations do not appear to be entirely accurate. The glosses I provide attempt to be as close in meaning to the original Afrikaans provided by informants, although in some instances I include the Afrikaans gloss for precision. I am a mother tongue speaker of Afrikaans—although not of the Orange River Afrikaans variety—and have used my familiarity with the language to the benefit of the study.[148]

5.2. Click phonemes

Ladefoged and Traill (1994:45) assert that "as a class clicks are probably the most salient consonants found in a human language." Their empirical research on native speakers of !Xóõ[149] determined that "clicks are easier to identify than non-click consonants", and that "clicks are virtually never confused with non-click consonants". Thus, if one disregards the

[148] Those forms that I deem to be the 'correct' Xri forms are marked in **bold** in all tables.

[149] The ISO 639-3 Code for !Xóõ is [nmn].

degree of error that can be attributed to being a 'rusty speaker', those informants who routinely and habitually substitute or confuse click phonemes—and particularly click types—can be confidently grouped as non-L1 speakers (i.e., in Groups 1 and 2; see 4 Assessing informant competency) by the salience of click-consonants identified in Ladefoged and Traill (1994). The following sections examine the veracity of this hypothesis.

5.2.1. Replacement of aspiration with nasalisation?

During fieldwork, it became apparent that there were some discrepancies between click representation in Haacke and Snyman (2019) and the articulation of clicks in the data I was collecting. Haacke and Snyman (2019) represent words such as */ǂhabasa-s* [ŋ̊|ʰɐbɐsɐs] 'young girl', */ǂhoe* [ŋ̊|ʰoe] 'gossip', and */ǂhaaxa* [ŋ̊|ʰɐɐxɐ] 'troublesome' (see Table 5.1, example (3)) all with delayed aspiration: |ˉh. Many informants were supplying me with the same lexical items although all with nasalised clicks, and only sometimes a hint of aspiration but without a delay: thus */nabasa-s* [ⁿ|ɐbɐsɐs] 'young female initiate', */noe* [ⁿ|oe] 'gossip', and */naaxa* [ⁿ|ɐɐxa] 'impure'. Had it not been for the three most fluent speakers of Xri (SW, LJ, SF1) and one or two others (EH, SF2)—who produced clicks with delayed aspiration to varying degrees—I would have come to the conclusion that either Snyman's transcriptions were incorrect or even that I was documenting a different variety of Khoekhoe. As fieldwork progressed, I began to hypothesise a connection between Xri competency and producing clicks with delayed aspiration [ŋ̊|ʰ], versus the nasal clicks [ⁿ|] (which are phonemically distinct).[150] The reason for this odd dual pronunciation of items is detailed in the next

[150] The dental click [|] is used as a placeholder here, as it was the most common click with delayed aspiration in the data I collected. It should be understood in this instance to represent all clicks with delayed aspiration.

section, focusing on the dental click where the phenomenon was produced most consistently.

5.2.1.1. Dental click with ‘delayed aspiration’

Owing to the delay between the articulation of the dental click /|/ and the post-articulated aspiration /ʰ/, the click with accompaniment transcribed as |ˉh, |ʾh, and |hɦ, has been known as ‘delayed aspiration’ (Ladefoged and Traill 1994:48; Sands 2020:26). The ‘delay’ in delayed aspirated clicks is due to a longer voice onset time—when compared to aspirated clicks—caused by the lowering of the velum during the click closure, resulting in *voiceless* nasal airflow (Ladefoged and Traill 1984:4–6; Sands 2020:26; see also Traill 1991). There is no audible velar release as the air is released (without voicing) through the nose and there is no pressure built up behind the closure, transcribed as a voiceless velar nasal /ŋ̥/ (Ladefoged and Traill 1994:48). The dental click with its delayed aspiration accompaniment is therefore best transcribed as /ŋ̥|ʰ/ (Sands 2020:26).[151] In Haacke and Snyman (2019:278) the delayed aspiration accompaniment is described as a ‘delayed voiceless glottal fricative’, represented [|ˉh]. While Haacke correctly interprets the macron [ˉ] as marking a “pause or delayed articulation of the fricative, not a glottal closure” (Haacke and Snyman 2019:278), there is no explicit statement of Snyman’s notation in his field notes with regard to the use of the apostrophe [ʾ].[152]

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[151] Alternatively /n̥̊|ʰ/, although this transcription is less reader friendly. My thanks to Matthias Brenzinger and Sheena Shah for bringing this source to my attention.

[152] In Snyman’s (1972) PhD thesis, he explains his three uses of [ʾ]. First, “the period of voicelessness preceding the [h] in *!ʾhui* ‘begin’”, phonetically transcribed as [ˉ] in [!ˈhui]; this use extends to all instances where [ʾ] falls between a click symbol and [h]. Second, “to indicate the glottal stop in *!ʾo* [!ˀo̤] ‘back’”, and third, “for symbolising the glottal narrowing in *daʾa* [daˀa] ‘fire’” (Snyman 1972:19, my translation, with thanks to Nina Brink, Ian Bekker and Daan Wissing for their invaluable assistance with the accurate translation of *“stembandklapper”*). Therefore, it should be explicitly stated that the [ʾ] in Snyman’s data represents the delay in a delayed aspiration accompaniment—but *only* when positioned between a click and

Informants (especially in Groups 1 and 2) regularly provided items with a (pre-)nasalised dental click, which varied from the 'normal' click accompanied by a voiced velar nasal /ᵑ|/ to a voiced alveolar nasal dental click [ⁿ| ~ n|], as in (6) */noe* [n|oe] 'gossip', in instances where Haacke and Snyman (2019:278) described a click with a "pause" before aspiration |ʔh, thus [|ˉhoe]. [153] The nasalisation by different informants ranges from a (pre-)nasalised [ⁿ|] to closer to a combination of a nasal plosive with a dental click release [n|]. The release of the click may still be followed by delayed aspiration ranging from light [ⁿ|ʰ] to strong [ⁿ|ʰʰ], although it usually was not. The prevalence of the voiced nasal [ⁿ|ʰ] realisation of click accompaniments that are marked as unvoiced [ŋ̊|ʰ] in Haacke and Snyman (2019) can be seen in in Table 5.1.

*Table 5.1. Comparison of the aspirated dental click in Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data. Instances with nasalisation are marked with * and click changes with **.*

	Snyman's data, c. 1973	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*/ʔhabasa-s*	'young girl'	*n|abasa-s*, n!abasa-s**,* ***/ʔhabasa-s***	'young female initiate', *'hokmeisie'*[154]
(2)	*/ʔhõ-p, /ʔhũ(m)-p, /ʔhũn-*	'European'	*n|uu-p*, ⁿ/ʔhuu-p*,* ***/ʔhuu-p,*** *n|um-p*, n!uu-p***	'Boer', 'master', 'white man'
(3)	*/ʔhaaxa*	'troublesome'	*n|aaxa*, /ʔhaa(na)xa*	'impure', 'dirty', 'unclean' (of person)

[h]—or a glottal stop after a click—without [h]—and, lastly, a glottal flap, or "glottal narrowing", in other positions. These three distinctions should be borne in mind when examining the data in Haacke and Snyman (2019). Another discussion of Snyman's representation of click accompaniments and use of [ʔ] can be seen in Traill (1992:347).

[153] For ease of comparison in the tables below, the 'n' (nasal accompaniment) is written before the respective click symbol, and the orthography of the data from Haacke and Snyman (2019) have been adjusted accordingly. Thus, [ᵑ|]→*n|*, and [ᵑ!]→*n!*, etc.

[154] Typically, a girl who is isolated after her first menstruation, confined for a number of weeks and then initiated as a woman. Also called a *groot jong meisiekind,* 'grown-up young girl'.

	Snyman's data, c. 1973	Gloss	My data, 2018–2019	Gloss
(4)	*/ʔhuni-p*	*Witgat*, Shepherd tree *(Boscia albitrunca)*	***/ʔhuni-(p)***, *ᵑ/hunu-*, ᵑ/huni-*, n/uni-p**	*Witgatboom*, Shepherd tree, *(Boscia albitrunca)*
(5)	*/ʔhorosma-p*	'drunkard'	***/ʔhorosma***, ***/ʔhoro***, *n/ʔoro*, n!oro***	'drunk'
(6)	*/ʔhoe*	'gossip'	*n/oe*, n/oi*, /ʔhoi,* ***/ʔhoe***	'gossip'

The process by which this change has happened can be understood as a series of changes that lead to the realisation of /ŋ̊|ʰ/ as [ⁿ|ʰ]. The first change happens when the otherwise-unvoiced velar nasal is voiced /ŋ̊|ʰ/→*[ᵑ|ʰ], which results in a click realisation that is unattested in Khoekhoe and can only be realised without the velar closure [ⁿ|ʰ].[155] In some cases this is then further reduced by the loss of aspiration after the click release. The change from /ŋ̊|ʰ/ can thus be illustrated as /ŋ̊|ʰ/→*[ᵑ|ʰ]→[ⁿ|ʰ]→[ⁿ| ~ n|]. By understanding this process, the realisation of, for example, (1) */ʔhabasa-s* [ŋ̊|ʰabasas] 'young female initiate', as *n/abasa-s* [ⁿ|abasas], can be understood as a part of language change resulting from attrition, and was produced primarily by informants in Groups 1 and 2. The same phonetic shift has occurred in Namibian Afrikaans and Namibian German, in lexical items loaned from Khoekhoegowab, with terminal elision of the click sound when produced in the Germanic languages: /ŋ̊|ʰ/→*[ᵑ|ʰ]→[ⁿ|ʰ]→[ⁿ| ~ n|]→[n] (W. Haacke, pers. comm., 21 January 2021). The change seen in the data for (4) */ʔhuni-p* 'Shepherd tree' [ŋ̊|ʰunip]→[n|unip] is taken

[155] It is important to bear in mind that in the click with delayed aspiration /ŋ̊|ʰ/ the hearer is most likely not aware of the voiceless velar element, and the mechanism of the production was only relatively recently described comprehensively by linguists (see Ladefoged and Traill 1984, 1994; Traill 1991).

further with the elision of the click (as well as the deletion of the PGN-suffix *-p*, and a vowel shift of /u/→[o]), thus: [ŋ̊|ʰunip]→[n|unip]→[noni].[156]

5.2.1.2. Delayed-aspirated alveolar click

Given the changes to the delayed aspiration click accompaniment described with reference to the dental click, the data presented in Table 5.2 offer the opportunity to examine different environments and test whether these changes are consistent across other environments where changes in aspiration have been observed. The data below demonstrate that the shift /ŋ̊|ʰ/→[ᵑ|ʰ]→[ⁿ|ʰ]→[ⁿ| ~ n|] is not limited to the environment of the dental click, indicating that the process is not determined by the dental place of articulation of the click itself.

*Table 5.2. Comparison of the aspirated alveolar click in Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data. * indicates a click change.*

	Snyman's data, c. 1973	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*ǃʔhae-p, ǃʔxae-p* *ǃxae-p*	'night' 'darkness'	***ǃʔhae-(p), ǃʔxae-**, n!ae-p*	'darkness', 'night'
(2)	*ǃʔhoa*	'speak'	*n!oa, n≠oa*, n‖oa*, ǂõa*, **ǃʔhoa**, ǃʔhõa, n‖au**	'speak', 'chat', 'tell', *'gesels'*
(3)	*ǃuru-p*	'thunder' n.	*g!ʰuru, **ǃʔhuru,** ǃʔhuri, n!uru*	'thunder' v.

In (1), the replacement of voiceless delayed aspirated click /ŋ̊!ʰ/ in *ǃʔhae-p* [ŋ̊!ʰaep] 'night' with a voiced alveolar nasal click [n!aep] correlates exactly with the changes discussed in 5.2.1.1 Dental click with 'delayed aspiration', as does (2). Note that in (3), Snyman's *ǃuru-p* contains neither aspiration (delayed or otherwise) nor nasalisation, while every token I recorded was realised with delayed aspiration [ŋ̊!ʰ] or a nasal [ᵑ!], and in one instance

[156] An additional example was provided for an item not attested in the Xri data: */ʔhawa-s* 'truffle' [ŋ̊|ʰɐwɐs]→[nabas].

voiced with aspiration [g!^{h}]. This suggests that there is some other process at work that cannot be explained by phonetic 'drift', as it needs to account for seemingly randomised click accompaniments. Indeed, as (2) shows, the clicks realised by informants could be just as variable, with *!ʔhoa* [ŋ̊!^{h}oɐ] 'speak' realised with every one of the four click types (!, |, ‖, ǂ) in Xri. In four out of the seven recorded realisations of *!ʔhoa*, the delayed aspiration was realised as a nasal accompaniment [^{ŋ}]. The remaining realisation [ǂõɐ̃] appears to have lost the aspiration and shifted the nasal onto the vowels following the click release; it is plausible that this production was closer to [ǂ^{ŋ}õɐ̃], with a velar nasal co-articulated with the vowel (*cf. !ʔhõa* [ŋ̊!^{h}õɐ̃] where there is also vowel nasalisation).

In the delayed aspiration accompaniments of the two remaining clicks, palatal /ŋ̊ǂ^{h}/ and lateral /ŋ̊‖^{h}/, there were no realisations with a voiced dental nasal [^{n}] as with | and !. However, this comes with the caveat that loss of aspiration did occur in instances where there was click substitution, for example, *ǂʔhabo-ku* [ŋ̊ǂ^{h}ɐboku] 'shoes' → */ʔaba-ku* [|^{ʔ}ɐbɐku]. This appears to be more closely linked to the realisation of the click (and associated attrition), and not a process similar to the one observed in Table 5.2, and is discussed in the next section.

5.2.2. Click convergence

A significant number of informants in Groups 1 and 2—and to a lesser degree in Group 3—tend to substitute clicks, to varying degrees, without being aware of the contrast between the click consonants. Informants would sometimes use different clicks for the same lexical item in the same utterance or correct their first (incorrect) realisation of the word with a second (incorrect) realisation. As Examples (1) and (4–8) from Table 5.3 show, some lexical items were realised using every one of the four click types that occur in Xri. Interestingly, the

clicks do tend to be realised with the correct accompaniments: voiced clicks such as /g‖/ in *g‖an-ni* [g‖ɐnni] 'meat' remain voiced clicks, nasal clicks such as /ᵑ‖/ in *n‖ui-p* [ᵑ‖uip] 'fat' remain nasal clicks, and so on.[157] Clicks with a glottal stop release *‖'am-mi* [‖ˀɐmmi] 'water' are frequently substituted with the 'simple' voiceless unaspirated form of the click [‖ɐmmi]. The production of the glottal stop click release is therefore less consistently realised than, for example, the nasalised (2), voiced (4) or voiceless unaspirated (1) releases.

Table 5.3. Comparison of Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the convergence and/or loss of distinction between clicks in the more recent data.

	Snyman's data, c. 1973	Gloss	My data, 2018–2019	Gloss
(1)	*/am*	'two'	***/am***, *!'am*, ‖am*, ǂam*, !am**	'two'
(2)	*/xam*	'urinate'	*/xama, /xam, !xam*, ‖'am**	'urinate'
(3)	*‖nui-p*	'fat'	*n‖oe-p, n‖ou-p, n/ui-p*,* ***n‖ui-p****, n‖oi-dan, ǂũi-p*, n/oi-p**	'fat'
(4)	*g‖an-ni*	'meat'	*g!an-(ni)*, g/an-ni*,* ***g‖an-ni****, gǂan-ni*, gǂənni*,* ***g‖ə-nni,*** *gan-dan, g!an-ni-ku*,* ***g‖an-dan***	'meat'
(5)	*‖'am-a, ‖am-dan*	'water'	*‖ɛ̃m-mi, ‖ə̃m-mi, ‖am-mi,* ***‖'am-mi****, !'am-mi*, /'am-mi*, /əm-mi*,* ***‖'am-dan, ‖'əm-mi,*** *ǂ'am-mi*, ‖am-dan, g‖am-mi*	'water'
(6)	*‖'oo*	'die'	*‖oo,* ***‖'oo****, /'oo*, !'hoo*, ǂ'oo**	'die'
(7)	*Tshuu‖'ao-p, Tshii‖'ao-p, Tshii‖'oa, Sii‖oa-p, Suu‖oa-p*	'God'	*Sii‖oa,* ***Sii‖'oa****, Suu/'oo*, Suuǂ'oa*,* ***Suu‖'oa****, Sii!'oa*, Sii/'oa-tse*, Tii‖'ao, Tii!'oa*,*	'God', 'Jesus', *'die Here'*[158]

[157] At times, the velar nasal shifts from the click accompaniment to the following vowel, which becomes a nasal vowel, thus in example (3) *‖nuip* [ᵑ‖uip]→[‖ũip] 'fat'. The nasal element is thus preserved, although its movement changes its place of articulation.

[158] A distinction was made by a number of informants between *Sii‖'oa, 'die Here'*, 'the Lord', and *Elup* or *Elop, 'God'*, 'God'. The former is taken to mean 'Jesus', and the latter to mean *'God die Vader'*, 'God the Father'. This distinction is not made in Haacke and Snyman (2019), possibly as the distinction is difficult to make and only became clear to me after several weeks in the field. I maintain this distinction here.

	Snyman's data, c. 1973	Gloss	My data, 2018–2019	Gloss
			Si'ǂ'oa-mu, Sii/'oa*, Sii/'oa*, Tiiǂ'oatse*, Sii!'oa-tse*, Sii/'oa-tse**	
(8)	*ǂ'ũ*	'eat'	***ǂ'ũu**, ǂ'uu, /'ũu*, !ũu**	'eat'

The seemingly free variation between clicks illustrated in Table 5.3 demonstrates that a number of informants are unable to clearly and consistently identify the difference between the four basic clicks in Xri. As illustrated in example (6), *//'oo* [‖ˀoo] 'die' is realised variously with [!ˀh], [ǂˀ], [|ˀ]. During interviews, the same group of informants (Group 1) regularly misidentified clicks that I produced when providing Xri words (although here one must accommodate the foreign sound and inaccuracy of my click production as well), and informants in Group 2—and to a lesser extent Group 3—also converged and confused click types. Nevertheless, the varying ability of informants to either consistently provide click forms or to correctly identify clicks is an indicator of language attrition and Afrikaans interference—Afrikaans contains no click-consonants.[159]

Additionally, informants with a limited Xri lexicon (i.e., Groups 1 and 2) have a reduction in the potential for lexical overlaps or confusion. For example, if *//'am-mi* [‖ˀɐmmi] 'water' is realised [!ˀɐmmi], this realisation overlaps with *!'am-mi* [!ˀɐmmi] 'porridge', and a speaker who knows both lexical items would not make the error. The phonemic reduction (or lack of clear distinction) between different click-consonants occurs most often in informants with lower Xri competence but does sometimes occur even in more competent speakers. It is therefore reasonable to state that the larger an informant's lexicon, the lower the chance of them producing lexical items that 'clash' with other lexical items due to phonemic overlap.

[159] Although the insertion of clicks into Afrikaans has been observed in Khoekhoe-heritage communities in Pacaltsdorp (Y. Ribbens-Klein, pers. comm., 2018).

The palatal click /ǂ/ has the greatest tendency to be realised with a different click, primarily as the alveolar click [!], regardless of its accompaniment. Indeed, to a non-native speaker of a language in which the clicks /ǂ/ and /!/ are phonemically distinct, they are particularly difficult to tell apart, and more so if the speaker has few teeth, has had a stroke, or does not speak clearly (as is often the case with older speakers, and indeed many of my informants).

5.2.3. Click non-realisation

The non-realisation of clicks was a regular feature of the speech of community members who knew only a handful of Xri items, but among my informants the non-realisation of clicks only featured infrequently.[160] In items containing a click consonant, informants would almost always produce one. However, many informants—particularly in Groups 1 and 2—frequently did not produce the *correct* click and their accuracy in the production of the click varied greatly (see 5.2.2 Click convergence, above). Some examples of items where click consonants were not realised can be seen in Table 5.4. In (1), the substitution of [d] for /gǂ/ is the only such example recorded by Meinhof (1930), and none are recorded in Haacke and Snyman (2019).[161] In my own data in Examples (2–5), click consonants are replaced by other stops that correspond to the voicing of the respective click. Voiceless clicks are produced as voiceless velar [k], and voiced clicks as voiced velar [g] or voiced velar with aspiration [g^{h}], thus: */ǎe-s-en* ‘sick(ly)’ [|ˀɐesən]→ [kˀɐesən], *g‖an-dan* ‘(a little) meat’ [g‖ɐndɐn]→[gɐndɐn], and *g|o-m ‘Pteronia camphorata* (?)’ [g|om]→[g^{h}om]. The exception is

[160] This is not to be confused with click loss, a process where clicks are replaced with a non-click (see Traill and Vossen 1997). In the case of click non-realisation, informants typically realise *only the accompaniment* (see below for examples), and less frequently replace the click with a non-click.

[161] The reader should bear in mind that this by no means indicates that there were no instances of click non-production, but rather that the objectives of their work was to document ‘correct’ Xri, and for the greater part omitting instances of inaccurate production.

dental click with delayed aspiration /ŋ̥|ʰ/ in (6–7) which is realised as nasal stop [n]. This supports the argument made above, in 5.2.1.1 Dental click with 'delayed aspiration', that the transition /ŋ̥|ʰ/→[ŋ|ʰ]→[ⁿ|ʰ]→[ⁿ| ~ n|] precedes the non-realisation of the click; therefore, a progressive loss of complexity and phonetic elements culminates with the loss of the click altogether /ŋ̥|ʰ/→[ŋ|ʰ]→[ⁿ|ʰ]→[ⁿ| ~ n|]→[n].

*Table 5.4. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the non-realisation of click consonants, marked with *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*dui-p**	'nose'	*gǂui-p*	'nose'	***gǂui-p***, *g!ui-p, g|ui-p, gǂei-p, gǂu-*	'nose'
(2)			*g‖an-ni*	'meat'	***g‖an-da-n, g‖an-ni***, *gan-dan*, g!an-(ni), g|an-ni, gǂan-ni, gǂən-ni, g‖ən-ni, g!an-ni-ku*	'meat'
(3)					*gʰo-m*, !'o-m,* g|o-m	fragrant plant spp.[162]
(4)			*/'ae-s-en*	'ill', 'sick'	*k'ae-s-en**, ***/'ae-s-en***, *‖'ae-s-en*	'sick'
(5)	*/o-i*	'child'	*/oo-i, /o-n-ku*	'child'	*k'oo-n**, ***/oo-n***, *‖oo-n, /'oo-n, ǂ'oo-n, !'oo-na*	'child'
(6)			*/'habasas*	'young girl'	*nabasa-s*, n|abasa-s, n!abasa-s,* ***/'habasa-s***	'young female initiate', *'hokmeisie'*

[162] Identified as any number of species in the genus *Aster* (family Asteraceae) in Boshoff and Nienaber (1967:448). It is identified as *Pteronia camphorata* by Hulley et al. (2016).

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(7)			*/ʔhõ-p, /ʔhũ-(m)p, /ʔhũn-*	'European'	*nuu-nu-ka*, /nuu-p, /ᵐʔhuu-p,* ***/ʔhuu-p,*** */nu-mp, !nuu-p*	'Boer', 'master', 'white man'

A similar process can be proposed for the omission, and eventually loss, of the click in other environments, as illustrated in Table 5.4 for examples (2–5) /|ˀ/→[kˀ], /g‖/→[g], [g|]→[gʰ]. This suggests an underlying velar element [ᵏ] in the production of (at least some) voiceless unaspirated clicks—indeed, voiceless unaspirated velar-alveolar clicks—and thus the transcription should read /ᵏ|ˀ/→[kˀ], for */ʔae-s-en* 'sick' [ᵏ|ˀɐesən]→ [kˀɐesən] (see Sands 2020:31). Notwithstanding the non-production of clicks, informants would more easily—or in fact, appeared to prefer to—produce an incorrect click consonant than omit it entirely, as numerous examples in the tables above have demonstrated. When informants *did* omit a click consonant, they would often correct themselves by repeating themselves and producing the item with a—correct or incorrect—click in the appropriate place.[163] This was especially the case for informants in Groups 1 and 2, who were more likely to omit or produce incorrect clicks. Those informants who would omit clicks entirely had all learnt their Xri lexicon later in life and had a very limited exposure to Xri as children, if any, and are at the lower end of Group 1.

[163] Indeed, such intermittent click-realisation in particular items (sometimes by the same speaker) has also been recorded by Fehn (2020b) as occurring in a variety of Angolan !Xun still in daily use by the entire speech community. A comparison of the patterns in this variety and in Xri may make an interesting topic for future investigation. (My thanks to Anne-Maria Fehn for bringing this to my attention.)

5.2.4. Click insertion

In a few instances, informants inserted clicks where no clicks occur naturally in Xri. While this was not a frequent occurrence, it was nonetheless striking and may signal the end point of a process begun by the changes presented above in 5.2.2 Click convergence. As Table 5.5 shows, there appears to be no predictable location for click insertion beyond the fact that it is always word initial. The ejective velar affricate /k͡xʼ/ was, however, the most likely sound to be substituted by a click: in (1), *kxʼai-p* [k͡xʼɐip] 'face' was variously realised with initial [n|], [ǂˀ] and [‖ˀ]. This mix of click accompaniments contrasts with the more consistent click substitution in (2), where *dai-p* [dɐip] 'milk' was realised with initial voiced clicks [g!], [g|], and [gǂ]. In (3), the initial consonant [k] was substituted with the 'plain' (voiceless and unaspirated) click [!], thus: *kowa* 'speak' [kowɐ]→[!owɐ]. A similar substitution is apparent in (4), except that the initial phoneme is aspirated and the click realised without aspiration, *khoe-s* 'woman' [kʰoes]→[|oep].[164]

*Table 5.5. Comparison of Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the insertion of click consonants, marked with *.*

	Snyman's data, c. 1973	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*kxʼai-p*	'face'	***kxʼaip***, *kxʼəip, n|aip*, ǂʼaip*, ‖ʼaep**	'face'
(2)	*dai-p, bii-p*	'milk'	***bii-p***, ***dai-p***, *dəi-p, g!ai-p*, g|əi-p*, gǂai-p**	'milk'
(3)	*koba*	'speak'	*!owa**, ***kowa, koba, gowa***, *khoba, kxoba*	'speak'
(4)	*khoe-s*	'woman'	***khoe-s, saa-s, tara-s,*** */oe-p*, ko-s*	'woman'

[164] The item was also realised with the incorrect gender (masc.) suffix (/-b/ rather than /-s/), which suggests strongly that the informant's knowledge of Xri was very restricted.

In the process of click insertion, the speaker may not know—or may be unable to distinguish—the appropriate place for clicks and introduces them into their speech as a signal of their ability to produce click consonants, thereby signalling their membership of the group as a 'true Griekwa'. However, in all instances of click insertion presented in Table 5.5, the click is inserted word-initially and replaces the initial consonant, which does imply some (subconscious) awareness of the appropriate location for a click phoneme, as word-initially is where the majority of clicks are found. The insertion of clicks was only made by some of the informants in Group 1.

5.3. Other consonants

5.3.1. Loss of aspiration

Although it does not present in a large number of items, the loss of aspiration shown in Table 5.6 is nevertheless significant as it presents in the most common lexical item(s) known by informants with a very restricted Xri vocabulary, as shown in (1): *khoe-p* [kʰoep] 'man' and *khoe-s* [kʰoɪs] 'woman'.

*Table 5.6. Comparison of Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the loss of aspiration in more recent data. The relevant unaspirated items are marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*khoi'i* *khois* *khoeb, khoib*	'person' 'woman' 'man'	*khoen* *khoes* *khoep*	'person' 'woman' 'man'	*khoen, koedan* ***khoes**, kos*, kxoes* ***khoep**, koep*, kxoep*	'person' 'woman' 'man'
(2)			*khai*	'rise', 'up'	***khai**, khãi, khãe, kai*,* *kxae*	'rise', 'up'

The loss of aspiration in phoneme /k^{h}/, realised [k], was diagnostic of an informant's restricted knowledge of Xri, and in every instance, the unaspirated form [k] was only produced by informants at the lower end of Group 1, and typically those informants who acquired a limited Xri lexicon in adulthood.

5.3.2. Insertion of aspiration after velar stops

A small number of informants realised some unaspirated velar stops with aspiration, as Table 5.7 shows. In both Examples (1) *koba* 'speak' [kobɐ]→[k^{h}obɐ] and (2) *kai-* 'old' [kɐi]→[k^{h}əi], the production of /k/ with aspiration as [k^{h}] was an aberrant realisation, occurring inconsistently in the speech of those with very small Xri lexicons, situated at the lower end of Group 1.

*Table 5.7. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing aspiration following velar stops in more recent data. The relevant aspirated items are marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)			*koba*	'speak'	*khoba*,* ***koba****,* ***kowa****,* ***gowa****, kxoba, xowa*	'speak'
(2)	*kai*	'big'[165]	*kaira, kaida*	'old', 'aged'	*khəira*, kaisi*	'old'
(3)	*gu-s*	'sheep'	*guu-s*	'sheep'	*ghuu-s, g^{h}uu-s,* ***guu-s***	'sheep'

In the case of (3), *guu-s* 'sheep' [guus]→[g^{hh}uus ~ g^{h}uus], full aspiration occurred in three tokens, slight aspiration in one token, and one token was unaspirated. No discernible pattern was present, although *guu-s* was only produced by informants in

[165] In Orange River Afrikaans, *'groot'*, usually means 'old' and not 'big', as in Standard Afrikaans. Thus, Meinhof's inaccurate translation of *'groot'* as 'groß' ('big') is understandable.

Group 3 and the upper end of Group 2. It must be noted though that (3) presented with only five tokens from all informants, whereas (1) is one of the most common Xri items, known even by individuals whose Xri lexicon did not extend beyond five items (and were not included in this study).

5.3.3. Voiceless aspirated velar stop realised as voiceless velar affricate

The realisation of the aspirated voiceless velar stop /kh/ as voiceless velar affricate [kx] (see Table 5.8) did not occur in the Xri speech of more competent informants and was limited to informants in Group 1 and the lower end of Group 2. The affricate realisation of the aspirated stop appears only in a few tokens and can be viewed as aberrant, as with the insertion of aspiration after velar stops discussed in the previous section. The articulatory adjustment that changes the production of an aspirated voiceless velar stop to a voiceless velar affricate—see (1) *khoe-* '(person)' [khoe-]→[kxoe-]—requires only a slight narrowing of the vocal tract at the velum.

*Table 5.8. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the replacement of the aspirated voiceless velar stop with a velar affricate in more recent data, marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*khoi-s* *khoe-b, khoi-b*	'woman' 'man'	*khoe-s* *khoe-p*	'woman' 'man'	***khoe-s**, ko-s, kxoe-s** ***khoe-p**, koe-p, kxoe-p**	'woman' 'man'
(2)			*khai*	'rise', 'up'	***khai**, khãi, khãe, kai, kxae**	'rise', 'up'

It is possible that these [kx] realisations are accidental productions, found in the speech of informants with a lower competency, but that makes them no less significant, as Xri maintains a phonemic distinction between the aspirated voiceless velar stop /kh/ and the

ejective voiceless velar affricate /kx'/. Indeed, *khai* [**kʰ**ɐi] 'rise, up' and *kx'ai* [**kx'**ɐi] 'on, at' form a minimal pair. The examples in Table 5.8 show ejective release ['] following the affricate [kx], as they are not a product of phoneme substitution, permissible substitution of allophones or phonemically acceptable variation, and the affricate element appears to be the result of inaccurate production of /kʰ/ as [kx].

5.3.4. Voiceless velar affricate with ejective release

The velar affricate with ejective release /kx'/ was characteristic of the Xri speech of the majority of my informants. The phoneme /kx'/ clearly distinguishes Xri (and !Ora) from Khoekhoegowab, in which it seldom occurs. Haacke and Snyman (2019:285) argue that the (predominantly word-initial) Xri phonemes /kx'/ and /ʔ/ merged to /ʔ/ in Khoekhoegowab. Meinhof (1930:146) encountered individuals who never produced phoneme /kx'/, only [k'] and [ʔ], and incorrectly assumed that this was a distinction between Xri and !Ora (and that Xri was therefore closer to Khoekhoegowab).[166] In Griekwastad, I noticed that fewer informants produced the complete ejective velar affricate. Examples (1–2) in Table 5.9 show that these informants produced /kx'/ in a range of ways: (1) without the ejective release [kx], *kx'om-mi* 'house' [kx'ommi]→[kxommi]; (2) reduced to an ejective voiceless velar stop [k'], *kx'aa* 'drink' [kx'ɐɐ]→[k'ɐɐ], or simply as a voiceless velar stop [k], thus [kɐɐ], and very infrequently also as an ejective velar fricative [x']: *kx'aa* 'drink' [kx'ɐɐ]→[x'ɐɐ]. This range of variation and its comparison to the historic literature on Xri warrants closer examination.

[166] In the index of Beach (1938:326), it is also erroneously asserted that a contrast exists between Xri /k'/ and !Ora /kx'/, where in fact this was far more likely due to the performance of his Xri informants (notably two elderly informants he encountered in Kokstad) (see also Beach 1938:223).

*Table 5.9. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the reduction of the realisation of the voiceless velar affricate with glottal release in more recent data, marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*k'um-mi*	'house'	*kx'om-mi*	'house'	***kx'om-mi***, *kxom-mi**	'house'
(2)			*kx'aa*	'drink'	***kx'aa***, *k'aa*, x'aa**	'drink'
(3)	*k'ama-∅-se,* *'ama-∅-se*	'truly'	*kx'ama-p*	'truth'	***kx'ama-p*** *ama-p-se**	'truth' 'truly'

I only encountered the realisation of /kx'/ as a glottal stop [ʔ] in one instance in my data, shown in (3), *kx'ama-p-se* 'truly' [kx'ɐmɐpse]→[ʔɐmapse], which can be contrasted to Meinhof's [k'amase ~ ʔamase] in the same example.[167] The realisations diverging from [kx'] were not nearly as common as Meinhof (1930) and Beach (1938) would lead one to expect. Meinhof (1930:146) and Beach (1930:326) saw /k'/ or even /ʔ/ as more characteristic of Xri versus the /kx'/ they associated with !Ora.[168] If the non-production of /kx'/ (limited to informants in Group 1) is treated as a marker of an informant's low Xri competency—which it was in the speech of my own informants—this finding casts serious doubt on the competence of both Beach's and Meinhof's Xri informants. Indeed, neither Meinhof nor Beach left any record of how their informants' level of reliability was determined; Beach (1938:183) only makes clear his preference for informants who are "pure representative[s]" of the "Korana".[169]

[167] Notably, this realisation was made by my informants in a song, and not in natural speech.

[168] Beach transcribes both as /kxʔ/ and /kʔ/, mistaking the ejective element for a glottal stop.

[169] Indeed, he sees the Griekwa as a thoroughly "bastardised" people, from whom a few "pure" !Ora need to be sorted out, "like sifting diamonds from sand" (Beach 1938:183). His contempt for the Griekwa is palpable.

5.3.5. Alveolar trill realised as lateral approximant

In a small number of tokens, alveolar trills /r/ were realised as lateral approximants [l], typically intervocalically, that is, /VrV/→[VlV]. This can be seen in Examples 1 and 2 in Table 5.10, where *ari-p* 'dog' [ɐrip]→[ɐlip], and *Biri-p* 'Tswana (man)' [birip]→[bilip]. Both of these realisations were idiosyncratic and produced by only one informant in Group 2 and would have been omitted from the study if Meinhof's data had not included an identical realisation—see (1).

*Table 5.10. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the realisation of the alveolar trill as a lateral approximant. Relevant variations are marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*ali-b*, ari-b*	'dog'	*ari-b*	'dog'	***ari-p**, ïiri-p, eiri-p, airi-p, ïri-p, eri-p, ali-p**	'dog'
(2)	*piri-p/s*	'goat/ram'	*Biri-p/s, Bari-p, Bri-p*	'Tswana (man, woman, etc.)'[170]	***Biri-p, Biri-n,** Bili-p*, Bri-n*	'Tswana (man, person, etc.)'

5.4. Vowels

5.4.1. Note on pairs of vowels in Khoekhoe

Research on vowel combinations—typically known as "diphthongs"—in the Khoekhoe languages has provided strong evidence that they are not true diphthongs. Beach (1938:51) argues against viewing these pairs of vowels strictly as diphthongs and prefers the term

[170] Haacke and Snyman (2019:271) notes that the Xri ethnonym given to the Tswana peoples, *Biri-na*, can be glossed as 'goat (people)', derived from Tswana *pọdi* 'goat', as the Tswana peoples kept goats and had introduced goats to the region. See also Meinhof's data in the table.

"combined vowels". Indeed, Haacke (1992:24–26) has argued that neither "diphthongs" nor "long vowels" occur in Khoekhoegowab. This has been extended to Xri and other Khoekhoe languages owing to:

> the formation of roots with juxtaposed identical or non-identical vowels through complete elision of the intervocalic consonant in Khoekhoe languages, generating so-called "long vowels" and "diphthongs"
>
> (Haacke and Snyman 2019:282)

Thus, the "diphthongs" and "long vowels" of Xri should more accurately be treated as serial vowels V_1V_2 and V_1V_1 respectively (see also Haacke 1992:24–26). Similarly, Haacke (1992:25–26) describes the formation of nasal "diphthongs" as the result of the underlying process $CV_1NV_2 \rightarrow CV_1V_2$ although a more accurate representation would be $CV_1NV_2 \rightarrow C\tilde{V}_1\tilde{V}_2$ where the nasal (N) is elided and the adjacent vowels (V_1 and V_2) both become nasal vowels, for example, /sɐ(N)ubee/→/sɐ̃ũbee/ 'put away'. A similar process is described for oral (non-nasal) dissimilar vowels $CV_1CV_2 \rightarrow CV_1V_2$, oral geminates $CV_1CV_1 \rightarrow CV_1V_1$ and nasal geminates, $CV_1NV_1 \rightarrow C\tilde{V}_1\tilde{V}_1$ (Haacke 1992:25–26).

5.4.2. Nasal vowels

Although they were produced consistently by only a minority of informants (mostly in Group 3 and the upper range of Group 2), nasal vowels are phonemically distinct from oral vowels in Xri. In the majority of informants, the nasal aspect of the vowel was either displaced and realised as an alveolar nasal [n] or velar nasal [ŋ] following the vowel or preceding the vowel (and realised as part of a click accompaniment), or omitted entirely and the vowel produced as an oral vowel only. In many instances there was no discernible nasal sound of any kind, and this, the ability to produce nasal vowels (or at the very least a nasal accompanying vowels), appears to correlate with Xri competency in informants (i.e., those

who produce nasal vowels are likely to have a high competency score). The data are presented in Table 5.11.

*Table 5.11. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the displacement of the realisation of the nasal element of nasal vowels, marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)			*sãubee*	'put away'	***sãubee**, soŋbee**	'put away'
(2)			*sĩsen, sisen**[171]	'work'	***sĩsĩn**, sĩnsĩn*, sinsin*, sisin* sənsən*, səsən**	'work'
(3)	*mũ-gu*	'eyes'	*mũ-mp, mũ-p*	'eye'	***mũu-ku**, muuŋ-kus*, muŋ-ku**	'eyes'

In (1), *sãubee* 'put away'[sãũbee]→[soŋbee], the vowel sequence /ãũ/ becomes [oŋ]. Thus, the shift of the nasal element to after the vowel cluster merges the two vowels /ãũ/, thereby lowering to [o] and shifting the nasal component to post-vocalic velar nasal [ŋ]. The nasal [ŋ] therefore effectively forms the second part of the vowel cluster /ãũ/→[oŋ], while simultaneously shifting the nasal element of the vowels to the end of the articulation. As both /ãũ/ and [oŋ] are [+sonorous, +nasal], it can be argued that [ŋ] takes on vowel-like properties in this location. The only instance in Snyman's data of a nasal vowel realised as an oral vowel is shown in (2), *sĩsĩn* 'work' [sĩsĩn]→[sɪsïn]. In my own data, the same item was produced variously as *sĩsĩn* 'work' [sĩsĩn]→ [sĩnsĩn ~ sinsin ~ sisin ~ sïnsïn ~ sïsïn]. These variations realise the nasal element of the vowel in a number of ways: adding an alveolar nasal after the nasal vowel [sĩnsĩn], realising the nasal vowels as an oral vowel with subsequent velar nasal [sinsin ~ sïnsïn], and realising the nasal vowels as oral vowels [sisin

[171] In this instance *e* should best be interpreted as [ï ~ ə].

~ sïsïn]. A similar substitution of the nasal element with a subsequent velar nasal [ŋ], *mũu-ku* ‘eyes’ [mũũku]→[muuŋku] is shown in (3).

5.4.3. Oral vowels

5.4.3.1. Selective convergence to the near-close central vowel

The realisation of phonemic near-open central vowel /ɑ/ has undergone a shift to [ï] in the speech of the great majority of informants.[172] The raising of /ɑ/→[ï] is not typical of Khoekhoe languages and [ï] more closely resembles [ə ~ ï] in Afrikaans.[173] In Table 5.12, Examples (1–2) show the shift /ɑ/→[ï], with [ï] transcribed as ‘ə’.[174] This shift occurs in environments with both click and non-click consonants: (1) post-click in *ǁ’am-mi* ‘water’ [ǁ’ɐmmi]→[ǁ’ïmmi], and (2) post-nasal in *mari-p* ‘money’ [mɐrip]→[mïrip]. This shift of the first vowel does not seem to affect the realisation of the second vowel [i] in either example, although closer acoustic examinations may yield more information. The shift of /ɑ/→[ï] has also been observed in “diphthongs” where the /ɑ/ segment shifts to between [e ~ ï], the /ɑi/→[ei ~ ïi]. Examples (3–4) demonstrate the [e ~ ï] range of the vowel shift, as both *kx’ai-p* ‘face’ [kx’ɐip]→[kx’eip ~ kx’ïip] and *dai-p* ‘milk’ [dɐip]→[deip ~ dïip] showing an identical range of articulation of /ɑ/. The similarity of this shift of the /ɑ/ vowel appears to confirm Haacke’s (1992) and Haacke and Snyman’s (2019) position concerning the relationship between the vowels in the “diphthongs”; that is, that they are phonologically

[172] Some other more erratic vowel variations include /e/→[i ~ u], and /u/→[e]. These are not discussed in any further detail as they appear to be idiosyncratic of certain informants in Group 1, rather than part of a generalised shift—or shifts—in vowel realisation.

[173] Lass (1992:267) recommends the notation /ɨ/ for the conventional Afrikaans /ə/ as it is a centralised front vowel, and not central in most contexts. As I argue that the production of /ɑ/ as [ï] in Xri is the result of Afrikaans contact, I use Lass’s notation.

[174] This is permissible in terms of the tonology, as nasals and vowels can both carry tone.

separate segments. The earlier data from Meinhof (1930) for (4) *dai-p* 'milk' [dɐip]→[deib] appears to indicate that this range of realisation of /ɑi/→[ei ~ ïi] is also not a recent one.

*Table 5.12. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the shift in realisation of the /ɑ/→[e ~ ï], marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)			*ǁ'am-a, ǁam-dan*	'water'	***ǁ'am-mi, ǁ'am-dan*** *ǁẽm-mi, ǁə̃m-mi*, ǁam-mi, !'am-mi, /'am-mi, /əm-mi*, ǁ'əm-mi*, ǂ'am-mi, ǁam-dan, gǁam-mi*	'water'
(2)			*mari-o*	'money'	***mari-p****, məri-p*,* ***mari-ku****, məri-ku* madi-p*	'money'
(3)			*kx'ai-p*	'face'	***kx'ai-p****, kx'əi-p*, kx'ei-p**	'face'
(4)	*dei-b**	'milk'	*dai-p, bii-p*	'milk'	***dai-p****,* ***bii-p****, dei-p*, dəi-p*	'milk'
(5)			*sĩsen*, sisen**	'work'	***sĩsĩn****, sĩnsĩn, sinsin, sisin sənsən*, səsən**	'work'
(6)			*bareda-s, bere-p, pere-p*	'bread'	***bere-p****, prə-p*, pəri-p*, pərə-p*, brei-dan, bri-dan*	'bread'

The shift of the close front vowel /i/ to central [ï] is not by any means universal. It occurs in a limited range of lexical items, but in these few items it accounts for nearly all tokens. In (5) (Table 5.12), the shift occurs between sibilant [s] in *sĩsĩn* 'work' [s̬ĭs̬ĭn]→[sïsïn].

The realisation of what is presumably /e/ in (6) (Table 5.12) as [ï] is more difficult to explain, as the exact underlying vowel in question (whether /e/, /ɑ/ or /i/) is not clear from the existing data. It is most likely, if we follow Khoekhoegowab *pere-b* [pere-b] 'bread' (Haacke and Eiseb 1999) and !Ora *bere-b* [bere-b] 'bread' (Meinhof 1930), that the vowel is

/e/. If this is correct, then the shift represented in (4) *pere-p, bere-p* 'bread' [pere-p, bere-p]→[bïrï-p, pïrï-p] may also indicate vowel elision in progress as follows: [bere-]→[bïrï]→[brï-]. The elision of the initial vowel, whether [e] or [ï], is towards a consonant cluster [br] which is atypical in Khoekhoe, with the exception of loan words. The etymological origin of *pere-p* is not known, although it is likely a loan word.[175]

5.4.3.2. Other vowel changes

This section briefly details a number of other phenomena related to vowels (vowel changes, shifts and modifications) that were documented, but did not occur with the consistency or on the scale of those already detailed above.

5.4.3.2.1. Vowel insertion

The vowel [ɪ] is occasionally inserted after word-initial open-back vowel /ɑ/, usually realised as [ɐ], and sometimes raising the realisation of the initial vowel as well. Thus /ɑ/ is sometimes realised as [ɐɪ] [eɪ] or [ïɪ]. As (1) in Table 5.13 shows, *ari-p* 'dog' [ɐrip]→[eɪrip ~ ïɪrip]. This insertion of an additional vowel [ɪ] after the initial vowel was made by only a few informants in Groups 1 and 2.

5.4.3.2.2. Vowel shifts in vowel sequences

The initial vowel in the vowel sequence, or "diphthong", /ɑu/ is occasionally lowered to [oʊ]. One such case is (2) presented in Table 5.13: *xau-p* 'faeces, shit' [xɐʊp]→[xoʊp]. This realisation of /ɑu/ as [oʊ] was done in only limited instances, and predominantly in lexical items without click phonemes, which may indicate that the shift is towards a 'more

[175] Haacke and Eiseb (2002) give *pere-b* 'bread; flour, meal' as a synonym of *tsammel-i* 'flour', and it is plausible that 'bread' is a loan word coinciding with the introduction of bread to the region.

Afrikaans' realisation of /ɑu/ as diphthong /ou/. Informants in all three groups sometimes realised /ɑu/ in this way.

*Table 5.13. Comparison of Meinhof's 1928 data (Meinhof 1930), Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing the shift in realisation of a number of vowels. Each example pertains to a different feature as discussed in the text. The tokens showing change are marked *.*

	Meinhof's data, 1928	**Gloss**	**Snyman's data, c. 1973**	**Gloss**	**My data, 2018–2019**	**Gloss**
(1)	*ali-b, ari-b*	'dog'	*ari-b*	'dog'	***ari-p**, iiri-p*, eiri-p*, airi-p*, iri-p, eri-p, ali-p*	'dog'
(2)			*xau-p*	'faeces (of dog)'	***xau-p**, xou-p**	'faeces, shit'
(3)			*ǂǁnui-p*	'fat'	***nǂǁui-p**, nǀui-p, ǂũi-p*, nǀoi-p*, nǁoe-p*, nǁou-p**	'fat'

Another vowel sequence that displayed a degree of changeability in informants' speech was /ʊi/. The single lexical item in (3) shows four different variations in realisation of the vowel sequence in *nǂǁui-p* 'fat' [ⁿǁʊip]→[ǂũip ~ ⁿǀoip ~ ⁿǁoep ~ ⁿǁoʊp]. If, in the first variation [ǂũip] one disregards the realisation of the incorrect click type, the nasal accompaniment of the click phoneme /ⁿǁ/ has been shifted on to the following vowel, which appears to be a hypercorrection of the phenomenon discussed above in 5.4.2 Nasal vowels. In the vowels of second and third variations [ⁿǀoip ~ ⁿǁoep], there is first the lowering and backing of /ʊ/ to [o], and then—in the third variation—the extension of the lowering and backing to the second vowel /i/ to [e]. This change represents another shift towards an Afrikaans realisation if the Xri vowel sequence as a more familiar diphthong, as with /ɑu/ discussed above. The fourth variation [ⁿǁoʊp] is more difficult to explain. Other than in terms of an Afrikaans diphthong, it could also be explained (at a stretch) as being a case of vowel shift of /i/→[o] following metathesis, thus /ʊi/→[iʊ]→[oʊ], although this seems less likely (see also (1) in Table 5.14). The variations above occurred in the speech of the full range of

informants, and seem to represent a shift away from Xri vowels and vowel sequences, towards more Afrikaans vowels and diphthongs.

5.4.3.2.3. Metathesis in vowel sequences

A number of instances of metathesis were recorded in vowel sequences. In Table 5.14, all the examples contain tokens of metathesis. Examples (1–3) show metathesis of the vowels in the vowel sequence /oɑ/→[ɐo]: in (1), *!ʔhoa* 'speak, chat' [ŋ̊|ʰoɐ]→[ⁿ‖ɐo ~ ⁿǂɐo ~ ⁿ‖ɐʊ ~ ⁿ!ɐʊ],[176] in (2), *Sii‖ʔoa(-p)*[177] 'God, Jesus' [sii‖ʔoɐ]→[tii‖ʔɐo], and in (3), *xoa* 'scratch, write' [xoɐ]→[xɐo].

*Table 5.14. Comparison of Snyman's c. 1973 data (Haacke and Snyman 2019) and my 2018–2019 data, showing metathesis in a number of vowel sequences. (1) also contains vowel shift. The tokens showing metathesis are marked *.*

	Snyman's data, c. 1973	Gloss	My data, 2018–2019	Gloss
(1)	*!ʔhoa*	'speak'	***!ʔhoa***, *!ʔhõa, noa, n|oa, n‖au*, n‖ʔoa, nǂao*, nǂoa, nǂõa, nǂou, n!au*, n!oa, n!oa, n!ou, ǂõa*	'speak, chat'
(2)	*Tshuu‖ʔao-p, Tshii‖ʔao-p*, Tshii‖ʔoa, Sii‖oa-p, Suu‖oa-p*	'God'	*Sii‖oa,* ***Sii‖ʔoa****, Suu|ʔoo, Suuǂʔoa,* ***Suu‖ʔoa****, Sii!ʔoa, Sii|ʔoa-tse, Tii‖ʔao*, Tii!ʔoa, Siˀǂʔoa-mu, Sii|ʔoa, Sii|ʔo, Tiiǂʔoatse, Sii!ʔoa-tse, Sii|ʔoa-tse*	'God', 'Jesus', *'die Here'*
(3)	*<u>xoa</u>‖naa*	'scrape off'	***xoa****, xao**	'write, scratch'
(4)	*ǂao-p*	'heart'	***ǂao-p****, ǂõa-p*, ǂoa-p**	'heart'

[176] Note also that all click phonemes are realised as nasal clicks, and three out of four with the incorrect click type. The latter two tokens also contain shift of the second vowel in the sequence (post-metathesis) [o]→[ʊ], thereby effectively completing a substitution of one vowel sequence /oɑ/ for another /ɑu/.

[177] Or several other variants (see Snyman's data in (2)).

The inverse metathesis can be seen in (4), of vowel sequence /ɑo/ realised as [oɐ], thus *ǂao-p* ‘heart’ [ǂɐop]→[ǂoɐp ~ ǂõap]. The metathesis of vowel sequences occurred in the full range of informants, with that in *!ʰhoa* (1) being found only in Groups 1 and 2, whereas *xoa* and *ǂao-p* (3–4) were produced by informants in Group 3. The metathesis in (2) was produced by only one informant in Group 2, but was also recorded in Snyman’s data (see Table 5.14).

5.4.4. A note on tone

While tone and tonology cannot justly be grouped with phonemes and phonetics, which are the topic of this chapter, it would be remiss of me not to include at least a short note on tone in the data collected. Only three informants (SW, JB, SF1) seemed to produce lexical tone with any real regularity and consistency. As no study has examined the tonology of Xri, it is not easy to establish whether their use of tone is either idiosyncratic, partially intact, or an eroded artefact of a previous tone system. Moreover, only one of the three informants (SW) contributed a substantial volume of data that could be analysed in future, but this leaves the researcher with the challenge of reconstructing Xri tonology based on, effectively, an idiolect. Meinhof’s (1930) data contain very occasional and insufficient tone markings and Snyman’s data contains no tone markings at all (Haacke and Snyman 2019). This means that the only approach for reconstructing Xri tonology would necessarily rely on what is known about the tonology of other Khoekhoe languages (i.e., Khoekhoegowab and !Ora), while using the data collected from the informants in this study.

5.5. Conclusions

This chapter has presented Xri phonetic data—with phonetic transcriptions—to illustrate the variations in the spoken Xri of the informants who were presented in the previous chapter.

These variations in informants' realisations were examined one phonetic feature at a time, including click phonemes and click accompaniments (changes in accompaniment realisation, the convergence of click types, and loss of and insertion of clicks), other consonants (loss of aspiration, insertion of aspiration and affrication, the ejective velar affricate), nasal vowels (attrition of nasal vowels and nasalisation of adjacent features) and oral vowels (including metathesis). The data that illustrated the variation in each feature were briefly discussed in each section. The links between the variation in each feature and the level of Xri competency with which it corresponded in the informants and informant groups were made clear in each section, which now allows several overall conclusions to be drawn.

5.5.1. Click phonemes

The production of clicks with delayed aspiration was a marker of high competency, attested almost exclusively in Group 3. Indeed, in terms of click phonemes it was found to be the clearest marker of informants with a high spoken Xri competency. While click convergence (substituting one click type for another, while maintaining the accompaniment) appears to be a widespread phenomenon, which was attested in the speech of most informants, it is most concentrated in Group 1, and to a smaller degree in Group 2. The loss of contrast between the realisation of click types is indicative of a loss of phonological distinction between them, while the accompaniments (which are easier to recognise) remain more stable. The non-production and insertion of clicks is limited to informants in Group 1, who also display the highest degree of click convergence, further indicating a loss of phonological distinction between click types.

5.5.2. Other consonants

In general, aspiration was a good predictor of informants' competency level—whether by its absence, addition, or realisation as a velar fricative—and only those with a moderate to good Xri competency (Groups 2 and 3) produced the items with a reasonable degree of accuracy. Informants who did not produce aspiration when appropriate, as well as those who realised voiceless aspirated velar stops as voiceless velar affricates, were likely to be in the lower range of Group 1, and those who aspirated unaspirated velar stops were also likely to be in Group 1. Realisation of the voiceless ejective velar affricate was attested in the speech of the majority of informants and absent only in the speech of informants with lower competency. It was further demonstrated that claims in previous studies about the voiceless ejective velar affricate being uncharacteristic of Xri (and characteristic of !Ora) were made in error, based on insufficient and unreliable data.

5.5.3. Vowels

Accurate and relatively consistent production of nasal vowels was an excellent predictor of informants' high spoken Xri competency and was produced most reliably by those in Group 3. Vowel shift in the oral vowels towards Afrikaans was ubiquitous and was not a good indicator of informant competency. However, this was not the case for the production of Xri vowel sequences, and those informants who produced them with a higher degree of fidelity were likely to be in at least the upper half of informant competency, as those in the lower end tended to produce vowel sequences closer (or equal) to Afrikaans diphthongs, as well as realising vowels in their reverse positions (i.e., vowel sequence metathesis). Less indicative of competency was the insertion of additional vowels after word-initial /ɑ/ by several informants in different groups.

It was further demonstrated that a number of the variations in the features discussed in this chapter were already present in some informants' speech in those data collected in the 1920s and 1970s, which suggests that the changes now evident in informants' Xri speech are part of a process of language shift and attrition—for which there is data-based evidence—over the past century. There is further anecdotal historiographical evidence that plausibly suggests that the process of language death, of which this study has detailed the end stages, has been ongoing for about 170 years.

6. Conclusion

In terms of Xri's classification within the Khoekhoe language cluster, this study's data tentatively support Haacke and Snyman's (2019) conclusion that Xri is a distinct member of the group (rather than an offshoot or variety of !Ora) although no firm statement can be made without application of the historical-comparative method. Examination of the data and informants of Meinhof (1930) and Beach (1938) suggests that the speech of their informants was more characteristic of individuals with a low Xri competency (see 4 Assessing informant competency). Furthermore, their conflicting classifications of Xri should be seen as indicative of the unreliability of their data. For example, the ejective voiceless velar affricate /kx'/, which was seen by previous studies as distinctive of !Ora *only,* has been clearly attested in this study's Xri data, as well as those of Haacke and Snyman (2019).[178] Even so, a lexicostatistical comparison of the two varieties is needed to clarify their exact relationship. The latest research on the relationships between the various language groups and families in the loose grouping of Indigenous Click Languages has also been laid out clearly, together with the types of the relationships that have—and have not—been established between them.

The historic causes of language shift from Xri to Afrikaans have been explained in the context of the socio-political history of Xri speakers and contact with Dutch and Afrikaans varieties. I have also given some clarity on the accuracy of reports of Xri's vitality in the 20th century, many made without adequate investigation. This study has shown that Xri was most likely already highly endangered at the turn of the 19th century, but with small speech

[178] Indeed, only informants with the lowest Xri competency scores produced the phoneme /kx'/ as [k'] or [ʔ].

communities remaining in isolated pockets. The language was still in use as an L1 in the home to at least the 1940s and 1950s, at the time that the informants with the highest Xri competency were acquiring the language. There must have been a (very small) Xri-speaking community in the Bucklands area, west of Douglas in the Northern Cape, at that time, likely members of a single extended family and numbering no more than a few dozen individuals. Beyond this small area, isolated speakers of Xri were still to be found in Griekwastad and Campbell, and predominantly on farms in Griqualand West and to the immediate south across the Orange and Vaal rivers.[179] Therefore the approximate date of Xri's moribundity—i.e., the point at which inter-generational transmission of Xri as a functional language ceased—can be understood to be by 1960. Needless to say, the premature pronouncements of Xri's status as 'extinct' since the 1950s have been disproved.

The available Xri linguistic data and the methods used to obtain them have been critiqued, particularly for their approaches to selecting informants. Meinhof (1930) and Beach (1938) have given a largely inaccurate representation of the Xri variety. Killian (2009) misinterpreted the socio-political situation and misidentified a range of informants—some speaking Xri, others speaking !Ora varieties, displaying clear signs of language decay—as speaking the constructed amalgam "Khoemana". While the data contained in Haacke and Snyman (2019) are substantial and constitute the largest Xri corpus—and are unlikely to be surpassed in this regard—very little metadata were contained in Snyman's field notes, and no insight into the socio-linguistic situation can be gleaned from the data set. The limitations of the previous examination of Xri language attrition have necessitated a re-examination of phonetic and phonological change in Xri, using the new data set collected for this study (see Figure 6.1). This investigation has been made from the perspective of

[179] Anecdotally, there was one farmer in the area who was 'fluent' in Xri. He died in the 1970s or 1980s.

changes in Xri occurring as a result of language decay, symptomatic of the end stages of language death, and is the first coherent treatment of the phonetic and phonological impacts of language death in an Indigenous Click Language; it is also the first to focus on a case of "gradual death" in a language in the area.[180]

The study does have some noteworthy limitations. Very little can be said about numerous aspects of Xri in the way one could for a 'healthy' language—that door is closed for Xri. There were relatively few potential candidates from which to choose the informants for this study, owing to the low number of community members with any level of Xri knowledge. Only five informants had a high level of spoken Xri competency (Group 3; see Figure 6.1), and only one of them (SW) was very cooperative and able to participate in extended interviews. A greater number of individuals with Xri knowledge from which to choose informants would have been helpful, but, sadly, the informants interviewed during fieldwork are most likely the majority of individuals with Xri knowledge. Nevertheless, the limited number of potential informants led to the development of the metric model (as discussed above; see Figure 6.1).

A schematic representation of this research study (Figure 6.1) has been made to remind the reader of the processes that have led to the study's conclusions. The schematic excludes the majority of secondary literature which further informed the study in order to simplify the already complex representation. The diagram shows, for example, where biographical data obtained in the interviews were used to verify the grouping of informants based on their Xri competency scores.

[180] A slower shift from Xri to Afrikaans; *cf.* Sands, Miller and Brugman (2007) on lexical attrition in N|uu, a case of "sudden death" (rapid shift from N|uu to Afrikaans). Killian (2009) mistakenly proposed Xri—as a part of so-called "Khoemana"—as being subjected to a "sudden death" as a result of genocide.

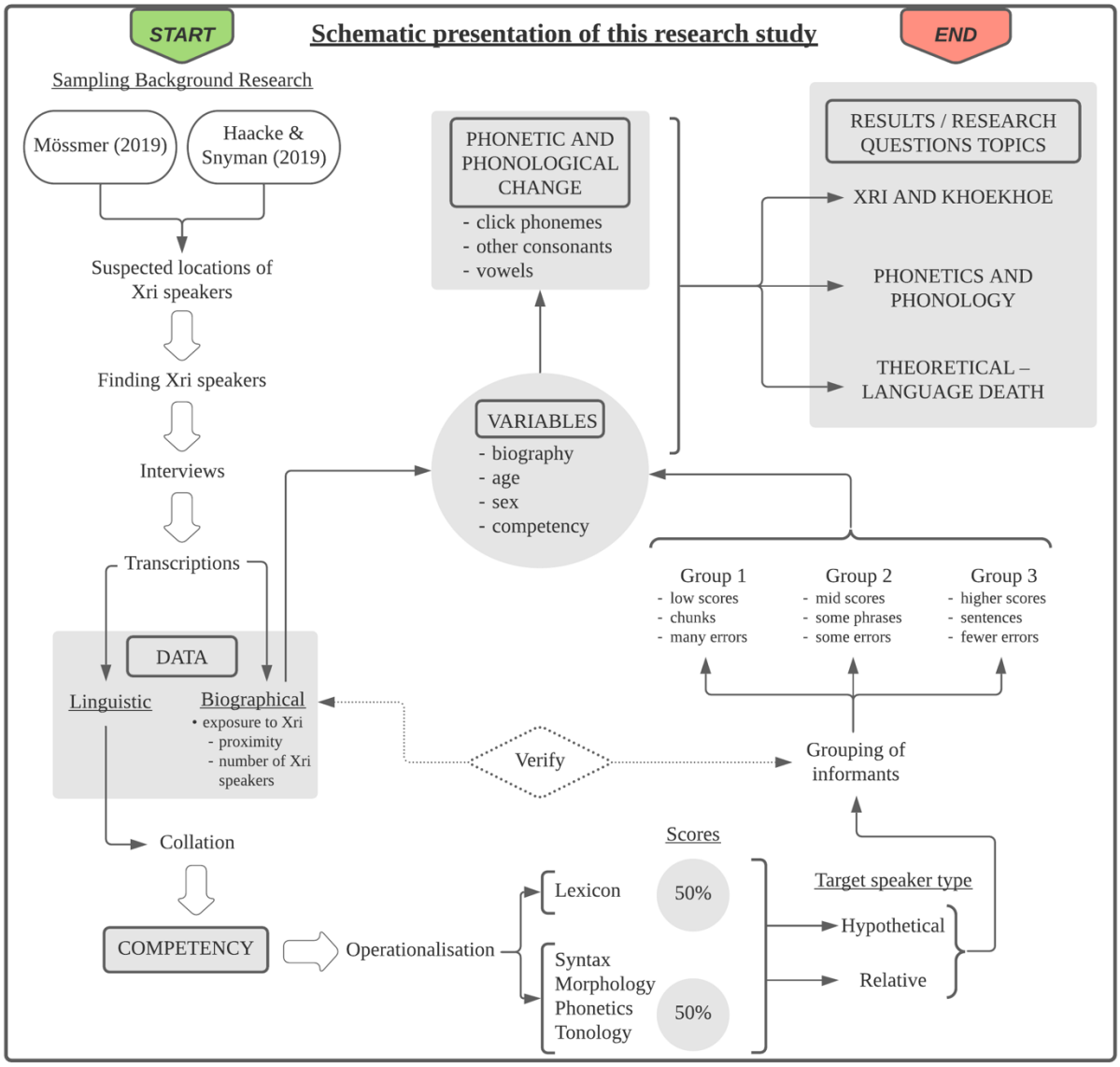

Figure 6.1. A schematic representation of the present research study, detailing the steps that were taken to reach the conclusions to which the study has come.

The innovative methods employed during data collection for this study meant that data could be collected from informants with a broad range of competencies, giving new insight into the socio-linguistic situation of Xri and those who use it (see Figure 6.1). The majority of informants were over 70 years old,[181] and a number suffered from impaired memory as a result of strokes or other causes. It was therefore important to elicit data without putting

[181] Of the 27 informants, 11 were 70–79 years old, and a further 11 were 80–99 years old.

unnecessary pressure on informants, as this negatively affected their Xri recall. Crucially, as an L1 speaker of Afrikaans, I was able to interact and form connections with my informants in ways that previous researchers could not.[182] Interviews were structured closer to informal interactions and conversations to set informants at ease. Rather than directly eliciting data from informants with a wordlist, storytelling was encouraged, particularly autobiographical storytelling. When accessing early life memories, informants were more likely to recall and produce Xri items spontaneously, boosting their confidence and often surprising themselves with what they could recall. In those informants who could remember songs in Xri, singing brought back a rush of memories. Using informal interactions that were closer to 'real life' to 'unlock' memories, I obtained data that the 'unreal' structured interviews I conducted previously did not (and could not). Based on the results obtained in interviews using the methods detailed in 3 Methods, the implementation of this approach in future studies of critically endangered languages is strongly recommended.

By developing a metric model (see Figure 6.1) for assessing the spoken competency of informants/speakers of critically endangered (and dying) languages, this study has contributed a first step in creating a tool to measure spoken competency based on objective empirical measurements. The tool has been developed specifically for those working in the field on critically endangered languages, and in the field of language obsolescence and death. The metric model can contribute to future linguistic studies in languages that have already undergone language decay and whose speakers are in an advanced stage of language attrition. The metric has been demonstrated in measuring spoken competency of speakers relative to both the most fluent documented speaker, and a hypothetical 'fluent speaker' of the language in question (as no fully fluent speakers were ever documented) (see Figure

[182] With the notable exception of Jan Snyman, an L1 Afrikaans speaker.

6.1). With future testing and refining, the metric has the potential to help build the framework for a more empirical, data-driven typology of last speakers of languages, thereby contributing to the study of language death.

The compilation of the data generated by the metric in three group case studies has defined contiguous yet distinct layers of competency in the informants (see Figure 6.1). Group 1 had very limited Xri knowledge, small spoken lexicons, and generally low competency in most aspects of Xri. Group 2 had slightly bigger spoken lexicons and a more coherent knowledge of Xri phonology. Group 3 had the most substantial spoken Xri lexicons, more confidently produced Xri phonetics, and retained a more significant knowledge of the tonology and syntax of the language. The most important factor in determining informants' competency was spoken lexicon size, which correlated positively with their overall competency. Informants who consistently produced lexical tone and nasal vowels invariably had among the highest competency scores. Similarly, the accurate production of click phonemes was a further indicator of overall higher Xri competency, and only informants with a very high competency consistently produced clicks with delayed aspiration. The ability of informants to produce other Xri phonemes not found in Afrikaans, particularly the voiceless velar ejective fricative, were found to discriminate between those individuals with very low Xri competency and the rest.

The three groups had a progressively older mean age, and Groups 2 and 3 were exclusively female. Older males in the communities were less likely to have Xri knowledge and, if they did, it was invariably at a lower competency level (i.e., Group 1) with a small lexicon.[183]

[183] Two potential male informants who were said to have a good Xri knowledge could not be interviewed, the first due to ill health, and the second because he had died a week before the first field trip.

This discrepancy in competency between genders may be because male children were sent out to work as soon as they were able and spent less time with their families (where they were exposed to Xri), as opposed to female children, who stayed closer to their family for longer (until they were married). However, it seems more probable that Xri knowledge was passed from mother/grandmother/aunt to daughter (as was the case in the majority of cases) as part of a matrilineal heritage line of cultural and linguistic Xri knowledge.

This study has, in 5 Analysis of phonetic features, explained what phonetic and phonological changes Xri has undergone during the processes of attrition and decay. There has been an overall loss of phonological distinction between the click types in click phonemes among informants with lower competency who readily substitute click types, while the accompaniments remain more stable. Only one click accompaniment—delayed aspiration—has undergone significant decay in the speech of almost all informants. In other (non-click) consonants, the realisation of aspiration has become highly unstable in informants with the lowest Xri competency. It was confirmed that the ejective voiceless velar affricate was characteristic of Xri—contrary to the claims of some studies—and that divergent realisations were present only in the speech of those with very low Xri competency. The production of nasal vowels was found to be indicative of informants with a high Xri competency, whereas other informants realised the nasal element before or after the (now oral) vowel as a velar nasal. A consistent shift in oral vowels towards Afrikaans vowels was documented in informants of all levels of competency. The accurate production of vowel sequences, however, was characteristic of informants with mid to high competency, and those with lower competency scores tended to produce Xri vowel sequences as Afrikaans diphthongs (with or without metathesis).

The persistence of clicks in Xri—in spite of attrition—does appear to support previous work on the salience of clicks as a phonological class (e.g., Ladefoged and Traill 1984, 1994; Traill and Vossen 1997). Nevertheless, all informants displayed some degree of click convergence (i.e., a click being realised as different click type), particularly in informants with lower competency. Indeed, the click accompaniment appears to be more stable and persistent than the click itself. The data showed a very low rate of non-realisation of clicks, and a similarly low rate of click insertion. These findings suggest that the salience of clicks may extend beyond (auditory) perceptual salience to an underlying (cognitive) phonological salience, although further investigation is required before any definitive conclusions can be drawn.

The change of sounds in Xri has been clearly demonstrated to be caused by extended language contact with Orange River Afrikaans (ORA) within the community, causing the slow death of Xri by attrition. It is likely that only a few Griekwa communities were ever mostly Xri-monolingual, and Xri speakers have been in regular contact with ORA (and its predecessor Khoe-Dutch) for at least two centuries. Given the two languages' co-existence for such a length of time it is perhaps surprising that Afrikaans has not left a greater phonetic 'stamp' on Xri.[184] As may be expected, phonemes that do not occur in Afrikaans phonology were more likely to undergo change. A number of the changes documented in the speech of informants for this study were already attested in the data from the early and late 20th century, clearly indicating that the process of language decay in Xri has been ongoing for—at the very least—a century. While the sound change detailed in this study is—in broad terms—the same as sound change occurring elsewhere in 'safe' or 'healthy'

[184] Indeed, Xri (and other Khoekhoe languages) have arguably had a greater effect on the phonetics of ORA than the other way around.

languages, it differs dramatically in M. Jones's (1998:1) three key aspects: the *rate* of change (rapid change within two generations), the *context* of change (in a marginalised community, stigmatised for use of their language), and the *amount* of change (changes in all major phonetic categories). Owing to a loss of domains of use, the phonetic changes in Xri have occurred together with progressively faster language attrition—once individuals are no longer able to fulfil basic linguistic functions with the Xri they know, or have nobody to speak to, their Xri knowledge atrophied and, in some cases, became dormant.

There is a wide range of openings for future research on Xri, due to the limited research conducted on the language in the past. While more fieldwork and data collection are strongly recommended, the substantial data collected for this study can be used for future studies on both Xri and the ORA of older speakers.[185] Potential areas of investigation include: an acoustic analysis of Xri features explored in this study; a lexicostatistical comparison of Xri with !Ora to clarify the relationship between them, building on Haacke and Snyman's (2019) comparison of Xri and Khoekhoegowab; an examination and reconstruction of Xri tonology (insofar as possible); and a formal description of the language (with consideration of the limitations of the data). Sociolinguistic investigations of the way in which Xri is used in informants' Afrikaans speech are also a possibility. The data collected for this study have begun to lay the foundations for any potential future language revitalisation efforts, and the communities will have linguistic data to work from.

[185] There may still be more individuals with Xri speaking competence, although the social-historical background suggests that it is unlikely that many speakers who were not documented for this study remain. Any potential future researcher must be wary of misinformation and treat with scepticism the romantic idea that there are still a large number of speakers of Indigenous Click Languages in the South African hinterland, waiting to be discovered.

Through the cumulative work of Meinhof (1930), Killian (2009), Haacke and Snyman (2019), Mössmer (2019), and the present study, the Xri language will not join the untold number of other languages that have become extinct without being documented. Nevertheless, the future of Xri is likely to be a short one, unless attempts are made to reconstruct and revitalise it in the near future. To this end, a complete data set of the Xri data collected for this study will be housed on the SADiLaR[186] online repository, to aid future research.[187] The compilation of these data will represent a significant step in documenting and recognising what remains of South Africa's Indigenous Click Language heritage.

[186] https://www.sadilar.org/index.php/en/resources

[187] The data may also be housed on or linked to other similar online repositories in the future.

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Appendix 1: Ethical clearance letter

LINGUISTICS SECTION
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7 February 2018

Dear Sir / Madam

Ethical Clearance for Research Project

Title: Khoekhoe varieties in South Africa, are there still speakers of Korana and Xri

Principal Investigator: Dr Matthias Brenzinger, CALDi / University of Cape Town
Secondary Investigator: Martin Mössmer, University of Cape Town

This is to confirm that the project mentioned above meets the requirements for research ethics as laid down by the Faculty of Humanities and the Linguistics Section.

Please feel free to contact me if you require any further information.

Yours faithfully

Signature Removed

Sean Bowerman
Chair: Ethics Subcommittee, Linguistics

Appendix 2: Extended Swadesh 207-word list[188]

adjective		
1. big	11. cold	21. sharp
2. long	12. full	22. dull
3. wide	13. new	23. smooth
4. thick	14. old	24. wet
5. heavy	15. good	25. dry
6. small	16. bad	26. correct
7. short	17. rotten	27. near
8. narrow	18. dirty	28. far
9. thin	19. straight	29. right
10. warm	20. round	30. left
animal		
31. animal	34. dog	37. worm
32. fish	35. louse	
33. bird	36. snake	
animal product		
38. skin	41. bone	44. horn
39. meat	42. fat (n.)	45. tail
40. blood	43. egg	46. feather
body part		
47. hair	54. tongue	61. belly
48. head	55. fingernail	62. guts
49. ear	56. foot	63. neck
50. eye	57. leg	64. back
51. nose	58. knee	65. breast
52. mouth	59. hand	66. heart
53. tooth	60. wing	67. liver

[188] Categorised by semantic field; taken and adapted from Bowern (2008).

body verb		
68. drink	72. spit	76. laugh
69. eat	73. vomit	77. live
70. bite	74. blow	78. die
71. suck	75. breathe	
colour		
79. red	81. yellow	83. black
80. green	82. white	
conjunction		
84. with	86. if	
85. and	87. because	
environment		
88. tree	100. moon	112. cloud
89. forest	101. star	113. fog
90. stick	102. water	114. sky
environment (continued)		
91. fruit	103. rain	115. wind
92. seed	104. river	116. snow
93. leaf	105. lake	117. ice
94. root	106. sea	118. smoke
95. bark	107. salt	119. fire
96. flower	108. stone	120. ashes
97. grass	109. sand	121. burn
98. freeze	110. dust	122. road
99. sun	111. earth	123. mountain
human		
124. woman	127. child	130. mother
125. man (adult male)	128. wife	131. father
126. man (human being)	129. husband	132. name
human verb		
133. sing	134. play	135. swell

impact		
136. kill	139. hit	142. stab
137. fight	140. cut	143. scratch
138. hunt	141. split	144. dig
location		
145. at	146. in	
miscellaneous verb		
147. sew	148. count	
motion		
149. swim	153. lie	157. fall
150. fly (v.)	154. sit	158. float
151. walk	155. stand	159. flow
152. come	156. turn	
perception verb		
160. see	163. think	166. sleep
161. hear	164. smell	167. say
162. know	165. fear	
pronoun		
168. I	173. they	178. who
169. you (singular)	174. this	179. what
170. he	175. that	180. where
171. we	176. here	181. when
172. you (plural)	177. there	182. how
quantifier		
183. not	187. few	191. three
184. all	188. other	192. four
185. many	189. one	193. five
186. some	190. two	

time		
194. night	195. day	196. year
tool		
197. rope		
transfer		
198. give	202. wash	206. throw
199. hold	203. wipe	207. tie
200. squeeze	204. pull	
201. rub	205. push	