

Juncture-Verb Constructions in Northeastern Kalahari Khoe: A comparative perspective

Anne-Maria Fehn 

CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, InBIO Laboratório Associado, Campus de Vairão, Universidade do Porto, Vairão, Portugal | BIOPOLIS Program in Genomics, Biodiversity and Land Planning, CIBIO, Campus de Vairão, Vairão, Portugal | Department of Linguistic and Cultural Evolution, Max Planck Institute for Evolutionary Anthropology, Leipzig
Email: afehn@cibio.up.pt

Admire Phiri 

Department of Linguistics and Language Practice, University of Free State, Bloemfontein, South Africa
Email: phiriadmirel@gmail.com

Abstract

Multiverbal predicates constitute a defining feature of the Kalahari Basin linguistic area of southern Africa encompassing the Kx'a, Tuu, and Khoe-Kwadi language families. Here, we focus on a complex predicate type restricted to the Khoe-Kwadi family's Khoe branch which involves a linker morpheme and is thus referred to as Juncture-Verb Construction (JVC). While JVCs have synchronically been interpreted as Serial Verb Constructions (SVC), their origin and relationship with SVCs in the narrower sense as found in the Kx'a and Tuu families remain debated. The Kalahari Khoe languages Ts'ixa, Shua and Northern Tshwa spoken along the northeastern Kalahari Basin fringe present a convenient case study to expand the descriptive corpus on Khoe JVCs while addressing the limits of areal spread and contact influence. We show that all languages under consideration present JVCs with formal and functional properties corresponding to those found in other Kalahari Khoe languages, while also sharing features with SVCs as attested in the Kx'a and Tuu families. Both JVCs and SVCs contrast with conjoined predicates and are defined by single-eventhood. JVCs cover the same semantic domains found among SVCs of the Kx'a and Tuu families, can be subdivided into symmetrical and asymmetrical constructions, and show the same potential for lexicalization and grammaticalization, respectively.

Keywords: Khoe-Kwadi; Kalahari Khoe; complex predicates; serial verb constructions; areal typology; language contact

1. Introduction

Complex predicates are a salient feature of the Kalahari Basin linguistic area (Güldemann 1998, Güldemann 2006, Güldemann & Fehn 2017:509ff) and are found across the Kx'a, Tuu, and Khoe-Kwadi families which together constitute the typological unit “Southern African Khoisan” (Güldemann 2014) (Figure 1). There is, however, no consensus on whether all languages in question have serial verb constructions (SVCs) in the narrower sense.

According to Aikhenvald (2006), SVCs

- are monoclausal;
- share prosodic properties of monoverbal predicates;
- share one tense/aspect/mode/polarity value;
- share at least one argument;
- describe a single event;
- function as a single predicate with no overt markers of coordination or subordination.

While there is broad agreement that Kx'a (Ju, †'Amkoe) (Figure 1B) and Tuu (Taa, !Ui) (Figure 1C) languages all display SVCs in the narrower sense, i.e., without overt markers of co- or subordination (ex. 1a-c) (Berthold & Gerlach 2017; Collins 2002; Heine & König 2015; Güldemann 2006; Kießling 2013; König 2010; Pratchett 2020, this volume; Sebba 1995), the status of a certain type of complex predicate in the Khoe-Kwadi family's Khoe branch (Figure 1A) involving a “linker” or “juncture” morpheme of the basic form *-a* and/or an accompanying tonal reflex known as “flip-flop” (1d) is disputed (Güldemann & Fehn 2017:510).

- (1) a. *ní sí ʎʎàʎʎ ʎʎàʎʎ kě ʎʎàè.*
 1sg IPFV **crawl go.out** LOC:3i> house.3i
 “I am crawling out of the house.” (Taa West, Taa; Kießling 2013:48)
- b. *dàʎàmà kʰù ɡálí-á kàtòngá.*
 child **jump go.out-TR** box
 “The child jumped out of the box.” (Jul’hoan, Ju; Dickens 2005:81)
- c. *ma cāʎò !ʎū.sò kì !òà nā.*
 1sg **walk enter** OBL house inside
 “I walk into the house.” (N!aqriaxe, †'Amkoe; Berthold & Gerlach 2017:168)
- d. *ʎōō=m̄ kò dáò=m̄ ʎà ɡʎāī-ā c’óā.*
 springhare IPFV road=sg.M LOC.prox **run-J exit**
 “The springhare runs away from the road.” (Ts’ixa)

Given the semantic opaqueness of the juncture, some authors (Chebanne & Collins 2017; Haacke 2014; Kilian-Hatz 2006, 2008, 2010) have opted to analyze this multiverbal predicate type as SVC. Other terms found in the literature are “compound verb” (Haacke 1999 for Standard Namibian Khoekhoe, Nakagawa 2006 for Glui), “verbal compound” (Visser 2010 for Naro), “juncture-verb construction” (Fehn 2016 for Ts’ixa) and “verb-juncture construction”

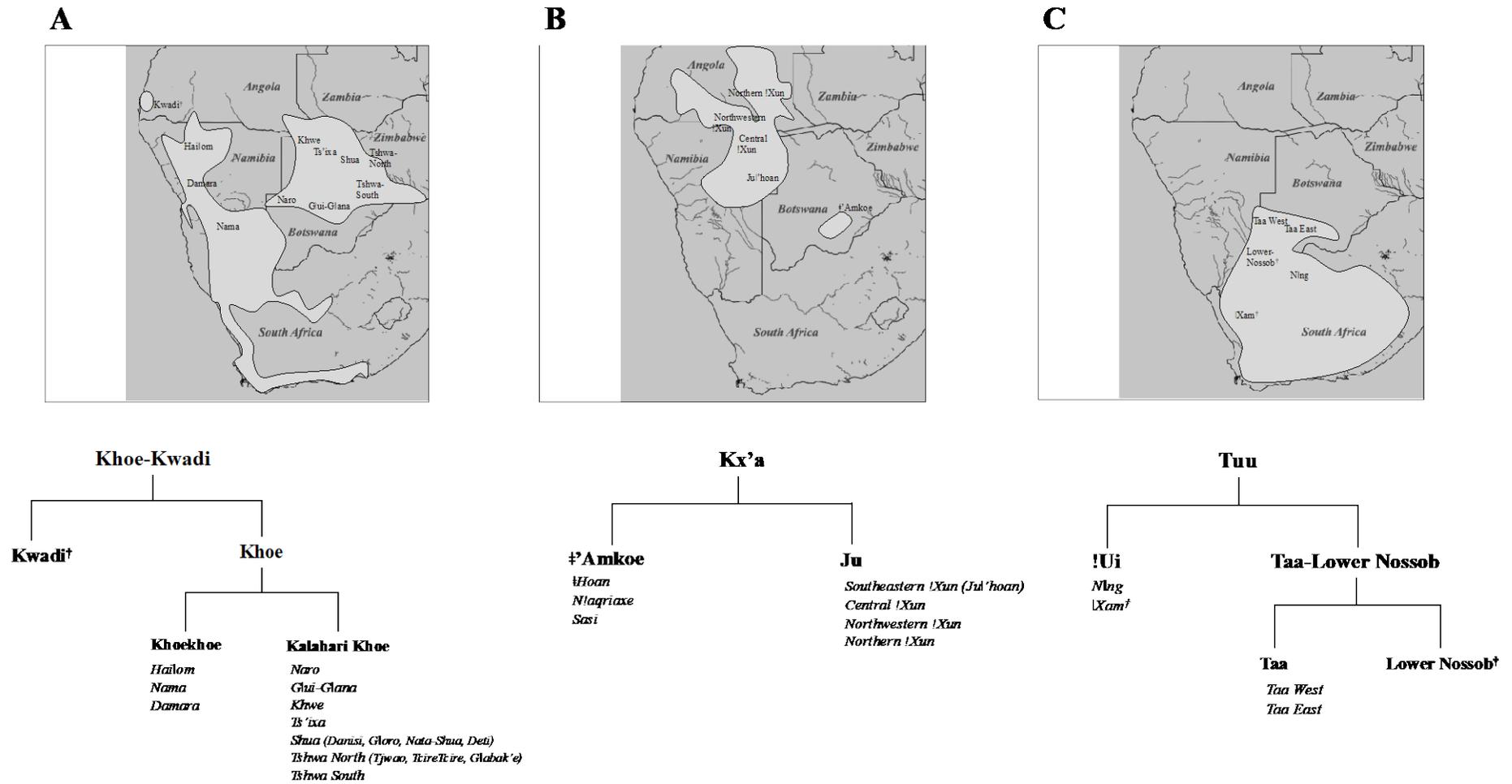


Figure 1: Historical distribution and subclassification of the three language families comprising the typological unit Southern African “Khoisan”: A) Khoe-Kwadi (Vossen 1997, Güldemann 2014); B) Kx’a (Heine & Honken 2010); C) Tuu (Güldemann 2005, 2014)

(Güldemann & Fehn 2014, Pratchett 2020). In this paper, we adopt the descriptive term “junction-verb construction” (JVC), without preliminary claims on the relationship between Khoe JVCs and SVCs as found in languages of the Kx’a and Tuu families.

While the available data suggests that multiverbal predicates of the JVC type are a general feature of Khoe, a comprehensive description of their formal and functional properties is only available for a small number of languages, including the Kalahari Khoe languages Khwe (Kilian-Hatz 2006, 2008, 2010) and Naro (Visser 2010, 2013), as well as contemporary varieties of Namibian Khoekhoe (Haacke 1999, 2014; Rapold 2014). In consequence, little is known about variation between languages, as well as about the possible role of contact in propagating this construction type. While Kx’a and Tuu are typologically close, Khoe-Kwadi displays a divergent profile and is commonly believed to be a late arrival to the area (Güldemann 2008). Hence, the existence of Khoe multiverbal predicates with the same functional range as Kx’a and Tuu SVCs may conceivably be traced to intense interactions in high contact areas like the central and southwestern Kalahari (Güldemann 2006, Güldemann & Fehn 2017, Nakagawa & Traill 2000). In this scenario, Khoe languages from the periphery of the Kalahari Basin would be expected to display less affinities with Kx’a and Tuu, including in the domain of complex predicate formation.

Being spoken in areas with little to no historically documented presence of Kx’a and Tuu speakers, Kalahari Khoe languages from the northeastern Kalahari Basin fringe present a convenient case study to expand the descriptive corpus on Khoe JVCs while addressing the limits of areal spread and contact influence. We here focus on three endangered languages (or language clusters) which have been included in the surveys of Westphal (1971, no data a) and Vossen (1997, 2013a, 2013b), but only recently became the subject of targeted language documentation: Ts’ixa, spoken by less than 200 individuals on the eastern fringe of the Okavango Delta; Shua, spoken in and around the Makgadikgadi and Nxai Pan areas of eastern-central Botswana; and Northern Tshwa (cf. Fehn & Phiri 2017), spoken in eastern Botswana and across the border in western Zimbabwe. We thereby draw on our previous work on Ts’ixa (Fehn 2016, 2017, 2019) and Tjwao (Andrason & Phiri 2018; Fehn & Phiri 2017; Phiri 2015, 2021), as well as on published (McGregor 2014, 2015, 2017; Vossen 1997, 2013), archival (Westphal no date a) and newly collected data from Shua and the Northern Tshwa dialects TcireTcire and G!abak’e. Sources used in the present paper are listed in Table 1, along with their state of documentation and the scope of the available data. All examples cited in this paper which were not collected by the authors themselves are indicated as such¹.

To provide a general overview of JVCs in northeastern Kalahari Khoe, we first outline the formal properties of the construction and delimit its use against other types of multiverbal predicates (section 2). We then assess the existing semantic variation in the framework of Aikhenvald (2006) with a special focus on the areal context (section 3). To conclude, we discuss the historical origin of JVCs and address the possible role of contact within the Kalahari Basin linguistic area (section 4).

¹As there exist a multitude of working and community orthographies for languages of the “Southern African Khoisan” unit (Brenzinger & Shah forthcoming), all data has been transliterated to match IPA standards in order to facilitate comparison. Note that the fricated palatal click rendered as <!!> in Heine and König (2015) has been transliterated as <f>, following the suggestion by B. Sands (p.c) (cf. also Fehn 2020a).

Name of doculect	Location	# of speakers	Researcher	Lexicon	Phoneme Inventory	Grammatical elicitation	Texts	Publication(s)
Ts'ixa	Mababe	docu	AM Fehn	✓	✓	✓	✓	Fehn (2016; 2017; 2018; 2019)
Danisi	Savuti (Mababe)	1	R Vossen	✓	✓	✓	✗	Vossen (1997; 2013)
			AM Fehn	✓	✓	✗	✓	fn
	Nxabe	3	AM Fehn, WB McGregor, B Kure	✓	✓	✓	✗	fn
	Phuduhudu	3	AM Fehn, WB McGregor, B Kure	✓	✓	✓	✗	Fehn (2018)
	Gweta	1	AM Fehn, WB McGregor, B Kure	✓	✓	✓	✗	fn
Gloro	Gweta	1	EOJ Westphal	✗	✓	✓	✗	rec
Shua	Nata	1	EOJ Westphal	✗	✓	✓	✗	rec
		docu	WB McGregor	✓	✗	✓	✓	McGregor (2014; 2015; 2017)
		1	AM Fehn	✓	✓	✓	✗	Fehn (2018)
Deti	Rakops	1	EOJ Westphal	✓	✓	✓	✗	fn, rec
		3	R Vossen	✓	✓	✓	✗	Vossen (1997; 2013)
		2	AM Fehn, WB McGregor, B Kure	✓	✓	✓	✗	Fehn (2018)
Tjwao	Tsholotsho	docu	A Phiri	✓	✓	✓	✓	Phiri (2015; 2021)
TcireTcire	Nata (Tsholotsho)	1	AM Fehn, A Phiri	✓	✓	✓	✗	fn
Glabak'e	Mosetse	1	EOJ Westphal	✓	✓	✓	✗	fn, rec

Table 1: Doculects used in this study (locations in brackets indicate place of recording (if not identical with place of origin of speaker; Abbreviations: docu ‘documentation project’; fn ‘field notes’; rec ‘recording’)

2. Defining JVCs in Northeastern Kalahari Khoe

In this section, we first provide a basic overview of the typological properties of northeastern Kalahari Khoe languages (section 2.1). We then briefly define JVCs and introduce the concept of the juncture morpheme (section 2.2) before distinguishing this predicate type from other multiverbal constructions, most notably conjoined predicates (section 2.3).

2.1 Typological features

Typologically, northeastern Kalahari Khoe languages largely align with better documented varieties from the central and southwestern Kalahari (e.g., Vossen, ed. 2013): they are mostly isolating, but display a rich suffixing morphology. Derivational affixes attach to both verbs and nouns, and a subset of tense-aspect categories is marked by postverbal affixes. Like in other languages of the Khoe-Kwadi family, the default word order is SOV. However, while Ts'ixa and the Shua dialect Danisi display a considerable amount of pragmatically motivated word order variation, the same does not seem to hold true for other dialects of Shua and the Northern Tshwa varieties where only occasional appearances of OSV are attested. Ts'ixa also stands out by optionally marking nouns with portmanteau morphemes encoding person, gender and number (PGN). While related PGN clitics also make part of the pronominal systems of Shua and Tshwa, they never appear as specific articles or obligatory noun markers. All languages distinguish at least three syntactic verb classes, according to the number of core participants they may take: intransitives, transitives and S/O-ambitransitives. Ditransitives with two objects treated like the single object of a transitive predication, appear in Shua and Northern Tshwa, but are absent in Ts'ixa. All northeastern Kalahari Khoe languages mark a subset of grammatical roles through their pronouns and PGN clitics. While Shua dialects display a two-case opposition between subject/object and clausal dependents (McGregor 2014:49), pronouns and PGN clitics in Ts'ixa and Northern Tshwa exhibit two differing types of accusative alignment: Ts'ixa displays a two-case opposition between subject/dependent and direct object, whereas Northern Tshwa displays a three-case opposition between subject, object, and genitive/dependent (Fehn & Phiri 2017). In Ts'ixa and Shua, the object of the clause is optionally marked by a postposition (*ʔà*) that occurs across Kalahari Khoe and is probably grammaticalized from a copula (Kilian-Hatz 2008; McGregor 2018). An additional strategy, indexing of pronominal objects on the verb, is exclusively found in the Shua dialect Deti. Peripheral participants are marked by a set of semantically specified postpositions which function as heads of their preceding noun phrases.

2.2 Defining features of Juncture-Verb constructions and the juncture morpheme

Complex predicates of the JVC type are attested in all northeastern Kalahari Khoe languages, from the Okavango Delta of Botswana (Ts'ixa) to western Zimbabwe (Tjwao) (ex. 2a-c):

- (2) a. *tsʰāó-ŋò kónò ʎóé kà kʰāń-á kúũ.*
 wide-LOC when knee OBL **crawl-J** go
 “When it is a wide place, (we) go crawling on (our) knees.” (Ts'ixa)
- b. *ta ke kʰai ʎa gʎai-a tʃũ.*
 1sg IPFV house LOC **run-J** enter
 “I run into the house.” (Nata-Shua, Shua)

- c. *ʔe.tsara* *kx'ui-a* *||x'ae-tfu-tam-hĩ.*
 3du.M speak-J meet-REC-NEG-PST
 “They could not agree.” (Tjwao, Northern Tshwa)

As exemplified by the Ts'ixa sentences quoted in (3) below, the JVCs in our data sample cannot be independently passivized (3a) or negated (3b), they share at least one core argument, usually the subject (3c), and are frequently contiguous. This is, however, not obligatory: The object in (3d) is not shared and can enter in-between intransitive V₁ and transitive V₂. Discontinuous JVCs are comparatively rare and are largely restricted to a subtype referring to conceptually connected sequences of events (cf. section 3.1 below).

- (3) a. *k^hōē=m̄* *||k'ām-á* *||k'ũũ-ē-hà.*
 man=sg.M hit:J-J kill-IMPS-PRF
 “The man was beaten to death.” (Ts'ixa)
- b. *||ũũ-xā=dzī* *ŋg|è* *mũũ-ā* *ʔáã-tèè* *||úú=sì* *||úá*
 parent-ASSOC=pl.F SEQ see:J-J know-NEG one.of=sg.F child
kà *tè* *káũ* *tà.*
 ATTR PST1 stay.behind COMP
 “The mothers (and their associates) did not notice that one of the children had stayed behind.” (Ts'ixa)
- c. *kōlóí=sì* *tè* *k^hōē=mà* *ʔà* *||k'ām-á* *||òò.xù*
 car=sg:F PST1 person=sg.M ACC hit:J-J put.down
dáò=m̄ *ʔà.*
 road=sg.M LOC.prox
 “The car knocked the man over on the road.” (Ts'ixa)
- d. *||xáà* *ʔà* *ʔé.sì* *kò* *síà* *góè=dzà* *ʔà* *c'áà.xù*
 morning LOC.prox 3sg.F IPFV VEN cattle=pl.F ACC take.out
nò *||ʔōrá* *‡ʔáá* *nè* *hāā* *ʔé.sà* *ʔà* *séè.*
 when big wind SEQ come:J 3sg.F ACC take
 “In the morning when she came to take out the cattle, a big wind came and took her away.” (Ts'ixa)

As observed by Kilian-Hatz (2006; 2008; 2010), Kalahari Khoe JVCs largely correspond to Aikhenvald's (2006) criteria defining SVCs, including single eventhood (Aikhenvald 2006:10ff; Bisang 2009). Even sequence JVCs like (3d) above must be understood as a single whole in contrast with another event or set of events (see section 3.1 below). This becomes particularly evident when JVCs are compared with other predicate types which denote simultaneous and sequential events (cf. section 2.3 below).

Despite the overall similarities between JVCs and SVCs, a latent problem is constituted by the so-called “juncture” morpheme (Elderkin 1986; Heine 1986; Köhler 1981) or “verbal linker” (Vossen 2010), which may be interpreted as co- or subordination marker. Synchronically, the gram's main function appears to lie in conveying that a verb will be followed by another verbal element – either a full verb or a suffix of verbal origin². One may therefore think of the juncture

² All derivative and TAM suffixes requiring use of the juncture can be shown to have grammaticalized from a verbal source (Fehn 2019; Vossen 1997, 2010).

as an element putting verbs into a construct state (Fehn 2016:177).³ Apart from linking a particular type of complex predicate, the juncture is required with a set of TAM and derivational suffixes which cannot be directly attached to the verb stem (see Table 6 in section 3.3 below). While all documented Kalahari Khoe languages (Vossen 1997) and a subset of Northern Khoekhoe dialects (Haacke 2014) have been shown to make use of the juncture⁴, its exact functions and morphophonological behavior differ between languages and even dialects. The juncture has a base form /a/ with several allomorphs (cf. Vossen 1997; 2010). While their distribution is in part predictable from the syllable structure and final vowel of the preceding verb stem, some allomorphs involving addition or insertion of the consonants /r/ and /n/ must be taken from the lexicon. Table 2 below provides the different juncture allomorphs attested in the data and documents their distribution across Ts'ixa, Tjwao and various dialects of Shua.

The basic juncture /a/ may be

- preceded by /n/ (-na).
- preceded by /r/ (-ra).
- assimilated to the preceding vowel (Ø).
- assimilated to the preceding vowel, preceded by r (/r/-insertion)⁵.
- assimilated to the preceding vowel, preceded by n (/n/-insertion).

	TS'IXA	SHUA				NORTHERN TSHWA
Juncture allomorph	Ts'ixa	Danisi	Gloro	Nata-Shua	Deti	Tjwao
-a	/i/, /u/, /ĩ/, /ũ/, /N/	/e/, /i/, /o/, /u/, /ĩ/, /ũ/, /N/, CVCV, derived	/e/, /ĩ/, /ũ/, /N/	/e/, /i/, /o/, /u/, /ĩ/, /ũ/, /N/, derived	/e/, */i/, /o/, */u/, /ĩ/, /ũ/, /N/, CVCV	/i/, /u/, /ĩ/, /ũ/, /N/, CVCV
-r-	/a/, /e/, /ε/, /o/			/a/	*/a/	/a/, /e/, /o/
-ra	/a/					
-n-	/ã/	/ã/		/ã/		/ã/
-na	/ã/, CVCV, derived	/ã/	derived	derived	*/ã/	/ã/, CVCV, derived
Ø	/a/, /e/, /ε/, /o/, /ã/, CVCV	/a/, /ã/, CVCV	/a/, CVCV	/a/, /o/, /ã/, CVCV	/a/, /o/, /ã/, derived	/a/, /e/, /o/, /ã/, CVCV

Table 2: Juncture allomorphs and their respective morphophonological environment in Ts'ixa, Tjwao and four dialects of Shua. Trigger vowels refer to V₂ of CVV roots; /N/ refers to roots ending in a nasal /m/ or /n/; “derived” refers to derived verbals, i.e., roots with one or more suffixes (*not attested in available sentence data, but mentioned in Vossen 1997:223-4; 2010:49)

In the following, juncture allomorphy and the associated tonal operation commonly referred to as “flip-flop” (Haacke 1999; Kilian-Hatz 2008) are lined out for Ts'ixa, as exhaustive data

³ Alternatively, Chebanne and Collins (2017:107) suggest that the juncture should be “thought of in the same way as the past participial morphology of Indo-European languages (‘I have eat-en’).”

⁴ While the juncture morpheme is absent in Standard Namibian Khoekhoe (Haacke 1999; Güldemann 2006), the accompanying tonal flip-flop appears in contexts associated with juncture use, indicating a shared historical origin (Rapold 2014).

⁵ Elderkin (2017:137) notes that in Khwe, r-insertion only occurs with verbs that can be reconstructed to an initial low tone (*LH or *LL), whereas elision of the juncture only occurs with verbs featuring an initial high tone (*HH and *HL). This pattern cannot be confirmed for Ts'ixa: While zero juncture only occurs with verbs that can be reconstructed to an initial high tone, r-insertion occurs with both *H- and *L-initial roots.

and/or a conclusive tonal analysis are lacking for the other varieties under discussion. We expect, however, that a similar picture, albeit with small modifications, can be assumed for other Kalahari Khoe languages of the northeastern Kalahari Basin fringe.

Rules governing the allomorphy in Ts'ixa can be summed up as follows (cf. Table 2 above): With CVV roots, *-a* is always predictable after the high vowels /i/ and /u/, both oral and nasal, as well as after verbs ending in a nasal consonant (either /n/ or /m/); after the mid vowels /e/, /ɛ/⁶ and /o/ and after the low vowel /a/, the juncture morpheme may either be assimilated, resulting in a zero-juncture, or /r/ may be added, or inserted. /ã/ either allows for zero-juncture or for /n/-insertion. In the case of /n/-insertion, nasality of the vowel is lost. *-na* appears occasionally with CVV roots ending in /ã/, after CVCV roots, as well as after derived verbals.

CVV roots followed by the juncture undergo tonal flip-flop, a suprasegmental operation which can be reconstructed to proto-Khoe (Rapold 2014). Like Glui (Nakagawa 2006), Khwe (Fehn 2019, Kilian-Hatz 2008, Köhler 1981), Naro (Visser 2013) and presumably most Kalahari Khoe languages, Ts'ixa has a three-tone system of H(igh) vs. M(id) vs. L(ow). Despite the tonal diversity found in modern Khoe languages, only *H and *L can be reconstructed to Proto-Khoe (Elderkin 2004, 2008). The relationship between proto-Khoe melodies and the synchronic Ts'ixa system is summarized in Table 3 below. Ts'ixa displays partial tonal depression after voiced onsets, as well as in the presence of the “second depressor” (in the following marked by \checkmark , following Elderkin 2013), a yet unidentified phonation type that appears to have existed in the proto-language (Elderkin 2013).

	Default	Voiced	2 nd Depressor
*HH	HH	HH~MH	MH
*HL	HL	HL~ML	ML
*LH	MH~HH	MH	
*LL	HM	MM	MM

Table 3: Ts'ixa reflexes of proto-Khoe melodies.

Underspecified verbs of the phonotactic shape CVV preceding the juncture morpheme exhibit unilateral flip-flop, meaning that root-initial *H changes to *L (Elderkin 2004, 2017). The following patterns arise: *HH > *LH; *HL > *LL; *LH > *LH; *LL > *LL. The Ts'ixa reflexes of the proto-Khoe melodies behave accordingly, as illustrated in Table 4 below for all documented juncture allomorphs. The table also includes information on so-called “sandhi”-forms (cf. Haacke 1999 for Khoekhoe) which appear in a variety of contexts, including V₂ of contiguous JVCs. A comparison between sandhi in Standard Namibian Khoekhoe (Haacke 1999) and Ts'ixa allows for the following generalizations with respect to the four proto-Khoe melodies: *HH > *HL; *HL > HL; *LH > *LL; *LL > *LL. Unlike unilateral flip-flop, sandhi also affects CVCV roots as well as derived verbals, and commonly involves a shift to a lower key (cf. also Fehn 2016:49ff). A previous study overlooked that it is not uncommon for flip-flop to operate on sandhi forms, contributing to the partly erroneous tonal analysis published in Fehn (2016).

⁶ Fehn (2016; 2018) does not consider the vowel /ɛ/ to be phonemic in Ts'ixa. A reanalysis of the Ts'ixa phoneme inventory has shed some doubt on this assumption. /ɛ/ is hence noted in the present paper.

Allo-morph	Proto-form ⁷	Example			Tonal melody		
		Default	Flip-flop	Sandhi	Default	Flip-flop	Sandhi
-a	*súí ‘arrive’	súí	>súí-á~á	>súí	HH	>HH-L~H	>HL
	*lx’ám ‘hit’	lk’ám	>lk’ám-á	>lk’ám	HH	>MH-H	>HL
	*tsúú ‘limp’	tsúú	>tsúú-á	>tsúú	HL	>HM-M	>HL
	*glái ‘run’	glái~glái	>glái-á	>glái~glái	HL~ML	>MM-M	>HL~ML
	*túú ‘buy’	cúú	>cúú-á	>cúú	ML	>MM-M	>ML
	*túí ‘call’	cúí	>cúí-á	>cúí	MH	>MH-H	>HL
	*l ^h ái ‘pull’	l ^h ái	>l ^h ái-á	>l ^h ái	MH	>MH-H	>HM
	*qx’ái ‘laugh’	k’ái	>k’ái-á	>k’ái	HM	>HM-M	>HM
*gúí ‘lift’	gúí	>gúí-á	>gúí	MM	>MH-M	>MM	
-r-	*péé ‘chase’	péé	>péé	>péé	HH	>HH	>HL
	*k ^h áá ‘give’	k ^h áá	>k ^h áá	>k ^h áá	HL	>HM	>HL
	*qx’óó ‘eat meat’	k’óó	>k’óó	>k’óó	MH	>MH	>HM
-ra	*x’úá ‘exit’	c’úá	>c’úá-rá	>c’úá	MH	>MH-H	>HM
	*t’úá ‘ask’	t’úá	>t’úá-rá	>t’úá	HM	>HM-M	>HM
-n-	*t’áá ‘know’	t’áá	>t’áá	>t’áá	MH	>MH	>HM
	*t’áá ‘enter’	cáá	>cáá	>cáá	HM	>HM	>HM
-na	*t’úá ‘pour’	l’úá	>l’úá-ná	>l’úá	HH	>HH-M	>HL
	*háá ‘exist’	háá	>háá-ná	>háá	MH	>MH-H	>HM
ø	*l’óó ‘die’	l’óó	>l’óó	>l’óó	HH	>MH	>HL
	*séc ‘take’	séc	>séc	>séc	HL	>HM	>HL
	*g’áó ‘look’	g’áó~g’áó	>g’áó	>g’áó~g’áó	HL~ML	>MM	>HL~ML

Table 4: Tonal flip-flop with known juncture allomorphs, as well as sandhi forms for all tonal melodies attested in modern Ts’ixa.

It is worth noting that *gúí* ‘lift’ > *gúí-á* is not an instance of tonal flip-flop, but rather a possible indication for the juncture /-a/ forming a phonological word with the preceding root: the added presence of a third mora allows for the realization of a depressed HM melody as MHM, rather than MM. However, the same is not true for the depressed melody ML (from *HL): *cúú* ‘buy’ has the flip-flop form *cúú-á*, rather than a depressed tri-moraic realization MHM of non-depressed HM. More research is needed to determine whether similar phenomena can also be observed in other Khoe languages, along with possible implications for wordhood and the suprasegmental properties of an intonation group.

While the juncture allomorphs cited above still regularly appear with all speakers of Ts’ixa before the completive *-xu*, the benefactive *-ma* and the durative *-t’íí.sí*, the language appears to be losing its allomorphic variation before the three Anterior/Perfect suffixes *-hã~-ha-*, *-ta* and *-lo* (Fehn 2016:139f). Especially with younger speakers, a default juncture *-na* is preferred, which no longer triggers obligatory flip-flop. In addition, there is some indication to suggest that the rules of juncture allomorphy in the productive formation of non-grammaticalized JVCs in Ts’ixa do not always correspond to those found in other environments. For example, CVCV stems as well as derived verbals commonly trigger the juncture allomorph *-na*, but most speakers tend to use *-a* in JVCs (ex. 4a-b). Furthermore, *-a* also appears with the mid-vowels /e/ and /ɛ/ (ex. 4c), which otherwise trigger either the zero allomorph or the default juncture *-na*:

⁷ All reconstructions provided in this paper are based on the authors’ own analysis and follow recent findings on Khoe vowel reconstruction (Elderkin 2016) and tone (Elderkin 2004, 2008).

- (4) a. *cxóā=m̄ t̄è hīl̄=sī ʔà ɬxōē-sī-à*
 elephant=sg.M PST1 tree=sg.F LOC.prox **rub.against-REFL-J**
ŋḡéé.
pass
 “The elephant scraped past the tree.” (Ts’ixa)
- b. *kōlóí=sí ʔà t̄è ɥābú-ā c’úā.*
 car=sg.F LOC.prox PST1 **jump-J exit**
 “(We) jumped out of the car.” (Ts’ixa)
- c. *gɥārá.ʔó=sì ʔà |ʔáò ɥk’āé-à cáā-nā-tà.*
 letter=sg.F LOC.prox money **meet:J-J enter-J-PST2**
 “(He) attached some money to the letter.” (Ts’ixa)

As derived verbals and CVCV stems do not display flip-flop, its presence cannot be used as a criterion to distinguish the juncture from the homophonous conjunction *ʔà* (Fehn 2016:255ff; see section 2.3 below). However, the expected allomorph *-na* is infrequent after CVCV and virtually absent after derived verbals, whereas *-a* appears in contexts regularly associated with JVCs. Furthermore, speakers were firm in insisting that *-a* in examples like (4) above is indeed the juncture and not a carelessly pronounced version of the conjunction which they unambiguously identify as a different morpheme. As a default juncture *-a* also used after derived verbals and CVCV forms is indeed attested in the neighboring Danisi dialect of Shua (ex. 5a-c), it may tentatively be suggested that occasional default use of *-a* in JVC contexts is the result of contact influence.

- (5) a. *cxoa k^hoe ɥao-a-ha.*
 elephant person shoot-J-PRF
 “A person shot an elephant.” (Danisi, Shua)
- b. *tsé bōódí-à-hà.*
 1pl.C tell-J-PRF
 “I told.” (Danisi, Shua)
- c. *féétù=fí kōrē Māsínsānē=m̄ xàè ʔé.nà ɥjárā-kū-à-hà.*
 PN=sg.F CONJ PN=sg.M CONJ 3pl.C cross.cousin-REC-J-PRF
 “Sheetu and Masinsane were in a cross-cousin relationship.” (Danisi, Shua)

2.3 Contrasting JVCs with other multiverbal predicates

Northeastern Kalahari Khoe JVCs contrast with other types of multiverbal predicates. In Ts’ixa, those primarily involve the discourse referential marker *t^hi.ʔà* and its allomorphs *t^hā* and *t^hòò* (Fehn 2016:252ff), the conjunction *ʔà* (Fehn 2016:255f), and the subordination clitic *=sè* (Fehn 2016:194f). Like JVCs, these constructions may share arguments as well as TAM value. While *t^hi.ʔà* and *ʔà* encode sequences of events, rather than single complex events (ex. 6a-b), adverbial constructions involving *=sè* are often synonymous with Manner JVCs (ex. 6c). Although more data would be needed to confirm this, it seems that adverbial constructions are preferred when the speaker intends to emphasize one of the subevents by means of fronting.

- (6) a. |ʔáò=dzà ʔé.sì dzōrō tʰí.ʔà tsxúm-á-xú-nà-tà.
money=pl.F 3sg.F pick.up DRM hide-J-COMPL-J-PST2
“She picked up the money and hid it.” (Ts’ixa)
- b. kʰōē=mà ʔābá=m tè páá ʔà |k’úú.
person=sg.M dog=sg.M PST1 bite CONJ kill
“The dog bit and killed the man.” (Ts’ixa)
- c. g|āá.kʰóè=sì kò ɲgláē kúú.
woman=sg.F:I IPFV **sing:J** walk
OR
kúú kò=sè g|āá.kʰóè=sì kò ɲgláè.
walk IPFV=ADV woman=sg.F IPFV sing
“The woman sings while walking.” (Ts’ixa)

Adverbial constructions involving the clitic =sè are not required to share arguments, TAM value, negation, or voice with the predicate in the main clause and are structurally different from other multiverbal predicates. They are best interpreted as true subordinate clauses which can usually be paraphrased with “while” (ex. 7a) or “when” (ex. 7b).

- (7) a. tí kò bālā=sè Bili=m cǎǎ-nā-hā.
1sg IPFV read=ADV PN=sg.M enter-J-PRF
“I was reading when Bill came in.” (Ts’ixa)
- b. Kʰwái ʔò ʔé.m kò kúú=sè xām ní ʔé.m |xòà
GN DIR 3sg.M IPFV go=ADV lion DEM.prox 3sg.M COM
||ʔǎǎ-kū.
fight-REC
“He was walking to Khwai when the lion fought with him.” (Ts’ixa)

Constructions with ʔà and tʰí.ʔà, on the other hand, clearly constitute individual predicates linked by coordinating particles. They nevertheless contrast with JVCs in their semantic and syntactic properties. Examples (8)a-c show JVCs contrasting with conjoined predicates. In (8)a, the single-event meaning ‘torture’ is expressed by a JVC, while the separate (but related) event of kidnapping is linked by means of the conjunction ʔà. In (8)b and (8)c, the discourse reference markers tʰā and tʰòò each introduce a new event, in contrast to the single events of climbing (jáā tāñ) and eating up (k’oró kʰídī) encoded by contiguous JVCs. Example (8)c further illustrates the difference between the conjunction ʔà and the discourse reference marker tʰí.ʔà and its allomorphs: tʰòò introduces a new event involving a change in agency, whereas ʔà links two sequential events performed by the same agent (coming and eating up).

- (8) a. k’áá.kʰóè=mà ||k’ām-á kéré.kéré ʔà g|āá.kʰóè=sà ts’ǎǎ-tā.
man=sg.M **beat:J-J** revolve CONJ woman=sg.F steal:J-PST2
“(They) tortured the man and kidnapped the woman.” (Ts’ixa)
- b. ʔé.sì nè jáā tāñ tʰā ʔé.sérà nè kúú ná=sérà
3sg.F SEQ **step:J** **stand.up** DRM 3du.F SEQ go DEM.ref=du.F
kà ||ʔáé=m ʔò.
POSS home=sg.M DIR
“She climbed (onto the cow) and the two of them went home.” (Ts’ixa)

- c. *g||āā.kʰóè=sì cī-nà-hà k'áà.kʰòè tʰòò nè āá ʔà k'ōró*
 woman=sg.F call-J-PRF man DRM SEQ come CONJ eat.meat:**J**
kʰúdí k'ōxú=mà ʔà.
 end meat=sg.M ACC
 “The woman called a man and (he) ate all the meat.” (Ts’ixa)

While the conjunction *ʔà* and the juncture morpheme both usually require sharing of the subject argument as well as of tense, aspect and modality, predicates linked by means of *tʰi.ʔà* can, but do not need to share arguments (ex. 9a) or TAM value (ex. 9b). They can be independently negated (ex. 9c) and also require separate morphological marking for subordination (ex. 9d) and passivization (ex. 9e).

- (9) a. *mōkóró=m̄ |k'ēé-nà-tà tʰà ʔé.ñ tōró.tórō tsʰāá=m̄ ʔà.*
canoe=sg.M fall-J-PST2 DRM 3pl.C perish water=sg.M LOC.prox
 “The canoe turned over and they perished in the water.” (Ts’ixa)
- b. *||xáà ʔà tí Mǎú ʔò kúú-ā-hà tʰi.ʔà*
 morning LOC.prox 1sg Maun DIR go-J-PRF DRM
ʔúú ʔà tí ||úǎ-nā-tǎ.
 evening LOC.prox 1sg return-J-PST2
 “I went to Maun in the morning and returned in the evening.” (Ts’ixa)
- c. *k'áà.kʰóè=m̄ tè k'ōxú=mà séè tʰā k'ōó-téè.*
 man=sg.M PST1 meat=sg.M take DRM eat.meat-NEG.SEQ
 “The man took the meat and did not eat it.” (Ts’ixa)
- d. *ʔúú.à.kà.tsʰéè ʔé.mà tí múú-nā-hā ʔé.ñ kò sámbà=sè*
 yesterday 3sg.M 1sg see-J-PRF 3sg.M IPFV wash=ADV
tʰi.ʔà η̄āmí-káxù=sè tʰi.ʔà ||áú.||áú=sè ʔé.sà ʔà.
DRM shine-CAU=ADV DRM straight:CAU=ADV 3sg.F ACC
 “Yesterday, I saw him while he was washing, then polishing, then repairing it (the car).” (Ts’ixa)
- e. *nāá=dzì kò séè-è tʰi.ʔà táó-è.*
 DEM.ref=pl.F IPFV take-IMPS DRM pound-IMPS
 “They (the fruits) are taken and pounded.” (Ts’ixa)

The Shua data is limited but reveals an overall similar picture. However, the available corpus does not offer conclusive evidence for a conjunction *ʔa*: while the expected juncture morpheme in example (10)a below would be zero, the possibility of a default juncture *-a* in JVC contexts has already been raised with regards to Ts’ixa (ex. 4 above); the same phenomenon might indeed apply to Shua. However, the parallel construction in example (10)b, produced by the same speaker, displays the expected zero juncture and is clearly identifiable as JVC. Hence, the existence of a conjunction *ʔa* in Shua remains a question for future research. Examples (10)c-d show a minimal contrast between JVCs which encode one complex event, and predicates conjoined with *ʔa.tʰi.ʔa* or *kotere...xae* which denote connected, but clearly separable, events. Finally, independent events happening simultaneously are expressed as adverbial clauses with the subordinating clitic *=se* (ex. 10e).

- (10) a. *ta xum ʔa |ʔae(-)a nĩũ-a-ha.*
1sg ground LOC fall(-)CONJ/J sit-J-PRF
“I fell into a sitting position.” (Nata-Shua, Shua)
- b. *ta xum ʔa |ʔae ||oe-ha.*
1sg ground LOC fall lie-PRF
“I fell into a lying position.” (Nata-Shua, Shua)
- c. *ta xum ʔa |ʔae ʔa.tʰi.ʔa nĩũ.*
1sg ground LOC fall CONJ sit
“I fall and sit down.” (Nata-Shua, Shua)
- d. *lũã-rena ke ŋglae kotere ndʒaa xae.*
child-pl IPFV sing CONJ dance CONJ
“The children sing and dance.” (Nata-Shua, Shua)
- e. *ta tee-ha=se k’aa.*
1sg stand-PRF=ADV drink
“I drink while standing.” (Nata-Shua, Shua)

Analogous to Ts’ixa, the Northern Tshwa dialect Tjwao has a conjunction *ʔa* which links closely connected events sharing TAM value. While the clausal subject is shared in most examples from our corpus (ex. 11a-c), this does not seem to be obligatory. In example (11d), O of the first coordinand is S of the JVC acting as the second coordinand:

- (11) a. *tire |x’ae ʔa |aa ka ||oe-ha.*
1sg fall CONJ belly MPO lie.down-PRF
“I fell and lay down.” (Tjwao, Northern Tshwa)
- b. *ʔaba kua huku tʃui ʔa ʔe xoo.*
dog IPFV chicken chase CONJ 3sg.C hold
“The dog chases the chicken and catches it.” (Tjwao, Northern Tshwa)
- c. *fori see ʔa tsxum-a-ha.*
tobacco take CONJ hide-J-PRF
“(He) took the cigarette and hid it.” (Tjwao, Northern Tshwa)
- d. *g|ee.xu e Vundla-ba tʃii ʔa ʔnĩũ-a |oo-kaxu-na-ha.*
woman 3sg.C PN-sg.M.ACC call CONJ eat-J end-CAU-J-PRF
“The woman called Vundla and he ate all the food.” (Tjwao, Northern Tshwa)

Tjwao further has a conjunction or discourse reference marker *ʔa.xua.xua* ‘and then’, which links events in temporal succession. Argument sharing occurs (ex.12a-b) but is not obligatory (ex.12c). Shared arguments can be specified only once (ex.12a) or be repeated for each coordinand (ex.12b).

- (12) a. *tfoa ka ʔii.je tshaa kx'aa loo-kaxu ʔa.xua.xua kx'oo.xo*
 person ANT all water drink end-CAU CONJ meat
ʔnũ-a.
 eat-?TAM
 “Someone drank all the water and then ate all the meat.” (Tjwao, Northern Tshwa)
- b. *tire buku bala ʔa.xua.xua tire loe(-)a kũũ.*
 1sg book read CONJ 1sg sleep-J/CONJ go
 “I read the book and then I went to sleep.” (Tjwao, Northern Tshwa)
- c. *xam ʔe.ba tfui-a ʔa.xua.xua ʔe.be ʔoo-hĩ.*
 lion 3sg.M.ACC chase-?TAM CONJ 3sg.M die-PST
 “The lion chased him and then he died.” (Tjwao, Northern Tshwa)

Like in Ts'ixa and Shua, subordinate clauses with the adverbializer =*se* are frequently used to express simultaneous but independent events (ex.13a-b).

- (13) a. *kx'ao.tfo kua tĩ=se kx'ui.*
 man IPFV stand=ADV speak
 “The man talks in a standing position.” (Tjwao, Northern Tshwa)
- b. *ti kua ŋglae kua=se kũũ.*
 1sg IPFV sing IPFV=ADV go
 “I walk singing.” (Tjwao, Northern Tshwa)

As no tonal analysis is currently available for Tjwao or any other Northern Tshwa variety under consideration, it is sometimes difficult to distinguish the juncture from the conjunction *ʔa*. Furthermore, it seems that – like Ts'ixa – *-a* appears as default juncture in some JVC contexts where zero would be expected, i.e., after /e/ (ex.14a-b). Note that, unlike in Ts'ixa and Nata-Shua, the basic juncture allomorph *-a* appears regularly after CVCV; hence, example (14)c almost certainly is a JVC.

- (14) a. *tire lx'ae(-)a loe.*
 1sg fall(-)J/CONJ lie.down
 “I fell into a lying position.” (Tjwao, Northern Tshwa)
- b. *mbutaa ke xue(-)a mpala xuu-a-xu.*
 hare IPFV run(-)J/CONJ impala leave-J-COMPL
 “The hare runs faster than the impala.” (TcireTcire, Northern Tshwa)
- c. *lxani-re pata kx'are-axue dʒii.dum kua tsxia-na-hĩ.*
 guinea.fowl-pl road **cross-J run** bush IPFV ?hide-J-PST
 “The guinea fowls ran across the road and hid in the bush.” (Tjwao, Northern Tshwa)

3. Types of JVCs

In the following sections, JVCs as well as particles and affixes grammaticalized from JVCs will be discussed. To allow for an assessment of the functional scope of northeastern Kalahari Khoe JVCs when compared to SVCs of the Kx'a and Tuu families, corresponding examples

are provided throughout. Drawing on Aikhenvald's (2006:3, 21ff) typology for SVCs, we propose to follow Kilian-Hatz (2006; 2008; 2010 for Khwe) and distinguish between symmetrical (section 3.1) and asymmetrical JVCs (section 3.2)⁸: in symmetrical constructions, two or more verbs from open classes are combined to denote one complex event. In asymmetrical constructions, a verb from a relatively large open class is modified by a verb from a more restricted class (e.g., motion, posture) which is frequently termed coverb (cf., e.g., König 2010, Pratchett 2020 for Ju)⁹. Symmetrical constructions are said to be prone to lexicalization, whereas asymmetrical constructions frequently undergo grammaticalization.

We further identify four main semantic types of JVC which occur to differing degrees in Ts'ixa, Shua and Northern Tshwa: Sequence of Actions, Manner, Cause-Effect and Path. Sequence JVCs as well as unrestricted Manner and unrestricted Cause-Effect JVCs may pick their verbs from large open classes, i.e., belong to Aikhenvald's "symmetrical" type (sections 3.1.1-3.1.3). Path JVCs, as well as a subset of Manner and Cause-Effect JVCs combine a modifier verb belonging to a restricted set with verbs from large open classes and are hence classified as "asymmetrical" (sections 3.2.1-3.2.5). In addition, all languages under discussion have grams of verbal origin which can still be traced to V_{final} (suffixes) or V_1 (particles) of a JVC (section 3.3).

3.1 Symmetrical JVCs

Symmetrical JVCs can be further subdivided into Sequence of Actions JVCs (section 3.1.1), Unrestricted Manner JVCs (section 3.1.2) and Unrestricted Cause-Effect JVCs (section 3.1.3).

3.1.1 Sequence of actions

Sequence JVCs are iconic in that the order of verbs matches the temporal order of the sequential events described (Aikhenvald 2006:28). In our data sample, only Ts'ixa displays regular use of sequence JVCs. However, nearly all attestations were found in texts, rather than in elicited material. Hence, it is likely that sequence JVCs will be shown to be more widespread, once more data from Shua and Northern Tshwa becomes available.

Example (15)a below was taken from a text detailing the preparation of a certain type of food. Here, the different steps of the preparation (take water – enter – stir) are encoded as a non-contiguous JVC, while the eventual act of eating the finished meal is linked by means of the discourse reference marker *thí.à* 'and then'. Cognitively, the speaker thus divided the sentence into two main events: preparation and consumption; hence, one may argue that the sequential JVC still fulfills the central criterion of single eventhood in the wider context of the narration. A similar argument can be applied to (15)b from a description of midwifery practices. While less obvious, it seems likely that the sequence of the wind's arrival and its kidnapping of the tale's protagonist as described in (15)c is seen as a single whole, rather than as two clearly dividable events.

⁸ An alternative categorization of SVCs is proposed by Foley and Van Valin (1984:190ff) who distinguish nuclear juncture from core juncture SVCs. While nuclear juncture SVCs require sharing of all arguments, core juncture SVCs select their arguments independently, allowing for so-called "switch function" SVCs (Aikhenvald 2006:14) in which O of V_1 can become S of V_2 .

⁹ Some scholars have rightfully pointed out that the definition of what constitutes an open class vs. a restricted class is rather vague and may not prove to be operational for all languages (Berthold & Gerlach 2017; Pratchett, this volume). Bisang (2009) further questions whether grammaticalised SVCs should still be considered SVCs, thereby limiting the scope of constructions usually grouped within the asymmetrical category.

- (15) a. *tʰá.nò tsé kò séē lúí.á tsʰāá n.tʰā cáā ʔūdí-ʔūdí-ʔūdí*
 DRM 1pl.C IPFV **take** only water like.that **enter stir-stir-stir**
tʰí.à ʔúúú à ʔúúú.
 DRM food ACC eat
 “Then we take only water, enter it like that, stir stir stir, then eat the food.” (Ts’ixa)
- b. *gōbó=ṁ kùè cʰéē lúúú kà nò |ʔéē-juá=sà*
 umbilical.cord=sg.M PROG drop child OBL when fire-ashes=sg.F
séē juá.xù.
take put
 “When the umbilical cord drops from the child, one takes ashes from the fire and puts them (on the navel).” (Ts’ixa)
- c. *lʰáà ʔà ʔé.sì kò síà góè=dzà ʔà c’áà.xù*
 morning LOC.prox 3sg.F IPFV VEN cattle=pl.F ACC take.out
nò |ʔōrá †ʔáá nè hāā ʔé.sà ʔà séē.
 when big wind SEQ **come:J** 3sg.F ACC **take**
 “In the morning when she came to take out the cattle, a big wind came and took her away.” (Ts’ixa)

Our data contains possible examples for sequential JVCs in Shua and Northern Tshwa. However, they do not allow for a conclusive statement on the presence or absence of this JVC type in languages to the east of Ts’ixa: (16)a from the Danisi dialect of Shua was taken from text collected with a speaker residing in the Ts’ixa-speaking village of Mababe. It therefore cannot be excluded that the sequence JVC reflects contact influence, rather than a genuine feature of Shua. Furthermore, as a reliable tonal analysis for Northern Tshwa is still lacking, the vowel /a/ in example (16)b below may be the conjunction and not the juncture morpheme:

- (16) a. *dzúú kà tí kúā kúú-ā fú-à múú-ā-hā=ηò ʔè.*
 foot OBL 1sg AND **go-J arrive-J see-J-PRF=NMZ** COP
 “It is a place to which I went by foot, arrived and saw it.” (Danisi, Shua)
- b. *tfoa.re tfoa lʰ’úú-a tfoa.re ʔaa ha kx’oxo-ra séē-hí.*
 3pl.C elephant **kill-?J** 3pl.C **come(?:J)** DEM meat-pl **take:J-PST**
 “After they had killed the elephant, people came to collect the meat.” (Lit. They killed the elephant, they came and collected the meat) (TcireTcire, Northern Tshwa)

Sequence JVCs are also attested in other Kalahari Khoe languages, whereby the available literature on Naro (Visser 2010:183) and Khwe (Kilian-Hatz 2006:112) suggests that they are a productive device to structure narrative discourse by lumping sequences of actions into macro events which may then be contrasted with other events or sets of events linked by means of co- or subordination markers.

Within the wider Southern African Khoisan unit, Sequence SVCs are attested in both the Ju (e.g., Heine & König 2015:92) and †Amkoe (e.g., Collins 2002:18) branches of the Kx’a language family (ex.17):

- (17) a. *hà llúā ŋlǔ̀̀̀̀ m̄ ll̄ā.ṁè.*
 N1 HAB **take.pl eat** animals
 “He used to catch and eat the animals.” (Northwestern !Xun, Ju; Heine & König 2015:99)
- b. *ma a- kí t̄fxa ʔam a- kí t̄fxa ʔam.*
 1sg PROG pl **cut eat** PROG pl **cut eat**
 “I cut it up and eat it, cut it up and eat it.” (#Hoan, †’Amkoe; Collins 2002: 18)

3.1.2 Unrestricted manner

Manner is a subtype of SVC in which “one verb may describe the way in which the action of the other verb was performed” (Aikhenvald 2006:29). In our data from northeastern Kalahari Khoe, V₁ of Manner JVCs provides information on how the action encoded by V₂ is performed. Except for the Posture subtype (section 3.2.2 below), Manner JVCs pick both verbs from large open classes and are always contiguous, i.e., no elements can enter between V₁ and V₂. Manner JVCs are rather productive in Ts’ixa, especially those describing the way in which a certain motion is performed (ex.18):

- (18) a. *†qōná=m̄ kùè b̄ará(-nà) h̄ā.*
 crocodile=sg.M PROG **swim(-J) come**
 “The crocodile approaches swimming.” (Ts’ixa)
- b. *ts̄h̄áó-ŋò kónò llóé kà k̄h̄án-á k̄úũ.*
 wide-LOC when knee OBL **crawl-J go**
 “When it is a wide place, (we) go crawling on (our) knees.” (Ts’ixa)
- c. *m̄ĩ k̄úũ n̄ĩ.ʔà k’ōxú-dáò llé kò ts̄ĩ-á k̄úũ.*
 DEM.dist trip during animal-path 1pl.M IPFV **observe-J go**
 “During that trip, we go observing animal tracks.” (Ts’ixa)

As predicted by Aikhenvald (2006) for SVCs, this type of JVC is particularly prone to be lexicalized. While all contributing elements of the lexicalized Ts’ixa JVCs exemplified in (19)a-c still exist as full verbs, the resulting meanings are not necessarily predictable from the individual components. Berthold and Gerlach (2017:241) therefore suggest, to distinguish lexicalized constructions (termed “verbal compounds” in their work) from productive SVCs. Whether such a distinction is actually feasible for northeastern Kalahari Khoe JVCs can only be assessed once more data from all varieties becomes available.

- (19) a. *tí kà l̄úá=sì kò xóó k’úũ.*
 1sg POSS child=sg.F IPFV **hold speak**
 “My daughter stutters.” (Ts’ixa)
- b. *k̄h̄ōē=m̄ kò ʔāú-á k’áĩ.*
 person=sg.M IPFV **shout-J laugh**
 “The man laughs loudly.” (Ts’ixa)
- c. *tsé à kò ts’áá k̄úũ-ā-mā tà tí kò †ʔān-ʔō-sĩ.*
 1pl.C ACC IPFV **steal:J go-J-BEN** COMP 1sg IPFV think-DIR-REFL
 “I think (they) are spying on us.” (Ts’ixa)

Our data from Shua did not contain symmetrical Manner JVCs. However, we expect that this is merely a gap owed to insufficient sampling, rather than a proof of absence. Northern Tshwa (20a-c) has Manner JVCs similar to those found in Ts'ixa:

- (20) a. *tʃi kx'ui-a kũũ tii, tʃi tʃee.tʃee na kũũ.*
 2sg.M **talk-J go** NEG.IMP 2sg.M listen CONJ.IMP go
 “Don’t walk talking, walk and listen!” (Tjwao, Northern Tshwa)
- b. *ti kua kʰan-a kũũ.*
 1sg IPFV **crawl-J go**
 “I go crawling.” (Tjwao, Northern Tshwa)
- c. *tʃire ke ŋglae kũũ.*
 1sg IPFV **sing walk**
 “I walk singing.” (TeireTcire, Northern Tshwa)

In the wider area of southern Africa, Manner JVCs have also been described for Kalahari Khoe (Kilian-Hatz 2006, 2008, 2010 on Khwe; Visser 2010 on Naro) and the Kx’a family (Berthold & Gerlach 2017:170f; Collins 2002:14f; Heine & König 2015:92f) (ex. 21):

- (21) a. *hà má ú kē m̄.*
 N1 TOP **go** PST **eat**
 “He ate while going.” (Northwestern !Xun, Ju; Heine & König 2015:92)
- b. *mā nà ʎx'áá tsáá.*
 1sg TAM **sing** **come**
 “I’m coming while singing.” (N!aqriaxe, †Amkoe; Berthold & Gerlach 2017:247)

3.1.3 Unrestricted cause-effect

Cause-Effect SVCs are characterized by iconic constituent order (Aikhenvald 2006:29), i.e., V_2 expresses the outcome of an action described in V_1 . In Kalahari Khoe, Cause-Effect JVCs exist, but are sometimes difficult to distinguish from Manner JVCs (cf. also Kilian-Hatz 2006:113 for Khwe). For example, (22)a below from Ts'ixa may be interpreted as “beating resulting in killing” (Cause-Effect), or as “killing by manner of beating” (Manner). While the majority of Cause-Effect JVCs found in northeastern Kalahari Khoe can be assigned to the asymmetrical subtype in which V_2 belongs to a semantically restricted class, unrestricted constructions do occur as well. Unlike in Kx’a, Tuu and Khoekhoe, it is not generally possible to form Cause-Effect JVCs of the switch-function type (cf., e.g., Güldemann 2006; Heine & König 2015; Kießling 2013), i.e., subject sharing is obligatory. Examples (22)a-c show unrestricted Cause-Effect JVCs in Ts'ixa:

- (22) a. *kōlóí=sí kʰōē=mà ʔà ʎk'ām-á ʎk'ũũ-nā-hā.*
 car=sg:F person=sg.M ACC **hit-J** **kill-J-PRF**
 “The car hit and killed the man.” (Ts'ixa)
- b. *táá.kʰóè=mà tí tē xóó tēè-xù.*
 elder=sg.M 1sg PST1 **hold** **stand-CAU**
 “I held the elder upright.” (Ts'ixa)

- c. *cxóā=m̄ kò ‖ʔóò tsʰéè tsʰāú=sí mĩ̄=sí kò*
 elephant=sg.M IPFV die day hand=sg.F DEM.dist=sg.F IPFV
‖kʰúm-ā kʰóm-ī ʔè.
cut-J cut.off-IMPS IMPS
 “On the day the elephant dies, that trunk is cut off.” (Ts’ixa)

While conclusive evidence is still lacking, examples (23)a-b suggest that this JVC subtype also exists in Shua and Northern Tshwa.

- (23) a. *ta ke ‖ʔao ‖ʔam-a ‖ʔũũ.*
 1sg IPFV snake **beat-J kill**
 “I am beating the snake dead.” Nata-Shua, Shua)
- b. *dʒĩ ‖kʰúō káò.*
 tree **chop drop**
 “Cut the tree down!” (Glabak’e, Northern Tshwa; Westphal no data a, rec)

Outside Kalahari Khoe, Cause-effect SVCs are attested in Kx’a (Collins 2002:16; Heine & König 2015:92) (ex. (24)a-b) and in the Taa subbranch of Tuu (Kießling 2013:51f) (ex. (24)c).

- (24) a. *hà m- é ŋʰō !ʰú gʰōē.*
 N1 TOP- PST **hit kill.sg** dog
 “He beat the dog dead.” (Northwestern !Xun, Ju; Heine & König 2015:92)
- b. *ma i ‖qãē Ōoa tsi.*
 1sg PROG **beat kill.pl** 3pl
 “I beat them dead.” (†Hoan, †Amkoe; Collins 2002:16)
- c. *ě já ŋʰòà qáj-í †xàm.*
 3i PRF shoot kill-1 gemsbok.sg1
 “He shot the gemsbok dead.” (Taa West, Taa; Kießling 2013:52)

3.2 Asymmetrical JVCs

Asymmetrical SVCs involve a minor verb or coverb from a restricted semantic class which modifies the verb meaning provided by another verb belonging to an open or slightly less restricted class. A large number of productive minor verbs has been documented for Northwestern !Xun (Heine & König 2015; König 2010), and the available data also shows their existence in †Amkoe (Berthold & Gerlach 2017; Collins 2002) and Taa (Kießling 2013). Like SVCs, JVCs can be asymmetrical and make use of minor verbs. Asymmetrical JVCs are here distinguished from grams going back to V₁ or V₂ of a JVC by phonological criteria: The minor verbs listed in Table 5 below still display the phonotactic structure and morphophonological behavior of full verbs, whereas verbs grammaticalized from JVCs (cf. Table 6 in section 3.3 below) have undergone phonological reduction, in addition to the expected semantic bleaching during the grammaticalization process.

Source Verb	Minor Verb meaning	Functional Domain	Construction type
*#ǎǎ ‘enter’	‘in(to)’	Path – Horizontal	V ₁ *#ǎǎ
*#x’ùá(-xu) ‘exit’	‘out’	Path – Horizontal	V ₁ *#x’ùá(-xu)
*#x’aa-xu ‘take out’	‘out’ (tr.)	Path – Horizontal	V ₁ *#x’aa-xu
*#ǎǎé ‘pass (by)’	‘past, across’	Path – Transverse	V ₁ *#ǎǎé
*#téé ‘stand’	‘perform in a standing position’	Manner – Posture	*#téé(-a) V ₂
	‘end up in a standing position’	Cause-Effect – Endpoint Posture	V ₁ *#téé
*#ǎǎúú ‘sit’	‘perform in a sitting position’	Manner – Posture	*#ǎǎúú-a V ₂
	‘end up in a sitting position’	Cause-Effect – Endpoint Posture	V ₁ *#ǎǎúú
*#lóé ‘lie’	‘perform in a lying position’	Manner – Posture	*#lóé(-a) V ₂
	‘end up in a lying position’	Cause-Effect – Endpoint Posture	V ₁ *#lóé
*!ǎǎǎ ‘get to know’	‘identify by sensory modality’	Cause-Effect – Cognition	V ₁ *!ǎǎǎ
*#sáá ‘fail’	‘fail to identify by sensory modality’	Cause-Effect – Cognition	V ₁ *#sáá
*#x’ǎé ‘meet’	‘together’	Cause-Effect – Cooperative	V ₁ *#x’ǎé
*#k’ùrí ‘end’	‘finish’	Cause-Effect – Terminative	V ₁ *#k’ùrí
*#lòò-kaxu ‘finish’	‘finish’	Cause-Effect – Terminative	V ₁ *#lòò-kaxu

Table 5: Verbs occurring as minor verbs in asymmetrical JVCs in northeastern Kalahari Khoe

Depending on their functional domain, minor verbs can occur in both the V₁ and V₂ slot of a JVC. The more common slot for minor verbs, however, is V₂. The three posture verbs conveying the meanings ‘stand’, ‘sit’ and ‘lie’ can occur in both slots: In V₁, they provide information on the posture in which a given action is performed. In V₂, they provide the endpoint posture of the movement encoded in V₁. In the following sections, asymmetrical JVCs of the Path (section 3.2.1), Posture (section 3.2.2) and Cognition (section 3.2.3) subtypes are discussed. We also provide a brief description of the Cooperative subtype (section 3.2.4) which so far is only attested in Northern Tshwa, as well as an overview of Terminative JVCs involving the verb *#k’ùrí ‘end’ (section 3.2.5) which only occurs in Ts’ixa and Shua.

3.2.1 Path

Path SVCs provide information on the direction or orientation in which the action expressed by the main verb is performed (Aikhenvald 2006). The data from Ts’ixa, Shua and Northern Tshwa suggests that Path JVCs in northeastern Kalahari Khoe are mostly restricted to the notions of ‘in’ and ‘out’ on the horizontal plane. In contrast, Path on the vertical plane (i.e., ‘up’ vs. ‘down’) is predominantly part of individual verb semantics. Path JVCs require V₁ and V₂ to share all arguments, i.e., to share transitivity value.

Intransitive Path constructions involving reflexes of the proto-Khoe verbs *ʔãã ‘enter’ (> ‘in’) and *ʔx’úá(-xu) ‘exit’ (> ‘out’) are attested in all languages (ex. 25a-f).

- (25) a. *ŋgūú=m̄ ʔà tí kò tsĩ-ā cáã.*
house=sg.M LOC.prox 1sg IPFV **limp-J enter**
“I limp into the house.” (Ts’ixa)
- b. *gūá=sì tè g||āī-ā c’óā k’áĩ kò=sè t^hā tsxúm-á-xù.*
hyena=sg.F PST1 **run-J exit** laugh IPFV=ADV DRM hide-J-COMPL
“The hyena ran away, laughing, then hid.” (Ts’ixa)
- c. *ta ke k^hai ʔà g||ai-a tǃã.*
1sg IPFV house LOC **run-J enter**
“I run into the house.” (Nata-Shua, Shua)
- d. *l’ao ke dǃii ʔam ʔa l’ae tǃ’oa.*
snake IPFV tree top LOC **fall exit**
“The snake falls out of the tree.” (Nata-Shua, Shua)
- e. *ndǃuu a tí kua xue tǃã.*
house LOC 1sg IPFV **run enter**
“I run into the house.” (Tjwao, Northern Tshwa)
- f. *ndǃuu a tí kua xue ts’oa.*
house LOC 1sg IPFV **run exit**
“I run out of the house.” (Tjwao, Northern Tshwa)

*ʔãã ‘enter’ is an ambitransitive verb and occurs in transitive contexts (ex. 26-c).

- (26) a. *ŋgūú=m̄ ʔà tí kò bōksí=mà ʔà k^hādi-nā cáã.*
house=sg.M LOC.prox 1sg IPFV box=sg.M ACC **push-J enter**
“I push the box into the house.” (Ts’ixa)
- b. *ta ke boksi k^hai ʔoʔa !^hūū-a tǃã.*
1sg IPFV box house LOC **push-J enter**
“I push the box into the house.” (Nata-Shua, Shua)
- c. *ndǃuu ʔoa tire bokisi ||^hai-a tǃã.*
house LOC 1sg box **pull-J enter**
“I pull the box into the house.” (Tjwao, Northern Tshwa)

As *ʔx’úá ‘exit’ is restricted to intransitive clauses, Shua and Northern Tshwa (ex. 27a-b) use a derived causative *ʔx’úá-xu ‘take out’ (< ‘exit-CAU’), while Ts’ixa has a semantically opaque form *c’áà.xù* ‘take out’ (ex. 27c) which is composed of a stem *c’áà* (< *ʔx’áà) with unknown meaning and the causative suffix *-xu*. At least in Ts’ixa, this particular type of JVC is contiguous, i.e., no elements may be inserted between V₁ and V₂. The two verbs form a single intonation unit. Attempts to insert a direct object or adverbial between V₁ and V₂ were explicitly rejected by the speakers.

- (27) a. *ta ke boksi k^hai ʔoʔa !^hũũ-a tʃ^oa-xu.*
 1sg IPFV box house LOC **push-J** **exit-CAU**
 “I push the box out of the house.” (Nata-Shua, Shua)
- b. *ndʒuu a ti kua bokisi see(-)a ts^oa-xu.*
 house LOC 1sg IPFV box **take(-)J/CONJ** **exit-CAU**
 “I take the box out of the house.” (Tjwao, Northern Tshwa)
- c. *ŋgũú=m ʔà tí kò bōksi=mà ʔà ʎ^hāí-á c^oáà.xù.*
 house=sg.M LOC.prox 1sg IPFV box=sg.M ACC **pull-J** **take.out**
 “I pull the box out of the house.” (Ts’ixa)

In example (27)b from Tjwao, it is not possible to say without a conclusive tonal analysis whether *-a* after *see* ‘take’ is the juncture or the conjunction. In example (28) below, an adverbial is inserted between V_1 and V_2 , indicating that if this is indeed a JVC, path constructions are not obligatorily contiguous in Tjwao.

- (28)
- | | | | | |
|-----------|------------|----------------|----------------------|---------------------------------|
| S | O | V_1 | ADV | V_2 |
| <i>ti</i> | <i>kua</i> | <i>mangoje</i> | <i>see(-)a</i> | <i>koloi a tʃ^oā.</i> |
| 1sg | IPFV | cat | take(-)J/CONJ | car LOC enter |
- “I put the cat in the car.” (Tjwao, Northern Tshwa)

As indicated previously, the notions of ‘up’ and ‘down’ are mostly a semantic part of monoverbal predicates of varying transitivity value. Shua and Northern Tshwa have a verb *ʔabo* (< *!ʔábò) ‘ascend, climb’, corresponding to Ts’ixa *ʎ^hā̀* (< *!ʎ^hā̀) of the same meaning. All languages have a verb *lúá ‘descend, go down’. In Ts’ixa and Shua, neither *ʎ^hā̀* nor *lúá* were accepted as path modifiers in a JVC (ex. 29a-c).

- (29) a. **híí=sī ʔà tí tè ʎk^oéé lúá.*
 tree=sg.F LOC.prox 1sg PST1 fall:J descend
 Attempted: “I fell from the tree.” (Ts’ixa)
- b. **híí=sā tí kò jáā ʎā̀.*
 tree=sg.F 1sg IPFV step:J ascend
 Attempted: “I climb up the tree.” (Ts’ixa)
- c. **turu ke dʒii ʔam ʔa jaa lūá.*
 mouse IPFV tree top LOC step descend
 Attempted: “The mouse climbs down the tree.” (Shua)

A lexicalized JVC *jáā tān* ‘climb, step up’ is sometimes used to encode the notion of ‘ascend’ in Ts’ixa (ex. 30a). It is composed of the verbs *jáá* ‘step’ and *tān* ‘get up’, with V_2 expressing the directional component. However, *tān* does not productively derive directional JVCs with other motion verbs. In Shua, *jaa* ‘step’ appears in combination with *ʔabo* ‘ascend, climb’ (ex. 30b).

- (30) a. *ʔé.sì nè jáā tāñ t^hā ʔé.sérà nè kúũ ná=sérà kà*
 3sg.F SEQ **step:J get.up** DRM 3du.F SEQ go DEM=du.F POSS
||ʔáé=m̄ ʔò.
 home=sg.M DIR
 “She climbed (onto the cow) and the two of them went home.” (Ts’ixa)
- b. *turu ke ɖʒii jaa ʔabo.*
 mouse IPFV tree **step ascend**
 “The mouse climbs onto the tree.” (Shua, Fehn f.n.)

In addition to JVCs specifying Path on the horizontal plain, Ts’ixa uses the verb *ɲgɛ́ɛ́* ‘pass (by)’ to add a transverse trajectory (‘across’) to motion verbs (ex. 31a-b).

- (31) a. *K^{hw}áí ʔò tsé kò kúũ nò tsé kò ts^hāá=mà ʔà*
 GN DIR 1pl.C IPFV go when 1pl.C IPFV water=sg.M:II ACC
bārá(-nā) ɲgɛ́ɛ́.
swim(-J) pass
 “When we go to Khwai, we have to cross the water.” (Ts’ixa)
- b. *bǐjé=dzi kíè g||āī-ā ɲgɛ́ɛ́ hāndá=m̄ ʔà*
 zebra=pl.F PROG **run-J pass** plain=sg.M LOC.prox
 “The zebras are galloping across the plain.” (Ts’ixa)

Multiverbal predicates expression Paths are found in Khwe (Kilian-Hatz 2006; 2008; 2010) and Naro (2010), and are also frequent in both the Kx’a (Berthold & Gerlach 2017:168f; Collins 2002:16; Heine & König 2015:100) (ex. 32a-b) and Tuu (Kießling 2013:47f) (ex. 32c) language families.

- (32) a. *mí m-é ú ||xàì !ʔō.*
 1sg TOP-PST **go cross** bush
 “I crossed the bush.” (Northwestern !Xun, Ju; Heine & König 2015:100)
- b. *ja^fm.si a- ||obo ʔo ki lori na.*
 child PROG **jump exit** PART car in
 “The child is jumping from the car.” (#Hoan, †Amkoe; Collins 2003:14)
- c. *ń sí g|ó’á ʔɲà’á kě ɲ|àè síè*
 1sg IPFV **limp go.out** LOC:3i> house.3i inside.S2ii
 “I am limping out of the house.” (Taa West, Taa; Kießling 2013:348)

3.2.2 Posture

In the Posture subtype of Manner SVCs, V_1 is a posture verb which conveys the position (sitting, standing, lying) in which the action described in V_2 is performed. Posture JVCs following a similar pattern were found in our data from Ts’ixa and Northern Tshwa. Individual verbs do not have to share transitivity value, i.e., an intransitive posture verb may combine with a transitive activity verb, like in example (33)a below (from Ts’ixa):

- (33) a. *tí kò téé-á ||k'ám̄ kātsí=sà ʔà.*
 1sg IPFV **stand-J beat** cat=sg.F ACC
 “I am beating the cat in a standing position.” (Ts’ixa)
- b. *ʔābá=rín kórè g|óé=sì xáè céé.céè kùè ʔé.sérà ɲúú-á*
 dog=sg.M CONJ tortoise=sg.F CONJ listen PROG 3du.F **sit-J**
k'úí=xū.
speak=NMZ
 “The dog and the tortoise are listening to them while they are sitting down and talking.” (Ts’ixa)
- c. *tí kua ʔe tii-e ||x'am.*
 1sg IPFV 3sg.C **stand-J beat**
 “I beat it (the cat) in a standing position.” (Tjwao, Northern Tshwa)
- d. *tí kua ʔe ɲúú-a ||x'am.*
 1sg IPFV 3sg.C **sit-J beat**
 “I beat it (the cat) in a sitting position.” (Tjwao, Northern Tshwa)

While Posture JVCs are attested from both elicitation and texts, it seems clear that speakers generally prefer to indicate posture by means of an adverbial construction involving stative forms (cf. Fehn 2016:241ff for Ts’ixa) of the three posture verbs (ex. 34a-b).

- (34) a. *tí. nà=sè tí kò g|árà.*
 be.standing=ADV 1sg IPFV write
 “I write in a standing position.” (Ts’ixa)
- b. *tí kua |ii tfee.tfee tsũ.na=se.*
 1sg IPFV song listen be.sitting=ADV
 “I listen to the song while sitting.” (Tjwao, Northern Tshwa)

It is not clear whether Posture JVCs exist in Shua. Attempts at elicitation were rejected by a Shua speaker from Nata, who preferred use of the conjunction *ʔa.tʰi.ʔa* throughout. According to our consultant, the attempted 35(b) *tee k'aa* would yield the non-sensical translation ‘I drink a standing’, i.e., *tee* ‘stand’ preceding *k'aa* ‘drink’ is interpreted as a nominal object and not as V₁.

- (35) a. *ta ke tee ʔa.tʰi.ʔa k'aa.*
 1sg IPFV stand CONJ drink
 “I am standing and drinking.” (Nata-Shua, Shua)
- b. **ta ke tee(-a) k'aa.*
 1sg IPFV stand(-J) drink
 Attempted: “I am drinking in a standing position.” (Nata-Shua, Shua)

Posture JVCs also exist in Khwe (Kilian-Hatz 2006; 2008; 2010) and Naro (Visser 2010), while Posture SVCs are attested in Kx’a (Berthold & Gerlach 2017:170f; Heine & König 2015:100f) (ex. 36a-b) and Tuu (Kießling 2013:38f) (ex. 36c).

- (36) a. *hà má lɣ- á gù gǔú.*
 N1 TOP sit.sg PROG take.sg water
 “He takes the water while sitting.” (Northwestern !Xun, Ju; Heine & König 2015: 93)
- b. *mā !ūī !ōā tsíí.*
 1sg stand.up stand see
 “I watch standing.” (N!aqriaxe, †’Amkoe; Berthold & Gerlach 2017:171)
- c. *ě tsʰúù áá.*
 3i sit.sg eat
 “He eats sitting.” (Taa West, Taa; Kießling 2013:39)

In a second type of Posture SVC here termed Endpoint Posture, the posture verb in V₂ denotes the position of S which is the result of a motion or action described in V₁. In northeastern Kalahari Khoe, Endpoint Posture JVCs contrast with predicates conjoined by the conjunction *ʔa* that denote independent events taking place in temporal succession (ex. 37d for Ts’ixa).

- (37) a. *tí tē tāh-ā tēè.*
 1sg PST1 get.up-J stand
 “I stood up.” (Ts’ixa)
- b. *ta xum ʔa lʔae ǁoe-ha.*
 1sg ground LOC fall lie-PRF
 “I fell into a lying position.” (Nata-Shua, Shua)
- c. *tire lxʔae(-)a xum lxe nūū.*
 1sg fall(-)J/CONJ ground on sit
 “I fall down and I end up sitting on the ground.” (Tjwao, Northern Tshwa)
- d. *tí tē lkʔéé ʔà ǁóè.*
 1sg PST1 fall CONJ lie.down
 “I have fallen and laid down.” (Ts’ixa)

Endpoint Posture SVCs exist in both Kx’a (Berthold & Gerlach 2017:171) (ex. 38a) and Tuu (Kießling 2013:37f) (ex. 38b).

- (38) a. *mā ē !ʔúú ʔǁáá.*
 1sg TAM fall sit
 “I fell into a sitting position.” (N!aqriaxe, †’Amkoe; Berthold & Gerlach 2017:171)
- b. *ń nǎ qáì ʔǁ!à-è tà̀m ě txàbè.*
 1sg PRF fall.sg lay.down.sg-3i> tsamma.3i 3i burst
 “I have dropped the melon and it burst.” (Taa West, Taa; Kießling 2013:37)

3.2.3 Cognition

Kalahari Khoe languages in general (cf. also Kilian-Hatz 2006; 2008; 2010 for Khwe; Visser 2010 for Naro) have a special type of JVC here termed “Cognition”. Cognition JVCs in northeastern Kalahari Khoe have a perception verb as V₁, and the verb *ʔãã* (< *!ʔãã) ‘know’

as V₂. V₂ then describes the cognitive outcome of the perceptive act described in V₁. Alternatively, V₁ could be viewed as the mode of perception through which a certain type of knowledge was obtained (cf. Brenzinger & Fehn 2013). The cognition JVC most attested in our sample is *múũ-ā ʔǎǎ* ‘identify, realize’ (lit. know by seeing) (ex. 39a-c).

- (39) a. *t^hā ɲjóró ʔà ɲ=dzi ɲglè múũ-ā ʔǎǎ t^hā*
 DRM back LOC.prox DEM.prox=pl.F SEQ **see:J-J** **know** DRM
ʔǎǎ-kū=m̄ mĩĩ=m̄ géré k^hūdí ʔité tà
 fight-REC=sg.M: DEM.dist=sg.M FUT end NEG COMP
xúũ=sē gǎĩ-ā-hà.
 bad=ADV run:J-J-PRF
 “After these ones (the zebras) realized that the fight was not going to end, (they) ran badly.” (Ts’ixa)
- b. *Sitúngú múũ-ā ʔǎǎ-nā.*
 GN **see:J-J** **know-PST**
 “I know Situngu (because I have seen it).” (Danisi, Shua)
- c. *lx’ao ti kua múũ-a ʔǎǎ.*
 snake 1sg IPFV **see-J** **know**
 “I recognize the snake (by vision).” (Tjwao, Northern Tshwa)

Other cognitive modalities, especially the verb to ‘hear’ may also appear as V₁. The resulting JVC is often translated as ‘understand’ (ex. 40a for Shua) or ‘recognize by hearing’ (ex. 40b for Ts’ixa).

- (40) a. *to ke ʔe.ma ʔa ʎam-a ʔǎǎ ʎam-a ʔǎǎ ʔĩ.*
 2pl.C IPFV 3sg.M ACC **hear-J** **know** **hear-J** **know** COP
 “[This] is how you understand him.” (Nata-Shua, Shua; McGregor 2017:867)
- b. *lí=sì í=sà tí kó kúm-à ʔǎǎ.*
 song=sg.F DEM.ref=sg.F 1sg IPFV **hear-J** **know**
 “I recognize this song (by hearing).” (Ts’ixa)

The verb **ʎám* can be reconstructed to proto-Kalahari Khoe and covers multiple cognitive modalities (see also Brenzinger & Fehn 2013). In Ts’ixa, *ʎám* is best translated as ‘perceive’, but covers such diverse meanings as ‘feel’, ‘taste’ and ‘smell’ (ex. 41a). The JVC *ʎám-ā ʔǎǎ* also occurs in the context of divination, where a holistic understanding of various sensory stimuli may lead to knowledge about the future (ex. 41b)

- (41) a. *tí kò ʎám-ā ʔǎǎ ɲúni ʎk’áũ.*
 1sg IPFV **perceive-J** **know** mouse smell
 “I notice the smell of a mouse.” (Ts’ixa)
- b. *lxúú.k^hóè=m̄ ʎám-ā ʔǎǎ-tà.*
 diviner=sg.M **perceive-J** **know-NEG.IPFV**
 “The diviner does not know/understand the future.” (Ts’ixa)

In Ts'ixa, a more limited type of cognition JVC is formed with the above-mentioned verbs of perception and *sáá* 'miss a target, fail' acting as V₂. In example (42)a-b below, *sáá* indicates that the act of perception was performed but disrupted, i.e., no real knowledge was obtained:

- (42) a. *tí tē mǔū-ā sáà.*
 1sg PST1 **see-J fail**
 "I could not see properly." (Ts'ixa)
- b. *tí tē kúm-à sáà.*
 1sg PST1 **hear-J fail**
 "I could not hear properly." (or: 'I overheard.') (Ts'ixa)

It is noteworthy that example (42)b above may also be translated as 'I overheard', hinting at a culturally specific conceptualization of knowledge which excludes information obtained in an accidental or backhanded way.

3.2.4 Cooperative

A Cooperative JVC involving a minor verb *lx'ae* 'meet, be together' is attested in our data from Northern Tshwa (ex. 43a-b).

- (43) a. *ʔe.tsara kx'ui-a llx'ae-tfu-tam-hĩ.*
 3du.M **speak-J meet-REC-NEG-PST**
 "They could not agree." (Tjwao, Northern Tshwa)
- b. *glǎã tfum kx'oxo tfum ʔe.be ll'am-a llx'ae-na-ha.*
 salad COM meat COM 3sg.M **beat-J meet-J-PRF**
 "He mixed vegetables and meat." (Tjwao, Northern Tshwa)

A corresponding JVC involving the verb **lx'àé* 'meet' is also found in Khwe (Kilian-Hatz 2006:116) and in Naro (Visser 2010:192), and a Cooperative SVC with the same minor verb occurs in !Xun (Heine & König 2015:222; König 2010:162) (ex. 44).

- (44) *fǰ m-ē glè llx'āē.*
 3pl TOP-PST **come together**
 "They came together." (Northwestern !Xun, Ju; Heine & König 2015:222)

3.2.5 Terminative (switch-function)

Aikhenvald (2006:14) uses the term "Switch-Function SVC" for constructions in which "the object of V₁ is the same as the subject of V₂". An asymmetrical JVC of the switch-function type may exist in Ts'ixa (ex. 45b) and Shua (ex. 45c-d), albeit in a restricted context: the intransitive verb **k^hùrì* 'end' (cf. ex. 45a) functions as a marker of terminative aspect in taking the direct object of a transitive V₁ as subject. If a switch-function interpretation is adopted, example (45)b below could be paraphrased accordingly as 'The woman ate the meat; the meat ended/was no more'. However, in Ts'ixa, the argument in question always receives marking for accusative case, i.e., is unambiguously treated as direct object of V₁.

- (45) a. *T^hābāré=ín tè k^hūdī.k^hūdī ʔiūū=mà ʔà.*
 PN=sg.M PST1 **end:CAU** food=sg.M ACC
 “Thabare finished the food.” (Ts’ixa)
- b. *hāà ʔé.dzi kónò tūū gúà=sì k’ōró k^hūdī-nā-tā*
 come 3pl.F when already hyena=sg.F **eat.meat:J end-J-PST2**
lúū=sà ʔà.
 child=sg.F ACC
 “When they came, the hyena had already finished eating the young.” (Ts’ixa)
- c. *ʔāā, ʔiū-á k^hùrì-tá.*
 yes **eat-J end-PST**
 “Yes, (they) have eaten it all.” (Gloro, Shua; Westphal no data a, rec.)
- d. *ʔāā, ʔiū-á k^hùlì-à-hà.*
 yes **eat-J end-J-PST**
 “Yes, (they) have eaten it all.” (Deti, Shua; Westphal no data a, rec.)

While a terminative construction involving a verb ‘end’ is also attested in Tjwao, both verbs here share transitivity value, i.e., *loo* ‘end’ receives the causative suffix *-kaxu* (ex. 46).

- (46) *tʃua ka ʔii.je ts^haa kx’aa loo-kaxu ʔa.xua.xua kx’oxo*
 person ANT all water **drink end-CAU** and.then meat
ʔniū-a.
 eat-TAM
 “Someone drank all the water and then at all the meat.” (Tjwao, Northern Tshwa)

Switch-function SVCs exist in the Kx’a (Heine & König 2015:98) (ex. 47a) and Tuu families (Güldemann 2006:118, see also Kießling 2013:53ff for a discussion of ambivalent cases in Taa) (ex. 47b), but do not appear to have a generally productive JVC counterpart in Kalahari Khoe. Khoekhoe makes use of a JVC-related construction of the switch-function type (ex. 47c) which was likely introduced via calquing from Tuu (cf. Güldemann 2006; Rapold 2014).

- (49) a. *hà má kē llhái ɲ^hàò tà^ʕ.*
 N1 TOP PST **pull fall** fruit.sp
 “He pulled the taq fruit down.” (Northwestern !Xun, Ju; Heine & König 2015:98)
- b. *si tay ll^ʔa-ɲ dó^ʕa ɲlī tēe !k’waa aa luuk-a.*
 1pl.e ? go-? ? **see lie** hartebeest.1 1REL die-STAT
 “We did see a dead hartebeest lying there!” (!Xam, !Ui; Bleek & Lloyd 1911:10-11, cited in Güldemann 2006:118)
- c. *audo-s-a ra mūū !oa.xa.*
 car-sg.F-ACC IPFV **see approach**
 “See a car approaching.” (Nama-Damara, Khoekhoe; Haacke 1995:357, cited in Güldemann 2006:118)

3.3 Grammaticalized JVCs

According to Aikhenvald (2006), asymmetrical SVCs display a tendency for grammaticalization. In analogy to Aikhenvald's predictions for SVCs, asymmetrical JVCs may be the source for both suffixes (< V₂) (section 3.3.1) and particles (< V₁) (section 3.3.2). An overview of grams found in Ts'ixa, Shua and Tshwa which can be shown to have grammaticalized from a verb used as minor verb in a JVC is provided in Table 6 below.

Source Verb	Grammatical category	Grammaticalized from	Distribution
*xúú 'leave behind'	> Completive	V ₁ -J *xúú	Khoe
	> Ablative	*xúú-a V ₂	Northern Tshwa
*máá 'give'	> Benefactive/Dative	V ₁ -J *máá	Khoe
*háá 'exist'	> Perfect	V ₁ -J *háá	Khoe
*ʔáí 'remain, stay'	> Durative	V ₁ -J *ʔáí(-REFL)	Ts'ixa, Khwe
*híí 'do, make'	> Past	V ₁ -J *híí	Tshwa, Khwe
	> Future	*híí-a V ₂	Shua, Tshwa, Glui-Glana
	> Imperfective/Progressive	*!úú-a V ₂	Tshwa, Glui-Glana
> Future	Shua		
> Itive	Ts'ixa, Shua		
*téé 'stand'	> Imperfective/Habitual	*téé V ₂	Danisi, Khwe, Glui-Glana
	?> Immediate Past		Ts'ixa
	> Present	V ₁ -J *téé	Khwe
*síí 'arrive, reach'	> Venitive	*síí(-a) ¹⁰ V ₂	Ts'ixa, Shua, Khwe

Table 6: Ts'ixa, Shua and Tshwa grams deriving from V₁ or V₂ of a JVC, along with their distribution within the Khoe subbranch of Khoe-Kwadi; data on cross-Khoe grammaticalizations was taken from Vossen (1997); on Khwe from Kilian-Hatz (2008), and on Glui-Glana from Collins & Chebanne 2017, Nakagawa (2016), and Vossen (2013c)

Grammaticalization of asymmetrical SVCs is also attested in Non-Khoe languages of the Kalahari Basin linguistic area (Heine & Kuteva 2002; Heine & König 2005). However, the patterns shared between Khoe and Non-Khoe are cross-linguistically common and should therefore not be taken as indicative of direct contact or areal spread: in the Kx'a language family, verbs for 'give' are found introducing dative and benefactive arguments (Berthold & Gerlach 2017:169f; Collins 2002:25; Heine & König 2015:218ff; Pratchett 2020:97) (ex. 50a-b), and the †'Amkoe variety N!aqriaxe has grammaticalized a future tense marker from a verb 'come' (Berthold & Gerlach 2017:172) (ex. 50c).

- (50) a. *má há kē glè là'ā.*
 food TOP N1 PST come give
 "For food he came." (Northwestern !Xun, Ju; Heine & König 2015:219)

¹⁰ In Khwe, the movement marker grammaticalized from *fíí* 'arrive' appears without the juncture morpheme, presumably due to its high level of grammaticalization (Kilian-Hatz 2008:303).

- b. *ɲ!au-la²a a- cxai fu ʔam cxana.*
 boy-DIM.pl PROG **dance give** 1sg uncle
 “The boys are dancing for my uncle.” (†Hoan, †’Amkoe; Collins 2003:25)
- c. *mā tsà gʔùrè.*
 1sg **FUT(< come)** be.blind
 “I will be blind (today).” (N!aqriaxe, †’Amkoe; Berthold & Gerlach 2017:172)

3.3.1 Suffixes grammaticalized from V₂ of a JVC

Ts’ixa, Shua and Northern Tshwa all have suffixes which have grammaticalized from V₂ of a JVC. They have undergone semantic bleaching and phonological depletion. However, the Ts’ixa durative *-ʔī.sī* retains the original sandhi form. Two suffixes can be reconstructed as far back as proto-Khoe: the Perfect/Past **-hã* goes back to a verb **hãã* ‘to exist, be there’ (Vossen 1997:365) which still exists as a full verb in many languages, including all northeastern Kalahari Khoe varieties (see also Andrason & Phiri 2018 for Tjwao) (ex. 51a). The Dative/Benefactive suffix **-ma* derives from **mãã* ‘give’ which still exists as a regular verb in Northern Tshwa (ex. 51b). All Kalahari Khoe languages have a suffix **-xu* denoting Completive (Vossen 1997:354, there called “Terminativ-Itiv”). **-xu* goes back to the verb **xúú* ‘to leave behind’ acting as V₂ in a JVC (ex. 51c). Two further suffixes appear to be restricted to the Kalahari Basin fringe: Ts’ixa has a durative suffix *-ʔī.sī* which derives from a complex verb form consisting of a defective root **ʔai* ‘remain, stay’ and the reflexive suffix *-si* (ex. 51d). A durative suffix *-ʔei* involving a similar grammaticalization path is also attested in Khwe (Kilian-Hatz 2008:143f). A Past tense suffix *-hĩ* (from **hĩĩ* ‘do, make’, Vossen 1997:363) is attested in Northern Tshwa (Andrason & Phiri 2018, Fehn 2019) and Khwe (Kilian-Hatz 2008:105f) (ex. 51e).

- (51) a. *Mãũ ʔò tsé tōē-hã ɲgēé-hã=m kúdí ká ʔà.*
 GN DIR 1pl.C **move:J-PRF** **pass:J-PRF=sg.M** year ATTR LOC.prox
 “We moved to Maun last year.” (Ts’ixa)
- b. *ʔé.mà ʔà tí jīrà-nà-ta ʔé.m tí ʔà k’ōxú ká*
 3sg.M ACC 1sg ask-J-PST1 3sg.M 1sg ACC meat OBL
ʔũũ-à-mà tà.
buy-J-BEN COMP
 “I asked him to buy meat for me.” (Ts’ixa)
- c. *tsé kò kũũ ɲ.kúà k’òè tsé à ʔārò-nà-xù.*
 1pl.C IPFV go where person 1pl.C ACC **chase-J-COMPL**
 “Wherever we went, people chased us away.” (Ts’ixa)
- d. *Mābábé ɲ.kúà tsé ɲũũ-à-ʔī.sī-nà.*
 GN LOC.dist 1pl.C stay-J-DUR-PST
 “We settled down at Mababe.” (Ts’ixa)
- e. *ɲoana ʔxaba ʔe.ʃe di-re ʔfũũ-na-hĩ ʔui.ká.*
 three rib 3sg.F POSS-pl **break-J-PST** yesterday
 “Three of her ribs broke yesterday.” (Tjwao, Northern Tshwa)

3.3.2 Particles grammaticalized from V₁ of a JVC

All northeastern Kalahari Khoe languages have grammaticalized particles from V₁ of a JVC. They can be further subdivided into tense-aspect particles (section 3.3.2.1), andative/venitive markers (section 3.3.2.2) and a particle adding an ablative argument to the predicate (section 3.3.2.3).

3.3.2.1 Tense-aspect particles

Various stages of grammaticalization of *hĩĩ ‘do, make’ are attested in the marking of future tense in Shua, Tshwa and Glui-Glana (Fehn 2019:105). In Shua and Tshwa, *hĩĩ* retains the juncture morpheme (> *hĩĩ.a*) and is commonly preceded by the imperfective particle (ex. 52a-b). In Tjwao, *hĩĩ.a* has undergone further phonological depletion and is realized as one single intonation unit with the imperfective *kua*, i.e., *kua.na* (ex. 52b). Vossen (1997:364) further reconstructs a particle **kua* expressing present and future tense in proto-East Kalahari Khoe, i.e., Shua and Tshwa. We suggest that the TAM particle *kua* actually conveys imperfective notions (ex. 52b) and future tense (ex. 52c), and goes back to *!úũ (> *kũũ*) ‘go’ acting as V₁ in a JVC, thus requiring the juncture morpheme (cf. Fehn 2019:105f). The contraction *kũũ-a* > *kua* hence resembles what been outlined above for the future tense marker *hĩĩ.a* (> *na*)¹¹.

- (52) a. *ʔe ke tuu=fa ta ke hĩĩ.a khai ʔa nũũ.*
 3sg.C IPFV rain=SUB 1sg IPFV FUT house LOC stay
 “When it rains I will stay in the house.” (Nata-Shua, Shua)
- b. *jii.ts^hee Vundla-be kua na kũũ.*
 one.day PN-sg.M IPFV FUT go
 “One day Vundla will go.” (Tjwao, Northern Tshwa)
- c. *kùà g|àm-kú-é bé.*
 FUT love-REC-IMPS NEG
 “People will not love each other.” (Danisi, Shua; Vossen 2013:222)

A particle or suffix grammaticalized from a verb **téé* ‘stand’ exists across Kalahari Khoe, usually with a semantic profile associated with present tense or imperfective aspect (Fehn 2019:104) (ex. 53a-b).¹² If related, a curious exception would be constituted by Ts’ixa, where the particle *tè* expresses immediate past (ex. 53c).¹³ In northeastern Kalahari Khoe, **téé* as V₁ has been desemanticized and undergone phonetic depletion, now occurring as a monomoraic particle with either H or L tone.

¹¹ A helpful reviewer drew our attention to the Khwe future tense marker *-gòè* which may derive from a verb *kōé* ‘go towards’ (Köhler 1989: 123, cited in Kilian-Hatz 2008: 101) and would hence constitute another future tense marker grammaticalized from a verbal source.

¹² It is worth noting that a present tense/imperfective grammaticalization of **téé* is shared with Khwe, whereas the source for the suffix *-te* (Kilian-Hatz 2008: 98ff) is V₂ and not – as in the northeastern Kalahari Khoe examples – V₁ of a JVC. While Khwe *-te* is also linked via the juncture suffix, this so-called “juncture I” is restricted to Khwe and does not display the same morpho-phonological behaviour as the cross-Kalahari Khoe juncture morpheme also found in northeastern Kalahari Khoe (“juncture II” in Khwe) (Kilian-Hatz 2008: 108ff). The origin of juncture I in Khwe, along with possible implications for the grammaticalization of non-past TAM markers from V₂ of JVCs should be considered important topics for future research.

¹³ As a grammaticalization from a verb ‘stand’ to a past tense marker appears to be cross-linguistically uncommon (Heine & Kuteva 2019: 409ff), it cannot be excluded that the source for Ts’ixa *tè* may ultimately turn out to be different from **téé*.

- (53) a. *tá té kúũ.*
1sg IPFV go
“I am walking.” (Danisi, Shua)
- b. *ʔē.mā lúá-rè tè bàá.tsʰà k’áà è?*
Q child-pl HAB beer drink Q
“Do children drink beer?” (Glabak’e, Northern Tshwa; Westphal no data a, rec.)
- c. *hīi=mā tè !ʔará-nà-xù, túú=mà.*
tree=sg.M PST1 crack-J-COMPL rain=sg.M
“It cracked up the tree, the rain.” (Ts’ixa)

3.3.2.2 Andative/venitive

Ts’ixa has grammaticalized two verbs *!úũ (> kúũ) ‘go, walk’ and *síi (> síi) ‘arrive, reach’ into markers for andative and venitive, respectively (ex. 54a-b). Although the evidence is scarce, it is likely the same grammaticalization is attested in Shua (ex. 54c-d) and Northern Tshwa (ex. 54e). Having undergone semantic bleaching and phonological depletion¹⁴, both forms originated from use of the respective verbs acting as V₁ in a JVC, which can still be seen by the application of tonal flip-flop (in Ts’ixa) and the juncture morpheme. They may combine with transitive and intransitive verbs, whereas the object of a transitive V₂ (ex. 54a) or even oblique participants (ex. 54d) may be entered between V₁ and V₂.

- (54) a. *lló kò kúũ kōtā kà ll’ōrá=m ʔò ʔà kúũ*
2pl.M IPFV go quota OBL grow.up=sg.M:I DIR CONJ AND
cxóā jírà.
elephant ask.for
“You go with the quota to an elder and ask for an elephant.” (Ts’ixa)
- b. *lōbá tsé síà lládí-nā.*
python 1pl.C VEN find-PST
“We went there and found pythons.” (Ts’ixa)
- c. *tù.á tí kúũ kúũ-ā-hā=ŋò ʔè.*
DRM 1sg AND go-J-PRF=land COP
“It is the land I went to.” (Danisi, Shua)
- d. *ʔúwā kè fīà ll’Ōré kà cáā.*
tomorrow IPFV VEN GN OBL arrive
“He will be in ll’Ore tomorrow.” (Gloro, Shua; Westphal no data a, rec.)
- e. *tʃire ke kue o kúũ tʃire ke kua ll’x’aa-hī.*
1sg IPFV river LOC go 1sg IPFV AND wash-REFL
“I go to the river to wash myself.” (TcireTcire, Northern Tshwa)

¹⁴ In both cases, the underlying three-moraic Verb+juncture forms *kúũ-a* and *sii-a-ŋii-a* have been shortened to conform to a two-moraic pattern acceptable for grammatical particles. Loss of nasality as in the case of *kúũ-a* is also attested with the verb *máá ‘give’ grammaticalizing into a dative/benefactive marker, as well as with *háá ‘to exist, be there’ grammaticalizing into a past/perfect suffix.

A similar grammaticalization has also been observed in Khwe, where the two verbs *jā́á* ‘come’ and *ǃí* ‘arrive’ appear as markers of both physical and narrative movement (Kilian-Hatz 2006: 109; 2008:303f). The use of verbs ‘come’ and ‘go’ as markers of deictic motion is further attested in Kx’á (e.g., Heine & König 2015:102-105; Pratchett 2020:93f) (ex. 55a-b) and Tuu (Kießling 2013:41f) (ex. 55c-d).

- (55) a. *kx’ā̀è tsí m-sì.*
hold come food-pl
 “Bring food!” (E3, Ju; Heine & König 2015:100)
- b. *ǀàmā kũ̀ndò̀̀à ǀā̀è má xā̀j ǀú-ē g`à̀j.g`à̀j ú ǀǎ̀j.*
 from there monkey TOP then HAB-PST **jump.from.tree.to.tree go** tree
 “Since then the monkey jumps from tree to tree.” (Northwestern !Xun, Heine & König 2015:100)
- c. *ń nǎ ǃ’á-í ǀq`à̀à sáí.*
 1sg PRF **have-1>** water.1 **come**
 “I have brought the water.” (Taa West, Taa; Kießling 2013:42)
- d. *ń nǎ ǃ’á-í ǀq`à̀à sáà.*
 1sg PRF **have-1>** water.1 **go**
 “I have taken away the water.” (Taa West, Taa; Kießling 2013:42)

3.3.2.3 Ablative

The Northern Tshwa dialect Tjwao uses a form *xuu.a* grammaticalized from *xúú ‘leave behind’ to add an ablative argument to the predicate. In all examples found in the dataset, *xuu.a* directly follows the argument it introduces (ex. 56a-c).¹⁵

- (56) a. *ŋguu ŋũũ xuu.a ǂe.je kua haa.*
 far country **ABL** 3sg.F **IPFV come**
 “You have come from a faraway country.” (Tjwao, Northern Tshwa)
- b. *Sigodini xuu.a ka haa k’ao.tfo sii-a-ha.*
 GN **ABL** ANT **come** man **arrive-J-PRF**
 “The man from Sigodini has arrived.” (Tjwao, Northern Tshwa)
- c. *jii dao kua tolo xuu.a ǂae kũũ.*
 DEM.prox road **IPFV** shop **ABL** homestead **go**
 “This path leads from the shop to home.” (Tjwao, Northern Tshwa)

4. Discussion

In this study, we have closed an important data gap by showing that Khoe JVCs, a complex predicate type often equated with SVCs, also exist in languages of the northeastern Kalahari Basin fringe forming part of Vossen’s (1997) “Eastern Kalahari Khoe” subgroup. Despite the limited amount of data available for Shua and Northern Tshwa, we were able to present

¹⁵ A reviewer suggests that Khwe may use *xúú ‘leave behind’ in a similar way (Kilian-Hatz 2008:305). However, the example cited in Kilian-Hatz (2008:305) *ǃē xúú* ‘take away’ features *xúú* with the meaning ‘away’, and not as a grammaticalized verb adding an ablative argument to the verb. We have therefore decided to treat the Khwe example as a variant of the completive function of *xúú.

examples from approximately the same range of semantic subtypes also attested in other Kalahari Khoe languages, notably Khwe (Kilian-Hatz 2006; 2008; 2010) and Naro (Visser 2010). Along with the works by Haacke (2014) and Rapold (2014) demonstrating a historical link between semantically equivalent constructions in Khoekhoe and Kalahari Khoe, we therefore provide further support for reconstructing JVCs to the proto-Khoe stage. Such a reconstruction is also supported by the existence of two deverbal suffixes *-hã (Perfect) and *-ma (Dative/Benefactive) throughout the Khoe branch of Khoe-Kwadi, indicating that JVCs acted as a source for grammaticalization in proto-Khoe.

We further show considerable formal and functional overlap between SVCs as found in the Kx'a and Tuu families and Khoe JVCs. Both JVCs and SVCs contrast with conjoined predicates and are defined by single-eventhood. JVCs cover the same semantic domains found among SVCs of the Kx'a and Tuu families, can be subdivided into symmetrical and asymmetrical constructions, and show the same potential for lexicalization and grammaticalization, respectively. From a purely synchronic point of view, it therefore seems justified to consider them SVCs, especially if a prototype-approach assuming a category "SVC" with fuzzy boundaries and varying degrees of membership is adopted (cf., e.g., Andrason 2018a; 2018b).

However, while there can be little doubt that SVCs in Kx'a and Tuu constitute strings of independent verbs without any linking element between them, Khoe JVCs involve morphophonological alterations. The juncture morpheme as well as the application of flip-flop and sandhi rules clearly differentiate verbs in a JVC from the same verbs used in isolation. Kilian-Hatz (2006:111) considers the juncture to have grammaticalized from a copula into an active voice marker¹⁶ and hence defines the morpheme as "a pure construction marker in SVCs" which "does not have any coordinating or subordinating function anywhere else in the grammar". Whether this is an adequate description of the juncture, especially from a diachronic point of view, is the subject of an ongoing discussion involving multiple and partly conflicting hypotheses.

Heine (1986) proposes that the juncture morpheme derives from a copula *?a* which still exists in some modern Khoe languages (e.g., Khwe, cf. Kilian-Hatz 2008). Based on an example from !Ora (Meinhof 1930), he assumes that the juncture derives from this copula acting as nominalizer for a preceding verb form. In contrast, Elderkin (1986) considers the juncture to have grammaticalized from a conjunction *?à*, which, according to him, no longer exists in modern Khoe. However, as we have shown in section 2.3 above, the conjunction *?a* not only exists in Kalahari Khoe, but also contrasts with the juncture morpheme. From contemporary uses of *?a*, we also know that the conjunction does not trigger flip-flop on the preceding verb stem, although it does seem to allow for sandhi forms on V_2 and subsequent verb stems in a coordination chain. It nevertheless seems possible that the juncture morpheme constitutes further grammaticalization of an existing conjunction in semantic environments resembling those commonly encoded by SVCs. A possible parallel from Ju is pointed out by Pratchett (2020:97ff, this volume) where the conjunction *tè* does not actually link chains of different events (ex. 57a) but verbs making up one single event (ex. 57b).

¹⁶ Kilian-Hatz (2006:111) assumes that the Khwe juncture, like the accusative/focus marker (*?à*) (Kilian-Hatz 2008:51ff), grammaticalized from a copula. In this context, she considers the "splitting" of low-mid and low-rising tones before the accusative (*?à*) an application of the flip-flop rule (Kilian-Hatz 2008:36), e.g., *gùù* 'sheep', but *gù á* 'sheep ACC'. As this tonal operation does not match the rules established in section 2.2 above, we prefer to remain cautious and, for the time being, will not interpret tone splitting in Khwe as an application of flip-flop.

- (57) a. *sá ú-á Tʃùm. !qx'úi t̃è ts'á.*
 du go-VE GN CONJ sleep
 “They went to Tsumkwe and slept.” (Jul’hoan, Ju; Dickens 2005:53, quoted in Pratchett 2020:116)
- b. *t̃è sì-!á ʃè t̃è tʃʰòà.tʃʰòà t̃è n!àbà sá.*
 CONJ 3pl **do.again** CONJ start CONJ follow du
 “And they started to follow them again.: (Jul’hoan, Ju; P. Dickens, quoted in Pratchett 2020:101)

In a similar fashion, the conjunction *ʔa* may have been employed to link verbs making up one complex event, followed by morphophonological and semantic erosion in these semantically delimited environments, while keeping its original form and phonological behavior in conjoined predicates. However, such a scenario neither accounts for juncture allomorphy nor for tonal flip-flop. Hence, any further pursuance of this hypothesis will have to account for both phenomena.

Finally, Güldemann and Fehn (2014), based on Westphal’s (no date b; c) fieldnotes, link the juncture to a marker *-la(a)* found with intransitive cognate-object constructions in the Khoe family’s higher-order relative Kwadi¹⁷ (ex. 58a). The same element also appears in ‘want to’ constructions involving *xa* ‘want’ and another verb (ex. 58b). *xa* still exists as a full verb in Kwadi and *kx’aa-laa xe* ‘want to drink’ in (58b) may hence be interpreted as a complex predicate. While promising, especially in terms of explaining the juncture allomorphy, this hypothesis will require further research, in particular with regards to the surprisingly vast usage spectrum of the element *(-)la(a)* and grams of the shape *IV* in general.

- (58) a. *ta tʰũ-laa tʰũ.*
 1sg be.sick-? be.sick
 “I am sick.” (Kwadi)
- b. *ta kx’a-laa xe.*
 1sg drink-? want:?
 “I want to drink.” (Kwadi)

Although a comprehensive assessment of the origins of the juncture morpheme is beyond the scope of this paper, the available evidence suggests that diachronically, JVCs do not constitute chains of independent verbs but involve a morpheme with a conjoining or nominalizing function. While this may seem irrelevant from a purely functional perspective, it is certainly important for assessing the role of JVCs in the context of the wider Kalahari Basin linguistic area, including their relationship with SVCs found in languages of the Kx’a and Tuu families.

Given the wide and coherent distribution of JVCs within the Khoe family, it cannot be excluded that they constitute a language-internal development, in line with the family’s primarily isolating profile. Such a development may have been triggered or fostered by increasing contact with languages using a wide range of complex predicates, thereby making part of a general process in which languages of the Khoe-Kwadi family became approximated to the Kx’a and

¹⁷ The Kwadi examples cited in this paper were collected by A.M. Fehn & J. Rocha with two rememberers/semi-speakers in Tue, Southwestern Angola. Kwadi, a language formerly spoken by the Kwepe, a small-scale pastoralist people of the Angolan Namib desert, is virtually extinct, with the bulk of evidence being restricted to fieldnotes and recordings made by E.O.J. Westphal (no data b; c) during the 1950s.

Tuu profile. The overall typological difference between Kx'a and Tuu on the one side and Khoe-Kwadi on the other is based on the widely shared assumption that Khoe-Kwadi languages are not native to southern Africa but were introduced by Late Stone Age pastoralists entering the region from eastern Africa, around 2,000BP (Güldemann 2008). In subsequent centuries, Khoe-Kwadi speakers admixed with local populations and possibly triggered a series of language shifts among Kx'a and Tuu-speaking hunter-gatherers (Pickrell et al. 2012), leading to the emergence of new ethnic and linguistic identities (Oliveira et al. 2018). In consequence, evidence from multiple linguistic domains shows considerable sub- and adstrate influence on both proto-languages (proto-Khoe, proto-Kalahari Khoe, proto-Khoekhoe) and individual Khoe languages. If JVCs were indeed present in proto-Khoe, it is possible that Khoe-speakers had recruited a type of complex predicate formation previously present in the language – e.g., nominalization or coordination – to imitate the SVCs they encountered in both form and semantics. The arising JVCs quickly became a productive source to derive new grammatical markers in proto-Khoe and its daughter languages proto-Khoekhoe and proto-Kalahari Khoe (Fehn 2019; Phiri 2021; Vossen 1997). While it can be shown that individual Khoe languages display additional contact influence in the formation of complex predicates (e.g., Güldemann 2006 on Khoekhoe), the calquing of SVCs and resulting emergence of JVCs would predate modern contact scenarios. Unlike their relatives from the Central Kalahari, the Khoe languages of the northeastern Kalahari Basin fringe are no longer surrounded by languages of the Kx'a and Tuu families; hence, their use of SVC-like JVCs clearly belongs to an inherited set of Kalahari Basin features and does not constitute a marker of ongoing Non-Khoe influence.

We close by stressing the need for further documentation of the endangered Khoe languages on the northern and eastern Kalahari Basin fringe. As we have shown, features previously thought to be restricted to the Central Kalahari are actually found throughout the Kalahari Khoe subgroup, contradicting premature notions of “linguistic impoverishment” of Eastern Kalahari Khoe (Chebanne 2014, see also Fehn 2020b) and challenging the idea of reduced Kx'a and Tuu influence on languages not currently in contact with those families.

Abbreviations

1 – ‘1st person’, 2 – ‘2nd person’, 3 – ‘3rd person’, 3i – ‘Taa noun class marker’, ABL – ‘ablative’, ACC – ‘accusative’, ADV – ‘adverbializer’, AND – ‘andative’, ANT – ‘anterior’, ASSOC – ‘associative’, ATTR – ‘attributor’, BEN – ‘benefactive’, C – ‘common gender’, CAU – ‘causative’, COM – ‘comitative’, COMP – ‘complementizer’, COMPL – ‘completive’, CONJ – ‘conjunction’, COP – ‘copula’, DEM – ‘demonstrative’, DIM – ‘diminutive’, DIR – ‘directive’, dist – ‘distal’, DRM – ‘discourse reference marker’, du – ‘dual’, DUR – ‘durative’, F – ‘feminine’, FUT – ‘future’, GN – ‘geographical name’, HAB – ‘habitual’, IPFV – ‘imperfective’, IMP – ‘imperative’, IMPS – ‘impersonal’, J – ‘juncture’, LOC – ‘locative’, M – ‘masculine’, N1 – ‘Ju noun class’, NEG – ‘negation’, NMZ – ‘nominalizer’, OBL – ‘oblique’, PART – ‘particle’, pl – ‘plural’, PN – ‘personal name’, POSS – ‘possessive’, PRES – ‘present’, PRF – ‘perfect’, PROG – ‘progressive’, prox – ‘proximal’, PST – ‘past’, PST1 – ‘near past’, PST2 – ‘hodiernal past’ Q – ‘interrogative’, REC – ‘reciprocal’, ref – ‘referential’, REFL – ‘reflexive’, REL – ‘relative’, SEQ – ‘sequential’, sg – ‘singular’, STAT – ‘stative’, SUB – ‘subordinate’, TAM – ‘tense-aspect-modality’, TOP – ‘topic’, TR – ‘transitive’, VE – ‘valency external’, VEN – ‘venitive’

Acknowledgements

This paper was written as part of the project PTDC/BIA-GEN/29273/2017 and funded by the Foundation for Science and Technology (FCT, Portugal). Anne-Maria Fehn is currently funded through contract CEECIND/02765/2017 financed by FCT. Admire Phiri is funded by Living Tongues Institute for Endangered Languages. Data on Tjwao was collected within the research project “The other grammar of Eastern Kalahari Khoe – the documentation and analysis of interjections, onomatopoeias, and ideophones in Tjwao” (2019–2021) funded by the Khoisan Fund of the Department of African Languages at Stellenbosch University. Data on Shua and Ts’ixa was collected under a research permit issued by the Ministry of Youth, Sports and Culture of the Government of Botswana and funded by the a.r.t.e.s. Graduate School of the University of Cologne, the German Academic Exchange Service (Deutscher Akademischer Austausch Dienst) DAAD, the project “The Kalahari Basin area: a ‘Sprachbund’ on the verge of extinction” within the European Science Foundation EUROCORES programme EUROBABEL, and by the Humboldt University of Berlin. We would like to extend our gratitude to the speakers of Ts’ixa, Shua and Tjwao, in particular to Arnold Ketapilwe for his continued advice during the development of this paper. We also thank Alexander Andrason, Jorge Rocha and Lee Pratchett for their encouragement and support, as well as two anonymous reviewers for their helpful comments and suggestions.

References

- Aikhenvald, A. Y. 2006. Serial verb constructions in typological perspective. In A.Y. Aikhenvald and R.M.W. Dixon (eds.) *Serial Verb Constructions: A Cross-linguistic Typology* (= *Explorations in Linguistic Typology* 2). Oxford: Oxford University Press. pp. 1-68. <https://doi.org/10.1093/oso/9780198791263.003.0010>
- Aikhenvald, A. Y. and R. M. W. Dixon (eds.). *Serial Verb Constructions: A Cross-linguistic Typology* (= *Explorations in Linguistic Typology* 2). Oxford: Oxford University Press.
- Andrason, Alexander. 2018a. The *wziąć* gram in Polish. A serial verb construction, or not? *STUF* 71(4): 577-629. <https://doi.org/10.1515/stuf-2018-0022>
- Andrason, Alexander. 2018b. A pseudo-consecutive non-canonical serial verb construction in isiXhosa. *Stellenbosch Papers in Linguistics Plus* 55: 1-6. <http://dx.doi.org/10.5842/55-0-776>
- Andrason, A. and A. Phiri. 2018. The *hĩ* and *ha* grams in Tjwao (Khoe) – the model of situated maps. *Studia Linguistica Universitatis Iagellonicae Cracoviensis* 135: 269-290. <http://dx.doi.org/10.4467/20834624SL.18.025.9319>
- Berthold, F. and L. Gerlach. 2017. Serial verb constructions in N!aqriaxe. In Fehn A-M (ed.) *Khoisan Languages and Linguistics: Proceedings of the 4th International Symposium, July 11–13, 2011, Riezlern/Kleinwalsertal*. Rüdiger Köppe. pp. 233-259.
- Bisang, W. 2009. Serial verb construction. *Language and Linguistics Compass* 3(3): 792-814. <https://doi.org/10.1111/j.1749-818X.2009.00128.x>
- Brenzinger, M. and A-M. Fehn. 2013. From body to knowledge: perception and cognition in Khwe-!Ani and Ts’ixa. In A.Y. Aikhenvald and A. Storch (eds.) *Perception and cognition in language and culture*. Leiden: Brill. pp. 161-191. https://doi.org/10.1163/9789004210127_008

Brenzinger, M. and C. König (eds.). 2010. *Khoisan Languages and Linguistics: Proceedings of the 1st International Symposium January 4-8, 2003, Riezlern/ Kleinwalsertal* (= *Research in Khoisan Studies*, 24). Cologne: Rüdiger Köppe.

Brenzinger, M. and S. Shah. (forthcoming). *Writing Click Consonants*. London: EL Publishing.

Chebanne, A. 2014. What have Eastern Kalahari Khoe languages lost linguistically? *Stellenbosch Papers in Linguistics Plus* 44: 1-21. <http://dx.doi.org/10.5842/44-0-639>

Chebanne, A. and C. Collins. 2017. Tense and aspect in Kua: a preliminary assessment. In A-M. Fehn (ed.) *Khoisan Languages and Linguistics: Proceedings of the 4th International Symposium, July 11–13, 2011, Riezlern/Kleinwalsertal*. Rüdiger Köppe. pp. 99-116.

Collins, C. 2002. Multiple verb movement in †Hoan. *Linguistic Inquiry* 33(1): 1-29. <http://dx.doi.org/10.1162/002438902317382161>

Dickens, P. J. 2005. *A Concise Grammar of Jul'hoan with a Jul'hoan-English Glossary and Subject Index* (= *Research in Khoisan Studies*, 17). Cologne: Rüdiger Köppe.

Elderkin, E. D. 1986. Kxoe tone and Kxoe 'jonctures. In Vossen, R and K. Keuthmann (eds.) *Contemporary Studies on Khoisan, in Honour of Oswin Köhler on the Occasion of his 75th Birthday*. Hamburg: Helmut Buske. pp. 225-235.

Elderkin, E. D. 2004. The starred tones of Central Khoisan. *Afrika und Übersee* 87: 3-77.

Elderkin, E. D. 2008. Proto-Khoe tones in Western Kalahari. In S. Ermisch (ed.) *Khoisan Languages and Linguistics: Proceedings of the 2nd international symposium, January 8–12, 2006, Riezlern/Kleinwalsertal. Research in Khoisan Studies*, 22. Cologne: Rudiger Koppe. pp. 87-136.

Elderkin, E. D. 2014. Some residual problems of Proto Khoe lexical tone. In A. Witzlak-Makarevich and M. Ernst (eds.) *Khoisan Languages and Linguistics: Proceedings of the 3rd International Symposium, July 6–10, 2008, Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe. pp. 139-161.

Elderkin, E. D. 2016. The vowel system of proto-Khoe. In S. Shah and M. Brenzinger (eds.) *Khoisan languages and linguistics. Proceedings of the 5th international symposium in Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe. pp. 53-95.

Elderkin, E. D. 2017. Tonal patterns in Khwe verb conjugation. In R. Vossen and W. Haacke (eds.) *Lone Tree sScholarship in the Service of the Koon: Essays in Memory of Anthony T. Traill*. Cologne: Rüdiger Köppe. pp. 119-141.

Fehn, A-M. 2016. *A Grammar of Ts'ixa (Kalahari Khoe)*. PhD dissertation, Universität zu Köln. (Accessed 7 August 2021: <http://kups.ub.uni-koeln.de/7062/>).

Fehn, A-M. 2017. *Khoisan Languages and Linguistics. Proceedings of the 4th International Symposium, July 11-13, 2011, Riezlern/Kleinwalsertal* (= *Research in Khoisan Studies*, 36). Cologne: Rüdiger Köppe.

- Fehn, A.-M. 2017. Nominal gender marking and case in Ts'ixa. *Khoisan Languages and Linguistics. Proceedings of the 4th International Symposium, July 11-13, 2011, Riezlern/Kleinwalsertal (=Research in Khoisan Studies, 36)*. Cologne: Rüdiger Köppe. pp. 121-156.
- Fehn, A. M. 2018. New data on Northeastern Kalahari Khoe phoneme inventories: A comparative survey. *African Linguistica* 24: 5-29. <http://dx.doi.org/10.2143/AL.24.0.3285489>
- Fehn, A. M. 2019. Revisiting tense and aspect in the Khoe language family. In B. Klaus, B. Gertrud, B. Köhler and U. Zoch (eds.) *Linguistics across Africa*. Rüdiger Köppe. pp. 99-111.
- Fehn, A. M. 2020a. Click replacement and loss in Ju. In B. Sands (ed.) *Click Consonants*. Leiden: Brill. pp. 336-355. https://doi.org/10.1163/9789004424357_011
- Fehn, A. M. 2020b. Click loss in Khoe-Kwadi. In B. Sands (ed.) *Click Consonants*. Leiden: Brill. pp. 291-335. https://doi.org/10.1163/9789004424357_010
- Fehn, A. M. and A. Phiri. 2017. Nominal marking in Northern Tshwa (Kalahari Khoe). *Stellenbosch Papers in Linguistics Plus* 48: 105-122. <http://dx.doi.org/10.5774/48-0-284>
- Foley, W. A. and R. D. Van Valin. 1984. *Functional Syntax and Universal Grammar (=Cambridge Studies in Linguistics, 38)*. Cambridge: Cambridge University Press.
- Güldemann, T. 1998. The Kalahari Basin as an object of areal typology: a first approach. In M. Schladt (ed.) *Language, Identity and Conceptualization among the Khoisan (=Research in Khoisan Studies, 15)*. Cologne: Rüdiger Köppe. pp. 137-169.
- Güldemann, T. 2004. Reconstruction through 'de-construction': the marking of person, gender, and number in the Khoe family and Kwadi. *Diachronica* 21(2): 251-306. <https://doi.org/10.1075/dia.21.2.02gul>
- Güldemann, T. 2005. *Studies in Tuu (Southern Khoisan)*. (=University of Leipzig Papers on Africa, Languages and Literatures 23). Leipzig: Institut für Afrikanistik, Universität Leipzig.
- Güldemann, T. 2006. Structural Isoglosses between Khoekhoe and Tuu: the Cape as a linguistic area. In Y. Matras, A. MacMahon and N. Vincent (eds.) *Linguistic Areas: Convergence in Historical and Typological Perspective*. Hampshire: Palgrave Macmillan. pp. 99-134. http://dx.doi.org/10.1057/9780230287617_5
- Güldemann, T. 2008. A linguist's view: Khoe-Kwadi speakers as the earliest food- producers of southern Africa. In K. Sadr and F. X Fauvelle-Aymar (eds.) *Khoekhoe and the Earliest Herders in Southern Africa (=Southern African Humanities, 20)*. pp. 93-132.
- Güldemann, T. 2014. Khoisan linguistic classification today. In T. Güldemann and A.M. Fehn (eds.) *Beyond 'Khoisan'. Historical Relations in the Kalahari Basin*. Amsterdam: John Benjamins. pp. 1-40. <https://doi.org/10.1075/cilt.330.01gul>
- Güldemann, T. and A. M. Fehn (eds.) 2014. *Beyond 'Khoisan'. Historical Relations in the Kalahari Basin*. Amsterdam: John Benjamins. <https://doi.org/10.1075/cilt.330>

Güldemann, T. and A. M. Fehn. 2014. A Kwadi perspective on Khoe verb-juncture constructions. *Paper presented at the international symposium of Khoisan Languages and Linguistics, Riezlern/Kleinwalsertal*.

Güldemann, T. and Fehn, A. M. 2017. The Kalahari basin area as a ‘Sprachbund’ before the Bantu expansion. In A. Hickey (ed.) *The Cambridge Handbook of Areal Linguistics*. Cambridge: Cambridge University Press. pp. 500-526.
<https://doi.org/10.1017/9781107279872.019>

Güldemann, T. and H. Nakagawa. 2018. Kalahari Basin sound structure – In memory of Anthony T. Traill (1939-2007). *African Linguistica* 24: 55-74.

Haacke, W. H. G. 1999. *The Tonology of Khoekhoe (Nama/Damara) (= Research in Khoisan Studies 16)* Cologne: Rüdiger Köppe.

Haacke, W. H. G. 2014. Verb serialisation in northern dialects of Khoekhoegowab: convergence or divergence? In T. Güldemann and A. M. Fehn (eds.) *Beyond ‘Khoisan’. Historical Relations in the Kalahari Basin*. Amsterdam: John Benjamins. pp. 125-151.
<https://doi.org/10.1075/cilt.330.05haa>

Heine, B. 1986. Bemerkungen zur entwicklung der verbaljunktoren im Kxoe und anderen Zentral Khoisan-Sprachen. In R. Vossen and K. Keuthmann (eds.) *Contemporary Studies on Khoisan, in Honour of Oswin Köhler on the Occasion of his 75th birthday*, 2 volumes. Hamburg: Helmut Buske. pp. 9-21.

Heine, B. and H. Honken. 2010. The Kx’*a* Family. *Journal of Asian and African Studies* 79: 5-36.

Heine, B. and C. König. 2015. *The !Xun Language. A Dialect Grammar of Northern Khoisan*. Cologne: Rüdiger Köppe.

Kießling, R. 2013. Verb serialisation in Taa (Southern Khoisan). In A. Witzlack-Makarevich and M. Ernszt. 2013. *Khoisan languages and linguistics: proceedings of the 3rd international symposium, July 6–10, 2008, Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe. pp. 33-60.

Kilian-Hatz, C. 2006. Serial verb constructions in Khwe (Central-Khoisan). In A. Y. Aikhenvald and R. M. W. Dixon (eds.) *Serial Verb Constructions: A Cross-linguistic Typology* (= Explorations in Linguistic Typology, 2). Oxford: Oxford University Press. pp. 108-123.

Kilian-Hatz, C. 2008. *A Grammar of Modern Khwe (Central Khoisan)* (Research in Khoisan Studies, 23). Cologne: Rüdiger Köppe.

Kilian-Hatz, C. 2010. Serial verb constructions vs. converbs in Khwe. In M. Brenzinger and C. König (eds.) *Proceedings of the 1st International Symposium, January 4–8, 2003, Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe. pp. 115-143.

Köhler, O. 1981a. Les langues Khoisan. Section 1: Présentation d’ensemble. In J. Perrot (ed.) *Les langues dans le monde ancien et moderne, première partie: Les langues de l’Afrique subsaharienne*. Paris: Centre National de la Recherche Scientifique. pp. 455-482.

König, C. 2010. Verb serialization in !Xun. In M. Brenzinger and C. König (eds.) *Proceedings of the 1st International Symposium, January 4–8, 2003, Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe. pp. 152-185.

McGregor, W. B. 2014. Numerals and number words in Shua. *Journal of African Languages and Linguistics* 35(1): 45-90. <http://dx.doi.org/10.1515/jall-2014-0002>.

McGregor, W. B. 2015. Four counter-presumption constructions in Shua (Khoe-Kwadi, Botswana). *Lingua* 158: 54-75. <https://doi.org/10.1016/j.lingua.2015.02.005>

McGregor, W. B. 2017. Unusual manner constructions in Shua (Khoe-Kwadi, Botswana). *Linguistics* 55(4): 857-897. <http://dx.doi.org/10.1515/ling-2017-0013>

Meinhof, C. 1930. *Der Koranadialekt des Hottentottischen*. Berlin: Dietrich Reimer.

Nakagawa, H. 2006. *Aspects of the Phonetic and Phonological Structure of the Glui Language*. PhD dissertation, University of the Witwatersrand.

Nakagawa, H. 2013b. Phonology/Tonology/Syntax: Glana subgroup. In R. Vossen (ed.) *The Khoesan Languages*. Oxford and New York: Routledge. pp. 64-71; 99-103; 394-401.

Nakagawa, H. 2016. The aspect system in Glui: with special reference to postural features (Natural history of communication among the Central Kalahari San). *African Study Monographs. Supplementary Issue*, 52. The Research Committee for African Area Studies: Kyoto University. <https://doi.org/10.14989/207691>

Oliveira, S., A. M. Fehn, T. Aço, F. Lages, M. Gayà-Vidal, B. Pakendorf, M. Stoneking and J. Rocha. 2018. Matriclans shape populations: insights from the Angolan Namib Desert into the maternal genetic history of southern Africa. *American Journal of Physical Anthropology* 165(3): 518-535. <https://doi.org/10.1002/ajpa.23378>

Phiri, A. 2015. *Tshwao Phoneme Inventory: A Descriptive Account*. MA thesis, University of Zimbabwe.

Phiri, A. 2021. *The Verbal and Nominal Morpho-Syntax of Tjwao: A Grammaticalization Approach*. PhD dissertation, Stellenbosch University.

Pickrell, J. K. et al. 2012. The genetic prehistory of southern Africa. *Nature Communications* 3: 1143. <https://doi.org/10.1038/ncomms2140>

Pratchett, L. 2020. *Dialectal Diversity in Southeastern Ju (Kx'a) and a Documentation of Goot Laagte †Kx'aol'ae*. PhD dissertation, Humboldt Universität Berlin.

Rapold, C.J. 2014. Areal and inherited aspects of compound verbs in Khoekhoe. In T. Güldemann and A. M. Fehn (eds.) *Beyond 'Khoisan'*. *Historical Relations in the Kalahari Basin*. Amsterdam: John Benjamins. pp. 153-177. <https://doi.org/10.1075/cilt.330.06rap>

Sebba, M. 1995. Some remarks on Jul'hoan serial verbs. In T. Traill, R. Vossen and M. Biesele (eds.) *The complete linguist. Papers in memory of Patrick J. Dickens*. Cologne: Rüdiger Köppe. pp. 363-370.

Trail, A. and H. Nakagawa. 2000. A historical !Xóõ-/Gui contact zone: linguistic and other relations. In H. Batipo and J. Tsonope (eds.) *The state of Khoesan Languages in Botswana*. Tasalls Publishing and Books. pp. 1-17.

Visser, H. 2001. *Naro Dictionary. Naro-English, English-Naro. (4 th edition)*. D'Kar: Naro Language Project.

Visser, H. 2010. Verbal compounds in Naro. In M. Brenzinger and C. König (eds) *Khoisan Languages and Linguistics: Proceedings of the 1st International Symposium, Riezlern/Kleinwalsertal, 4–8 January 2003. (= Research in Khoisan Studies 24)*. Cologne: Rüdiger Koppe. pp. 176-200.

Visser, H. 2013. Phonology/Tonology/Morphology/Syntax: Naro. In R. Vossen (ed.) *The Khoesan Languages*. Oxford and New York: Routledge. pp. 60-64; 98-99; 179-207; 379-394.

Vossen, R. 1997. Die Khoe-Sprachen: Ein Beitrag zur Erforschung der Sprachgeschichte Afrikas (= Research in Khoisan Studies, 12). Cologne: Rüdiger Köppe.

Vossen, R. 2010. The verbal linker in Central Khoisan (Khoe) in the context of deverbal derivation. *Journal of Asian and Africa Studies* 80: 47-60.

Vossen, R. (ed.). 2013. *The Khoesan Languages*. London and New York: Routledge. <https://doi.org/10.4324/9780203084465>

Vossen, R. 2013a. Phonology/Tonology/Morphology/Syntax: Shua subgroup. In R. Vossen (ed.) *The Khoesan Languages*. London and New York: Routledge. pp. 71-73; 103-104; 215-227; 401-407.

Vossen, R. 2013b. Phonology/Tonology/Morphology/Syntax: Tshwa subgroup. In R. Vossen (ed.) *The Khoesan languages*. London and New York: Routledge. pp. 73-75; 104; 228-234; 407-408.

Vossen, R. 2013c. Morphology: Glana subgroup. In R. Vossen (ed.) *The Khoesan Languages*. London and New York: Routledge. pp. 207-214.

Vossen, R. and K. Keuthmann (eds). 1986. *Contemporary Studies on Khoisan. 2 vols. (=Research in Khoisan Studies, 5.)* Hamburg: Helmut Buske.

Westphal, E. O. J. 1971. The click languages of southern and eastern Africa. In T. A. Sebeok (ed.) *Linguistics in Sub-Saharan Africa (= Current Trends in Linguistics 7)*. The Hague: Mouton. pp. 367-420.

Westphal, E. O. J. no date a. Unpublished fieldnotes and recordings. Cape Town: Manuscripts and Archives Department, University of Cape Town. (Accessed on August 7, 2021: <https://www.digitalcollections.lib.uct.ac.za/ernst-westphal-san-languages>).

Westphal, E. O. J. no date b. The Kwadi language (for the use of Prof. António de Almeida). Cape Town: Manuscripts and Archives Department, University of Cape Town.

Westphal, E. O. J. no date c. Kwadi field notes. Cape Town: Manuscripts and Archives Department, University of Cape Town.

Witzlack-Makarevich, A and M. Ernszt. 2013. *Khoisan languages and linguistics: proceedings of the 3rd international symposium, July 6–10, 2008, Riezlern/Kleinwalsertal*. Cologne: Rüdiger Köppe.