Verb extensions in Koalib: a first general overview followed by some brief comparative considerations[1]

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1 Verb extensions in Koalib: an introduction

Koalib is a Kordofanian language (Heibanian family[2]) spoken by ca. 100,000 people living in or coming from the areas of Abri, Delami, Tongole, Umm Heitan, Umm Berembeita and Djebel Nyukur, in the northeastern part of the Nuba Mountains (Southern Kordofan, Sudan; see MAP 1). As happens in many other Niger-Congo languages, verb extensions are a key element of Koalib verb morphology. Indeed, out of a total of 2,397 verbs registered in our Koalib dictionary (Quint & Ali Karmal Koko, forthcoming), 406 at most are underived verbs, while the rest, i.e., 1,991 items or 83% of the total, are extended verbs.[3] At least 10 different extensions are attested in contemporary Koalib (see TABLE 1).

To this day, only two publications are available about Koalib verb extensions, namely Stevenson (1956/57: 29), which gives examples of some extensions, and Quint (2010), which focuses on applicatives (benefactives and malefactives).

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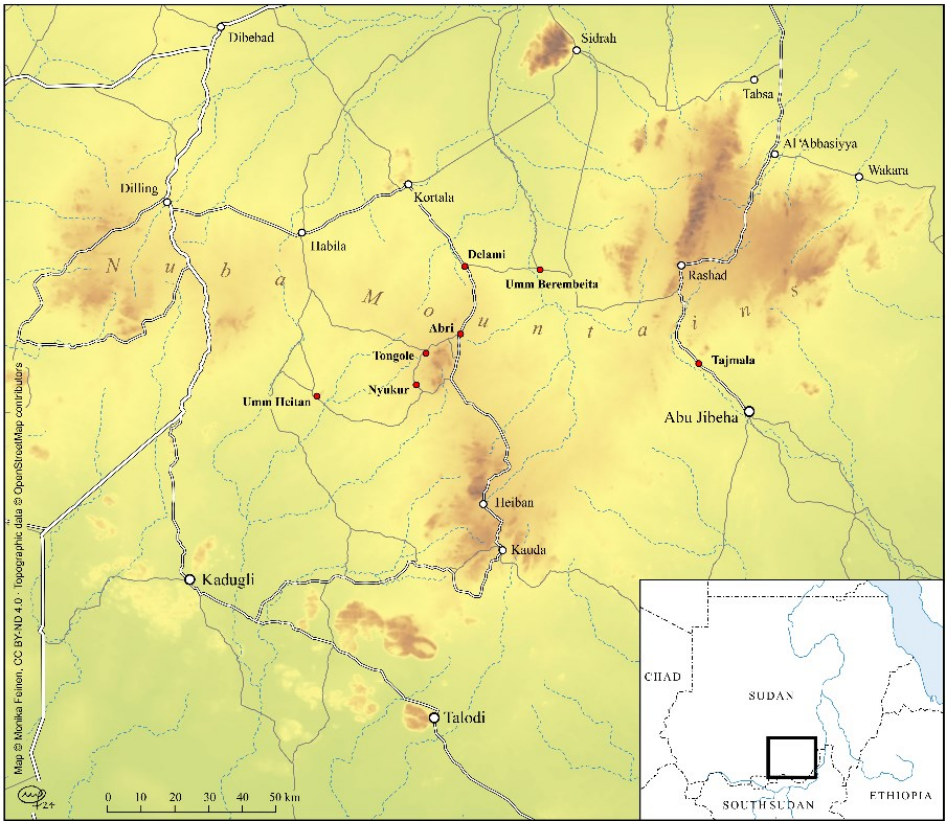
[1] This chapter is dedicated to our Koalib and other Sudanese friends and informants who have to face the dire consequences of the present civil war in Sudan. May they have the opportunity to live in peace and harmony again soon. We also want to thank our editors for their careful revision of the present paper, as well as Rozenn Guérois and Mark Van de Velde for their bibliographical support.

[2] Throughout this paper, we stick to the position that, within the Niger-Congo phylum, the Kordofanian branch is a consistent phylogenetic unit comprising five distinct families (Heibanian, Katloid, Lafofa, Tegalian and Talodian). For more details about Kordofanian, see Quint (2020). For divergent views about the unity of Kordofanian, see Blench (2013) and Dimmendaal (2018).

[3] This Koalib dictionary, which has been in compilation since the year 2000 and is based on extensive fieldwork and the systematic review of a collection of oral texts and of nearly all available literature published in Koalib, will be used as the main corpus for the present paper.



MAP 1: The Koalib area in the Nuba Mountains of Sudan

The purpose of this chapter is to provide a general overview of verb extensions in Koalib. Its contents are organized as follows. In SECTION 2, the different verb extensions are scrutinized regarding their main characteristics (segmental and tonal morphology, valency, productivity, phonological constraints, semantics and borrowed verbs). In SECTION 3, the question of the boundaries between basic and extended verbs is tackled, with particular attention being paid to the case of frequentative and pluractional verbs. In SECTION 4, a brief comparative insight is provided, in order to allow the reader to situate Koalib verb extensions with respect to other Heibanian and Kordofanian languages. SECTION 5 summarizes the main points developed in this chapter and makes suggestions for further research.

VERB EXTENSION		EXAMPLES
Applicative 1 (benefactive)		*àé*[4] 'die' > *éi**ccí*** 'die **for s.o.**'
Applicative 2 (malefactive)		*nyìimí* 'steal sth.' > *nyíim**ètè*** 'steal sth. **from s.o.**'
Associative		*àppé* 'carry' > *àpp**àté*** 'carry **together**'
Causative	V_H	*ájlè* 'be weak' > ***è**jlí*** 'weak**en**'
	suffixed	*tùllí* 'cough' > *tùllù**nní*** '**make** s.o. cough'
Excessive		*ɔ́blɛ̀* 'be short' > *òbl**àtté*** 'be **too** short'
Immediate		*ɟùú* 'go out' > *ɟùut**ènní*** 'go out **at once**'
Locative		*ɽùuní* 'bring s.o. up' > *ɽùun**ècí*** 'bring s.o. up **somewhere**'
Passive		*ìppí* 'beat' > *ìppì**nní*** '**be** beat**en**'
Reciprocal		*èŋɲyé* 'kill' > *èŋɲy**àtècé*** 'kill **each other**'
Reflexive		*ìppí* 'beat' > *ìpp**ènní*** 'beat **oneself**'

TABLE 1: The ten verb extensions attested in Koalib (Quint 2020: 249-250)

2 Main characteristics of Koalib verb extensions

2.1 Segmental and tonal morphology

Each Koalib verb extension is characterized by a given segmental marker (generally a suffix) and tone melody (see TABLE 2).

Except for the V_H causative, the segmental markers are all suffixes. Furthermore, at least four verb extensions (suffixed causative, immediate, passive and reflexive) share one and the same segmental marker, namely *-nnE*. The V_H causative and the *-nnE* marker will be examined in more detail in this subsection.

[4] The Koalib data provided throughout this paper come from the *ŋèréɛŋɛ̀* variety (anglicized under the form *Rere*), spoken natively by Siddig Ali Karmal Koko. The data are transcribed following the phonologically-based system described in Quint (2006: 169-187; 2009: 189-210). When the transcription system is at variance with the IPA and whenever deemed necessary, a phonetic transcription is added to clarify the actual Koalib pronunciation.

VERB EXTENSION	SEGMENTAL MARKER	TONE MELODY OF THE VERB WORD	EXAMPLES
Applicative 1 (benefactive)	*-(V)ccE*[5]	$H(L)_nH$[6]	(1)
Applicative 2 (malefactive)	*-(V)tA*	$H(L)_nL$	(2)
Associative	*-tE*	$(L)_nH$	(3)
V_H causative	V_H[7]		(7)-(9)
Excessive	*-AttE*		(4)
Locative	*-AcE*		(5)
Suffixed causative Immediate Passive Reflexive	*-(V)nnE*		(10)-(20)
Reciprocal	*-(V)tEcE*		(6)

TABLE 2: Segmental and tonal characteristics of Koalib verb extensions (centrifugal imperfective[8])

Regarding tone, both applicatives are characterized by an initial high (H) tone while all other extensions share one and the same tone melody, namely $(L)_nH$, with an initial low (L) tone. The initial high tone can therefore be understood as a specific marker of the applicative (Quint 2010: 297-298).

In the following examples, each verb extension is illustrated by a series of pairs of basic and extended verbs.

[5] The representation of the segmental markers is phonological. /E/ and /A/ are archiphonemes standing for /i, e, ɛ/ and /ɐ, a/ respectively; their realization depends on harmonic rules (Quint 2006: 34-42; 2009: 33-40). The actual phonemic value of the archiphonemes is provided in the examples.

[6] H = high tone; L = low tone; n = number of tone bearing units (usually considered as syllables), with $n \geq 1$.

[7] V_H = high vowel. The eight Koalib vowels are divided into two harmonic sets, a high set comprising the three vowels /i, ɐ, u/ and a low set comprising the five vowels /e, ɛ, a, ɔ, o/. All vowels in a given Koalib word necessarily belong to one and the same set (Quint 2006: 34-42; 2009: 33-40).

[8] The centrifugal imperfective is one of the three aspect-motion stems (AMS) of the Koalib verb and can be considered as the basic form of the Koalib verb morphology (Quint 2010: 296-297; forthcoming; Ferlita & Quint 2024). In particular, it is the only stem for which the tone melody is lexically (i.e., not morphologically) determined. The other two AMSs are the centripetal imperfective and the perfective, some of which forms are also presented and discussed in this paper.

(1) Applicative 1 (benefactive):

(a) *ùuɽí* 'cut sth.' > *úuɽìccí* 'cut sth. **for** s.o.'

(b) *àŋɽé* 'draw (water from a well)' > *áŋɽàccé* 'draw (water) **for** s.o.'

(c) *èmmé* 'braid (hair)' > *émmèccé* 'braid s.o.**'s** (hair)' (= 'braid hair **for** s.o.)

(2) Applicative 2 (malefactive):

(a) *kɛ̀dɾí* 'burp' > *kɛ́dɾìtɛ̀* [kɛ́dɾìðɛ̀] 'burp **in** s.o.**'s face**'

(b) *òoné* 'harvest' > *óonàtà* [óonàðà] 'harvest **[unduly]** s.o. else**'s** (crop)'

(3) Associative:

(a) *dìmmé* 'lift sth.' > *dìmmètí* [dìmmèðí] 'lift sth. **together**'

(b) *àpré* [àvɾé] 'flee' > *àpràté* [àvɾàðé] 'flee **together** (a young couple whose parents do not want them to build a relationship)'

(4) Excessive:

(a) *òmmé* 'catch (animals), fit (s.o.)' > *ùmmèttí* 'be narrow' (= '**too** tight'), 'be **too** tight for s.o. (garment)'

(b) *ɔ́ɔɾɛ̀* 'be wide' > *òoràttɛ́* 'be **too** wide'

(5) Locative:

(a) *ɽùnʈí* [ɽùnɖí] 'squeeze sth. (lemon)' > *ɽùnʈècí* [ɽùnɖèʒí] 'squeeze sth. (lemon) **on** sth. else (food)'

(b) *èntèré* 'sleep' [ènn̪èré] 'sleep' > *èntèràcé* [ènn̪èràʒé] '**make** s.o. sleep **against** sth. (wall) or s.o. else'

(6) Reciprocal:

(a) *nyìimí* 'steal sth.' > *nyìimètìcí* [ɲìimèðìʒí] 'steal **from each other**'

(b) *éntà* [énn̪à] 'meet s.o.' > *èntàtècé* [ènn̪àðèʒé] 'meet **(each other)**'

2.1.1 V_H-causative

The V_H-causative extension is the only one that triggers a systematic change within the verb stem. If the vowels of the basic verb belong to the low set, they are all heightened in the causative extension (7):

(7) (a) *màané* 'cook' > *mèèní* 'make s.o. cook'

(b) *còoɽé* [ʃòoɽé] 'be clean' > *cùuɽí* [ʃùuɽí] 'clean sth.' (= 'make sth. clean')

(c) *pèeté* [fèeðé] 'be white' > *pìití* [fìiðí] 'whiten sth.'

However, if the vowels of the basic verb belong to the high set, there is no vowel change. In this case:

(i) If the basic verb ends with a low tone, the causative extension displays a $(L)_nH$ tone melody and contrasts tonally with the basic verb (8).

(8) *úŋnì* |HL| 'be black' > *ùŋní* |LH| 'blacken'

(ii) If the basic verb ends with a high tone, the causative extension and the basic verb have the same form in the centrifugal imperfective (9).

(9) (a) *nyùrttí* [ɲùrt̪í] 'come apart (overcooked meat)' > *nyùrttí* [ɲùrt̪í] 'overcook sth. (meat) so that it comes apart'

(b) *tùkwlí* [t̪ùgʷlí] 'swell up (boiled sorghum grains)' > *tùkwlí* [t̪ùgʷlí] 'make sth. (boiled sorghum grains) swell'

MEANING	EXTENSION	ASPECT-MOTION STEMS		
		CENTRIFUGAL IMPERFECTIVE	PERFECTIVE	CENTRIPETAL IMPERFECTIVE
'come apart'	basic verb	*nyùrttí*	*nyùrttù*	*nyùrttè*
'overcook sth.'	V_H-causative		*nyùrttè*	
'swell up'	basic verb	*tùkwlí*	*tùkwlù*	*tùkwlè* ~ *tùkwlìtè*
'make sth. swell'	V_H-causative		*tùkwlè*	*tùkwlè*

TABLE 3: The three aspect-motion stems of the Koalib basic verbs *nyùrttí* 'come apart' and *tùkwlí* 'swell up', and their respective V_H-causative extensions

However, the basic verb and its causative extension always remain distinct in the perfective aspect-motion stem (where the basic form has an *-O* ending and the causative an *-A* ending) and sometimes in the centripetal imperfective (see TABLE 3).[9]

At any rate, the contrast between a V_H-causative and its basic verb is less clear when the vowels of the basic verb are high. Indeed, as shown in TABLE 4, the basic verbs whose vowels belong to the high set are statistically less prone to producing V_H-causative extensions: they represent only 14% of the total number of basic verbs with an attested V_H-causative extension, while verbs containing high vowels account for roughly one half (48%) of the total number of Koalib verbs.

VERB TYPE	ITEMS WITH HIGH VOWELS (V_H)	TOTAL ITEMS	% V_H
Basic verbs with an attested V_H-causative extension	16	113[10]	14%
Basic verbs	119	406	29%
All Koalib verbs (either basic or extended)	1 150	2 397	48%

TABLE 4: Proportion of different types of verbs whose vowels belong to the high harmonic set (V_H)

2.1.2 *-nnE* extensions

As seen above in TABLES 1 and 2, the *-nnE* suffix encodes at least four different semantic values (or semes): causative, immediate, passive and reflexive. This similarity in coding inevitably leads to an important question: does the *-nnE* suffix encode one Koalib verb extension which has different semantic values or can it reasonably be said that these four extensions (or at least some of them) are morphologically independent from each other? In this subsection, we will try to answer this question.

First of all, it is true that there is some overlap between the four main semantic values associated with the *-nnE* suffix as, in a sizeable number of instances, one and the same verb can assume several of these values (see TABLE 5).[11]

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[9] According to Koalib vowel harmony rules, the archiphoneme /O/ stands for /o, ɔ/ (low vowel set) and /u/ (high vowel set); see footnotes 5 and 7 above.

[10] The causative extended verbs derived from another extended verb (concatenated extensions – see SECTION 2.4.2 and (37)) have been excluded from this figure.

[11] Note that, from a typological viewpoint, the linguistic devices encoding CAUSATIVE, PASSIVE and REFLEXIVE are frequently shared or historically derived from each other; see Haspelmath (1990).

NUMBER OF VALUES PER EACH *-nnE* EXTENDED VERB	SEMANTIC VALUES	*-nnE* VERBS	%	EXAMPLES
1 semantic value	causative	35	7%	TABLE 1
	immediate	43	8%	TABLE 1
	passive	203	37%	TABLE 1
	reflexive	135	25%	TABLE 1
	Total 'monovalue'	**416**	**77%**	
2 semantic values	causative + passive	20	4%	(10)
	causative + reflexive	10	2%	(11)
	immediate + passive	4	1%	(12)
	immediate + reflexive	15	3%	(13)
	passive + reflexive	57	10%	(14)
	Total 'divalue'	**106**	**20%**	
3 semantic values	causative + passive + reflexive	8	1.5%	(15)
	immediate + passive + reflexive	8	1.5%	(16)
	Total 'trivalue'	**16**	**3%**	
	Overall total	**538**	**100%**	

TABLE 5: Semantic values associated with each verb extended by means of the suffix *-nnE*

As shown in TABLE 5, most of the *-nnE* extended verbs are associated with only one of their four possible semantic values: out of a total of 538 *-nnE* extended verbs, the 'monovalue' verbs represent 77% of the sample.

However, the *-nnE* extended verbs associated with two semantic values (e.g. causative + passive) are also quite common, accounting for 20% of the total. The five attested types of 'divalue' verbs are illustrated below:[12]

[12] Note that only one of the logical pairs of values is lacking, namely 'causative + immediate'. However, we cannot say whether this absence is due to the limitations of our corpus or to an impossibility of associating both values with one and the same *-nnE* extended verb.

(10) causative + passive: *nèŋné* 'hear'

> *nìŋnìnní* '**make** s.o. hear' (causative) + '**be** heard' (passive)

(11) causative + reflexive: *wàoé* 'urinate'

> *wèuìnní* '**cause** s.o. to urinate (e.g. beer)' (causative) + 'wet one's bed (= urinate on **oneself**)' (reflexive)

(12) immediate + passive: *ɔ̀rlé* 'turn back'

> *ɔ̀rlànné* 'turn back (somewhere) **at exactly the same time as** s.o. else' (immediate) + '**be** turned inside out (garment)' (passive)

(13) immediate + reflexive: *èlŋé* 'sing'

> *èlŋànné* '**immediately set out to** sing' (immediate) + 'sing **about oneself**' (reflexive)

(14) passive + reflexive: *pìéŋ* [piéŋ] 'shave s.o. off'

> *pìèŋní* [pièŋní][13] '**be** shaved off' (passive) + 'shave **oneself** off' (reflexive)

A small minority (3%) of *-nnE* extended verbs is even associated with three semantic values. The two types of 'trivalue' verbs attested are illustrated in (15) and (16):

(15) causative + passive + reflexive: *dɔ̀nné* 'roast sth. (meat)'

> *dùnnùnní* '**make** s.o. roast sth. (meat)' (causative) + '**be** roasted (meat)' (passive) + 'burn **oneself** (= roast **oneself**)' (reflexive)

(16) immediate + passive + reflexive: *àaɽé* 'go back (somewhere)'

> *àaɽànné* 'go back **at once**' (immediate) + '**be** brought back (somewhere) (cattle)' (passive) + 'put sth. back **on** (garment)' (reflexive)

Secondly, besides the overlaps between the four values, there are also many cases where one and the same basic verb can generate segmentally different *-nnE* extended verbs (17)-(20), each associated with their own specific value(s):

[13] The final sequence -[ní] of *pìèŋní* is one of the possible realizations of the variant *-nE* of the suffix *-nnE*. The variant *-nE* is mostly used with basic verbs ending with a consonant (see SECTION 2.5.1 below).

(17) *lɔ́ɔ́* 'write'

> *lùutìnní* [lùuðìnní] 'make s.o. write (sth.)' (causative)

vs. *lɔ́ɔtènné* [lɔ́ɔðènné] 'be written' (passive)

(18) *rúuŋì* 'be dirty'

> *rùuŋènní* 'get **immediately** dirty' (immediate)

vs. *rùuŋùnní* 'dirty **oneself**' (reflexive)

(19) *èɽnyɛ́* [èɽɲé] 'kill s.o., put sth. out (fire)'

> *èɽnyènné* [èɽɲènné] '**be** kill**ed**' (passive)

vs. *èɽnyànné* [èɽɲànné] 'kill s.o. **at once**' (immediate) + 'go out (fire), subside (conflict)' (reflexive)

(20) *kɛ̂ɛ* 'be bad/dangerous, break (off) [intr.], tear away [intr.]'

> *kìènní* 'tear sth. **immediately**' (immediate)

vs. *kììnní* 'be broken/torn' (passive)

vs. *kèànné* 'get damaged/spoiled (stored grain)' (reflexive)

Thirdly, although these are not absolute rules, some values tend to be associated with a specific subgroup of *-nnE* extensions characterized by some formal features:

(i) Nearly all (≥94%) *-nnE* verbs with causative value have vowels belonging to the high set (or V_H), while this proportion is much lower (55%) among the whole sample of *-nnE* verbs (see TABLE 6).

VERB TYPE	VALUE	V_H	TOTAL	%
-nnE verbs associated with:	causative only	33	35	94%
	causative + other(s)	71	73	97%
all *-nnE* verbs		295	538	55%

TABLE 6: Proportion of different types of *-nnE* extended verbs whose vowels belong to the high harmonic set (V_H)

In other words, *-nnE* causatives, just like V_H-causatives (see SECTION 2.1.1 above), seem to resort to using high vowels as a morphological marker of their causativeness.[14]

(ii) All *-nnE* verbs exclusively associated with an immediate value have an *A* vowel preceding the *-nnE* final sequence, whereas this is the case with only 42% of all *-nnE* extended verbs. In other words, *-AnnE* (rather than *-nnE*) appears to be the standard form of the suffix associated with the immediate value.

VERB TYPE	VALUE	*-AnnE*	TOTAL	%
-nnE verbs associated with:	immediate only	43	43	100%
	immediate + other(s)	69	70	99%
all *-nnE* verbs		225	538	42%

TABLE 7: Proportion of different types of *-nnE* extended verbs ending in an *-AnnE* sequence

The data examined above suggest that, although it is not always possible to distinguish the main four values associated with the *-nnE* suffix by means of morphological (i.e., non-semantic) criteria, in some cases at least this distinction does have a morphological basis. Be that as it may, the synchronic data we have at our disposal do not allow us to determine whether *-nnE* is a unique polysemous morpheme that acquired different values in the course of its historical development, or whether *-nnE* has a different origin according to the value(s) it encodes, with the present partial homonymy being due to the merger of historically distinct morphemes. Thus, throughout this chapter, we have preferred to consider that each of the causative, immediate, passive and reflexive semantic values is a separate verb extension.

2.2 Valency

Koalib verb extensions can also be characterized by the valency changes they trigger. TABLE 8 summarizes these changes, i.e., the number of core (S or O) or circumstantial (LOC = locative) arguments typically added or suppressed for each verb extension. In Koalib, O 'object' refers to any verb complement morphologically marked by means of the object case (Quint & Allassonnière-

[14] Note that, as happens with V_H-causatives (see TABLE 4 and discussion thereof), the basic verbs whose vowels belong to the high set are also less prone to producing suffixed *-nnE* causatives: out of a total of 73 *-nnE* extended verbs associated exclusively or partly with a causative value, only 19 (i.e., 26%) are derived from a basic verb containing high vowels.

Tang 2022). The object can assume the semantic role of BENEFICIARY, CAUSEE or PATIENT (see also (42)). As for the extra argument of locative extended verbs, it can be either a locative circumstantial argument (LOC, as happens here with *ɽùunècɨ́*) or a morphological object (O, see (47)).

VERB EXTENSION		EXAMPLES	VALENCY CHANGE	SYNTACTIC ROLE
Applicative 1 (benefactive)		*àé* 'die' (intr.) > *éìccí* 'die **for s.o.**' (tr.)	+1	+O
Applicative 2 (malefactive)		*nyìimí* 'steal sth.' (tr.) > *nyíimètè* 'steal sth. **from s.o.**' (ditr.)	+1	+O
Causative	V_H	*ájlè* 'be weak' (intr.) > *èjlí* 'weaken **s.o.**' (tr.)	+1	+O
	suffixed	*tùllí* 'cough' (intr.) > *tùllùnní* 'make **s.o.** cough' (tr.)	+1	+O
Locative		*ɽùuní* 'bring s.o. up' (tr.) > *ɽùunècí* 'bring s.o. up **somewhere**' (tr. + locative argument)	+1	+O/ LOC
Associative		*àppé* 'carry sth.' (tr.) > *àppàté* 'carry sth. together' (tr.)	0	
Excessive		*ɔ́blè* 'be short' (intr.) > *òblàttí* 'be too short' (intr.)	0	
Immediate		*ʈùú* 'go out' (intr.) > *ʈùutènní* 'go out at once' (intr.)	0	
Passive		*ìppí* 'beat **s.o.**' (tr.) > *ìppìnní* 'be beaten' (intr.)	-1	-O
Reciprocal		*èɽnyé* 'kill **s.o.**' (tr.) > *èɽnyàtècé* 'kill each other' (intr.)	-1	-O
Reflexive		*ìppí* 'beat **s.o.**' (tr.) > *ìppènní* 'beat oneself' (intr.)	-1	-O

TABLE 8: Valency changes typically triggered by each Koalib verb extension

One valency change for each category (+1, 0 and -1) is illustrated in turn hereafter (21-23):

(21) a. *àé* 'die' (intransitive, basic verb)

Kwókkò	*kw-âé*
PN	CL-die.IPFV.CFG
S	S.V[15]

'Kwokko will die.'

b. *ɛ̂ìccí* 'die **for s.o.**' (transitive (+1=O), applicative 1 (benefactive))

Kwókkò	*kw-ɛ̃ì-**ccí***	*ny-éllɛ̀*	*ny-ùŋwún*
PN	CL-die-**BEN**.IPFV.CFG	CL.PL-child.O	CL.PL-POSS3SG
S	S.V	O	

'Kwokko will die **for** his children.'

(22) a. *àppé* 'carry' (transitive, basic verb)

kw-âppé	*lúuɽì*
CL-carry.IPFV.CFG	wood.O
S.V	O

'S/he will carry the piece of wood.'

b. *àpp**àté*** [àpp**àðé**] 'carry **together**' (transitive (+0), associative)

*l-âpp-**àté***	*lúuɽì*
CL-carry-**ASSOC**.IPFV.CFG	wood.O
S.V	O

'They will carry the piece of wood **together**.'

(23) a. *àmɽé* 'love **s.o.**' (transitive, basic verb)

kw-àmɽà	*Kwókkò-ŋwó*
CL-love.PFV	Kwokko-O
S.V	O

'S/he loves Kwokko.'

[15] In this paper, S (small capital) refers to the 'subject agreement marker', i.e., a bound morpheme agreeing with or expressing the subject on the inflected verb itself.

b. *àmɽàtècé* [àmɽàðèʒé] ‘love **each other**’ (intransitive (-1 = O), reciprocal)
l-àmɽ-àtècà
CL.PL-love-REC.PFV
S.V
‘They love each other.’

Such valency changes are quite regular in the corpus and some extensions comply rather strictly with their prototypical behavior regarding valency: for instance, all known benefactives (applicatives 1) and suffixed causatives are transitive, which is expected as these extensions trigger an extra object argument when compared with their basic verb (see TABLE 8 above). However, a minority of V_H-causatives and malefactives (applicatives 2) are attested in intransitive constructions. This involves 3% (4/148) of V_H-causatives and 21% (55/262) of malefactives, of which 27 (10% = 27/262) have only been documented as intransitives.

Such unexpectedly intransitive V_H-causatives and malefactives themselves fall into two different categories:[16]

(i) ‘semi-intransitives’, in whose construction a postposition (*lá* ‘up’ in (24), *né* ‘in’ in (25)) or an oblique complement (*ŋèɽàaŋàlŋê* = *ŋèɽàaŋàl* ‘thing’ + *ŋ* ‘CL’ + *ê* ‘INSTR’ = ‘with sth.’ in (26)) plays the role of a pseudo-object:[17]

(24) *èrlé* ‘stand/wait’

> applicative 2: *érlàtà-lá* [érlàðà-**lá**] ‘stand **up**’[18]

[16] The notion of ‘unexpected intransitive’ arises from the fact that, contrary to what happens in Western European languages such as English or French, Koalib verbs are rarely labile. In Koalib, a change of valency almost always entails the use of another verb extension, e.g., ‘eat sth.’ (tr.) translates as *yèé*, while ‘eat’ (intr.) translates as *ètné*, an irregular reflexive extension of *yèé*.

[17] When Koalib postpositions directly follow a verb (with no noun phrase involved), the resulting combination ‘verb + postposition’ is often quite comparable to English phrasal verbs, as suggested by the translation of (24).

[18] Note that this specific malefactive verb extension does not have a typically malefactive meaning; the same applies for (26) and (28)-(31). For more details about the semantics of the malefactive verb extension, see SECTION 2.6.1 below.

(25) *àaɽé* 'go back'

> V_H-causative: *èɐɽí-**né*** 'miscarry' (= 'make go back + **in**')

(26) *kèʈʈé* 'place/put/set'

> applicative 2: *kéʈʈàtà* [kéʈʈàðà] ***ŋèɽàaŋàlŋê*** = 'base one's expectations/reasoning **on** (= 'with') **sth**.'

(ii) 'full intransitives', which can be used without any direct or oblique complement (27)-(31):

(27) *èrlé* 'stand/wait'

> V_H-causative: ***ìrlí*** 'get engaged (a man to a woman)' (= 'make stand/wait')

(28) **bOɽŋ-* [basic verb unknown]

> applicative 2: *búɽŋ**ètè*** [búɽŋ**èðè**] 'make a sauce'

(29) *pèrttέ* [fèɾʈέ] 'sweep/gather'

> applicative 2: *pérttàtà* [féɾʈ**àðà**] 'put the flour into a container after grinding'

(30) *kwèέ* 'make a (seed) hole'

> applicative 2: *kéetàtà* [kéeðàðà] 'put sorghum seeds in the seed holes'

(31) **aŋr-* [basic verb unknown]

> applicative 2: *áŋrètà* [áŋrèðà] 'be ready for anything, stay alert'

As can be seen from this selection, the full intransitive constructions of V_H-causatives and malefactives regularly refer to very common activities in Koalib traditional culture, such as marriage arrangement (27), food preparation (28)-(29), agriculture (30) or attitudes towards the outside world (31). In most of these instances, the expected object must have been dropped because it was

easily deduced from the verb itself, e.g., *búŋ̀ŋètɛ̀* in (28) refers only to the specific action of MAKING A SAUCE (not any other type of food). Furthermore, we can notice that two of the five above intransitive applicatives 2 ((28), (31)) lack a basic verb (which probably got lost at some point in the history of the language). The absence of a basic verb in synchrony probably favors the intransitive use of verbs, which are morphological malefactives but whose relationship with their original basic verb has been severed, thereby rendering more obscure the mechanisms of valency change in the speakers' minds.

2.3 Productivity

As shown in TABLE 9, the productivity of the diverse verb extensions is quite variable.[19] Benefactives (29%) and *-nnE* extensions (28%, if we consider it as a unique category; see SECTION 2.1.2) are clearly dominant: in fact, the number of extended verbs associated with each of these extensions is higher than the actual number of attested basic verbs (406; see SECTION 1).

Verbs borrowed by Koalib from other languages may also combine with benefactive and *-nnE* extensions, which shows that these extensions are fully productive in today's Koalib (see SECTION 2.7). At the other end of the frequency curve, the excessive extension is clearly residual in contemporary Koalib (12 items, i.e., less than 1% of all extended verbs).

If we split the verbs associated with the suffix *-nnE* according to their value (passive, reflexive, immediate and causative), immediates and suffixed causatives also have relatively low frequencies in Koalib, suggesting that they may not be fully productive in synchrony.

[19] Note that here the notion of productivity is based on the number of lexical entries in the Koalib dictionary. Corpus-based studies based on frequency of use are still lacking for Koalib: they may give significantly different results regarding the respective vitality of each verb extension in daily speech.

EXTENDED VERBS		NUMBER	%
Applicative 1 (benefactive)		573	29%
-nnE extension		538	28%
of which[20]:	Passive	262	14%
	Reflexive	175	9%
	Immediate	56	3%
	Causative	45	2%
Applicative 2 (malefactive)		262	14%
Locative		175	9%
V_H-causative		148	8%
Associative		133	6%
Reciprocal		105	5%
Excessive		12	1%
Total[21]		**1 946**	**100%**

TABLE 9: Respective frequency of Koalib extended verbs in our corpus

2.4 Over-derivation

Two cases of over-derivation will be discussed in this subsection:

(i) 'multiple extension':[22] when several extended verbs belonging to one and the same type of extension are derived from one and the same basic verb;

(ii) 'concatenated extension': when several different verb extensions are associated together with one and the same basic verb to produce one resulting derived verb.

[20] The numbers given for each value associated with the suffix *-nnE* are estimates based on TABLE 5. The number of items associated with each value is calculated as follows: (N/416)x538, where N is the number of *-nnE* extended verbs exclusively associated with a given value (e.g., N = 35 for 'causative' in TABLE 5); 416 is the total number of *-nnE* extended verbs associated with one value only ('monovalue'); and 538 is the overall total of *-nnE* extended verbs.

[21] If we compare the total number of derived verbs (1,991; see SECTION 1 above) with the total of derived verbs in TABLE 9, there are 45 verbs (1,991-1,946) which remain unidentified (i.e., not ascribed to any definite verb extension). Most of these are variants or dubious cases. The bias they introduce in the data ((45/1 991)x100 = 2% of the sample) can be considered as not significant.

[22] The term is coined after an analogy with 'multiple birth', whereby the basic verb is 'the mother', and the extended verbs are 'the children'.

2.4.1 Multiple extension

The existence of this type of over-derivation comes as no surprise, as certain categories of extended verbs (in particular benefactives and *-nnE* extensions; see SECTION 2.3) are more numerous than the basic verbs.

Double benefactives (i.e., two benefactives derived from the same basic verb) have already been described in Quint (2010: 306-307), from which (32) is taken:

(32) *èɽnyɛ́* [èɽɲɛ́] ~ *ɽɛ̀ɛnyɛ́* [ɽɛ̀ɛɲɛ́], 'kill sth. (animal)/s.o.'

> benefactive (applicative 1): *ɽêny**cɛ́*** [ɽêɲ**ɟɛ́**][23] 'kill sth. (animal) **for** s.o.', where the concrete meaning of the basic verb is maintained;

vs. benefactive (applicative 1): *éɽnyà**ccɛ́*** [éɽɲà**ccɛ́**] 'forgive s.o. sth.', which has a more abstract meaning (= 'kill/ erase [in one's mind] the bad actions that s.o. did to you').

Double malefactives (33), passives (34) and reflexives (35) are also attested:

(33) *èmné* 'eat sth. that does not need chewing (flour, porridge)'

> malefactive (applicative 2): *émnà**tà*** [émnà**ðà**] 'eat **unduly** sth. **belonging to** s.o. else., eat sth. **on one's way**'

vs. malefactive (applicative 2): *ímnè**tɛ̀*** [ímnè**ðɛ̀**] 'gnaw sth., lick sth., eat sth. **on one's way**'

Both malefactive extensions share one of their meanings, namely 'eat sth. **on one's way**', while also displaying significantly different senses.

(34) *ìiɽí* 'obey s.o.'

> passive: *ìiɽè**nní*** '**be** tam**ed** (bull)/calm**ed** down (cow)' (= '**be made** obedient'[24])

vs. passive: *ìiɽì**nní*** '**be** obey**ed**'

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[23] The final sequence -[ɟɛ] of *ɽêny**cɛ́*** is one of the possible realizations of the variant -/jE/ of the benefactive suffix -/(V)ccE/ (Quint 2010: 303). -/jE/ is frequently used with basic verbs ending with a -/mV/, -/nV/ or -/ɲV/ sequence (*ɽɛ̀ɛ**nyɛ́*** [ɽɛ̀ɛ**ɲɛ́**] CVV**ɲV** falls into this category) or with a consonant (see SECTION 2.5.1 below).

[24] The English translation suggests that this particular item has a causative component and hence that *ìiɽènní* might be a case of concatenated extension (see SECTION 2.4.2), i.e., causative + passive. However, the available data do not allow us to prove this hypothesis.

(35) *èccé* 'look, watch'

> reflexive: *èccà**nné*** 'look **around oneself**, check **one's outfits**'

vs. reflexive: *ìccì**ní*** 'feel' (= 'look **at oneself** [in a certain state]')

2.4.2 Concatenated extension

This type was also described in Quint (2009: 302), from which (36) is taken.

(36) *èrrí* |LH| 'do sth.'

> passive: *èrrì**nní*** |LLH| 'happen' (= '**be** do**ne**')

> benefactive (applicative 1): *érrìnnì**ccí*** |HLLH| 'happen **to** s.o.'

In (36), we have a combination of *-nnE* (passive value) plus benefactive. As can be seen, it is the last extension (here the benefactive) that imposes its tonal melody (here $|H(L)_nH|$; see SECTION 2.1 above) on the previously extended verb (here *èrrì**nní***).

Actually, concatenated extension is not a rare phenomenon in Koalib. We were able to find 161 concatenated extended verbs, i.e., 8% of the total number of identified extended verbs (161/1,946). Among the 64 types of concatenated extended verbs theoretically possible, a significant part (30, i.e., almost half) are actually attested in the corpus, as shown in TABLE 10. Note also that, at least in synchrony, the mechanism of concatenation seems to be limited to two verb extensions.

Besides *-nnE* plus BEN (illustrated in (36)), a few more pairs of combined extensions are exemplified below; see (37)-(39):

(37) ASSO + V_H-CAUS

èrmé 'hit s.o./sth., bump into sth.'

> associative: *èrmè**té*** [èrmè**ðé**] 'face **each other (football/wrestling team)**, fight **each other**, bump into **each other**'

> associative + V_H-causative: *ìrmì**tí*** [ìrmì**ðí**] '**make** people fight each other, **make** people bump into each other'

PENULT. EXT.	LAST EXTENSION								TOTAL	%
	AS-SOC	BEN	EXC	LOC	MAL	*-nnE*	REC	V_H-CAUS		
ASSOC		13		1		7	2	25	48	30%
BEN	1	2				5	1		9	5%
EXC	1			3	4	2	1		11	7%
LOC	1	8		2		6	3		20	12%
MAL		1				5			6	4%
-nnE	1	33			14	2	3	7	60	37%
REC								1	1	1%
V_H-CAUS		2				1	3		6	4%
Total	4	59	0	6	18	28	13	33	161	100%
%	3%	37%	0%	4%	11%	17%	8%	20%	100%	

TABLE 10: Main types of concatenated extended verbs in Koalib

(Legend of TABLE 10: ASSOC = associative, BEN = benefactive (applicative 1), EXC = excessive, LOC = locative, MAL = malefactive (applicative 2), penult. ext. = penultimate extension, REC = reciprocal, V_H-CAUS = high vowel causative)

(38) BEN + *-nnE*

kìttí 'open sth.'

> benefactive (applicative 1): *kíttìccí* 'open sth. to s.o.'

> benefactive + immediate: *kìttìccènní* 'immediately open sth. to s.o.'

(39) *-nnE* + MAL

lùccí 'hide s.o./sth.'

> *-nnE* (passive/reflexive): *lùccìnní* 'be hidden, be unknown, hide (oneself)'

> *-nnE* + malefactive (applicative 2): *lúccínnètè* [lúccínnɛ̀ðɛ̀] 'hide (oneself) from s.o.'

Concatenated extensions may be the source of more verbal items than the ones that have been documented in TABLE 10. For instance, benefactive (applicative 1) *cúuɽìccí* 'clean sth. for s.o.' may directly be traced back to the basic verb *còoɽé* 'be clean'. Nonetheless, it is also safe to assume that the V_H-causative verb *cùuɽí* 'clean sth.' (see (7b)) acts as an intermediary between the basic verb and its benefactive, in which case *cúuɽìccí* would be a concatenated extended form (40):

(40) *còoɽé* [ʃòoɽé] 'be clean' (basic verb, intransitive)

> *cùuɽí* [ʃùuɽí] 'clean sth.' (V_H-causative, transitive)

> *cúuɽìccí* [ʃúuɽìccí] 'clean sth. for s.o.' (benefactive, ditransitive)

Although it cannot entirely be proved, the hypothesis that *cúuɽìccí* is a concatenated extended form would better account for the valency of the verb (+1 object per extension) and for the vowel alternation between the basic verb and its benefactive form.

Finally note that the few trivalent verbs attested in Koalib are all concatenated extensions (41):

(41) *támtò* [t̪ámðò] 'go beyond sth. (place)' (basic verb, transitive)

> *tèmtí* [t̪èmðí] 'make s.o. cross sth.' (V_H-causative, ditransitive)

> *témtìccí* [t̪émðìccí] 'make s.o. cross. sth. for s.o. else' (V_H-causative + benefactive, tritransitive), as exemplified in (42).

(42)

Kwókkò	*kwé-tĕmtì-ccí*		
Kwokko	CL-cross.CAUS-BEN.IPFV.CFG		
S	S-V		
ɛ́vepù-ŋwú	*y-èeɽó*	*kè-pèrttà.*	
Uhvoo-O	CL.PL-goat.O	CL-river.bed.O	
O1 (BENEFICIARY)	O2 (CAUSEE)	O3 (PATIENT)	

'Kwókkò will get the goats across the river bed for Uhvoo.'

2.5 Phonological constraints

In some cases, the phonological shape of the basic verb imposes some limitations on the extension mechanisms. We will study hereafter two instances of this type of limitation.

2.5.1 Consonantal verbs

Most Koalib basic verbs comply with well-formedness rules regarding their syllabic structure. The imperfective-centrifugal stem has either a (C)VC.CV (43) or a (C)VV.CV (44) form, in which one can distinguish:

- a lexical verb root, (C)VC.C- or (C)VV.C-;

- a final vowel -V, characteristic of the aspect-motion (here imperfective-centrifugal).

(43) a. *ùtrí* [ùðrí] VC.CV ‘sip sth. (a drink)’
b. *dɔ̀rké* [dɔ̀rgé] CVC.CV ‘be striped’

(44) a. *áaŋè* VV.CV ‘swell’
b. *kɛ̀ɛrɛ́* CVV.CV ‘be selfish, despise s.o.’

However, an important group of Koalib basic verbs (59 items, i.e., 15% of our sample of 406 basic verbs) do not comply with this rule, as their imperfective-centrifugal stem ends with a consonant (45). We term these verbs ‘consonantal verbs’.

(45) a. *ɛ̀ɛrúm* ‘burn’
b. *ɛ̀dɾény* [ɛ̀dɾéɲ] ‘tear sth.’
c. *ʈɛ̀mpɛ́l* [ʈɛ̀mbɛ́l] ‘confuse s.o.’s mind, cheat s.o.’

In practice, only four verb extensions are attested among the consonantal verbs (see TABLE 11) and two are really frequent: the benefactive (applicative 1) and the *-nnE* extension (46).

(46) *òkrɔ́m* [ògrɔ́m] ‘noisily crush sth. with one’s hand or foot’

> benefactive: *ókrɔ̀mjɛ́* [ógrɔ̀mɟɛ́] ‘crush sth. **belonging to** s.o.’

> *-nnE* (passive): *òkrɔ̀mnɛ́* [ògrɔ̀mnɛ́] ‘**be** crush**ed**’[25]

[25] Note that, with the consonantal verb *òkrɔ́m*, the suffixes marking the benefactive and the *-nnE* extension are -[ɟɛ] and -[nɛ] respectively. These forms are variants of the prototypes *-(V)ccE* and *-(V)nnE* described in TABLE 2.

As shown in TABLE 11, there is a total of 101 verb extensions for 59 basic consonantal verbs, i.e., an average of 1.7 extended forms for each basic consonantal verb, a much lower figure than what is observed for the total sample of verbs we have at our disposal, where the average is 4.9 (1,991 extended forms for 406 basic verbs; see SECTION 1), i.e., nearly three times higher.[26] The phonological shape of the consonantal verbs seems therefore to considerably limit their possibilities to produce extended forms.

	BEN	LOC	MAL	*-nnE*[27]	TOTAL
Number of extended verbs	44	1	4	52	101
% consonantal basic verbs with at least one verb extension	76%	2%	7%	76%	

TABLE 11: Attested extended verbs derived from consonantal basic verbs

2.5.2 Vowel alternation

The vowel changes triggered by the V_H-causative extension may prevent the use of certain forms of V_H-causative extended verbs. As shown in TABLE 12, the V_H-causative extension of *òoɽé* 'get down' is only attested for the centripetal imperfective aspect-motion stem.

MEANING	EXTENSION	CENTRIFUGAL IMPERFECTIVE	PERFECTIVE	CENTRIPETAL IMPERFECTIVE
'get down (intr.)'	basic verb	*òoɽé*	*òoɽò*	*òoɽà*
'get s.o./sth. down (from a higher place)'	V_H-causative			*ùuɽè*
'cut'	basic verb	*ùuɽí*	*ùuɽù* ~ *ùuɽùtù*	*ùuɽìtè*

TABLE 12: The attested aspect-motion stems of the Koalib verb *òoɽé* 'get down', of its V_H-causative extension and of the verb *ùuɽí* 'cut'

[26] For each extension considered in TABLE 11, the percentages are obtained by dividing the number of consonantal basic verbs that can be extended by the total number of consonantal verbs (=59).

[27] 44 consonantal basic verbs, i.e., 76% (44/59) of all consonantal basic verbs have at least one *-nnE* extended verb. However, some consonantal basic verbs have more than one *-nnE* extended verb (due to the existence of cases of multiple extension; see SECTION 2.4.1), hence the figure of 52 (not *44) *-nnE* extended verbs in the first line of TABLE 11.

This is arguably due to the fact that the other aspect-motion stems would have had forms (**ùuʃí* for the centrifugal imperfective and **ùuʃè* for the perfective; see TABLE 3) very similar to the verb *ùuʃí* 'cut', which would have led to much confusion in daily speech, as both basic verbs have a high frequency of use.[28] Significantly, no V_H-causative extension can be derived from the verb *ùuʃí* 'cut'.

2.6 Semantic considerations

Within the scope of this paper, it is impossible to provide an exhaustive study of the many semantic subtleties and intricacies linked with the use of verb extensions in Koalib. We will content ourselves with mentioning three important points regarding this question.

2.6.1 Defining the semantic core of a given extension: the example of locatives and malefactives

Like other Koalib verb extensions, locative and malefactive extensions are defined and labelled on the basis of one or more salient semantic or syntactic properties shared by a significant number of their members. For the two extensions at stake, these properties will be examined in turn below.

The two main salient properties of locatives are:

(i) a TRANSITIVE construction (5a,b);

(ii) the presence of either a circumstantial argument indicating PLACE (5a,b); one of the three 'light' postpositions (i.e., with a CV syllabic structure; see also SECTION 2.2), -/lÁ/ 'up, -/lO/ 'down', and -/nÁ/; or a 'heavy' postposition (i.e., whose syllabic structure exceeds CV by at least one segmental position) with a locative meaning, usually -*náanà* 'over'.

The malefactive is principally defined by the fact that the action:

(i) is performed AT THE EXPENSE OF (2a,b, 33)

(ii) and/or implies a SPATIAL RELATION VIS-À-VIS the malefactee (2a, 33) (see 'gnaw, lick'; Quint 2010: 305-306, 309-310).[29]

These properties will be considered as the 'semantic core'[30] of their respective extensions. We have tried to quantify these properties (and others that

[28] This case is a typical instance of 'homonymic clash' (Bynon 1985: 186-190).
[29] For the distinction between spatial relation and place, see the second point of the discussion following TABLE 13.

appeared when scrutinizing the data in detail) for the locative and the malefactive. The results are shown in TABLE 13.

TABLE 13 confirms the validity of the semantic core: PLACE and TRANSITIVE are definitely dominant properties associated with locatives, whereas SPATIAL RELATION and (at s.o.'s) EXPENSE are among the three higher-scored properties associated with malefactives.

	LOCATIVE (175 ITEMS)		MALEFACTIVE (262 ITEMS)	
SEMANTIC OR SYNTACTIC PROPERTY	ITEMS	%[31]	ITEMS	%
PLACE	120	69%	134	52%
TRANSITIVE	68	39%	51	19%
SPATIAL RELATION	37	21%	105	41%
EXPENSE	1	1%	104	40%
+ *náanà* 'over'[32]	37	21%	73	28%
CAUSATIVE	20	11%	0	0%
INTRANSITIVE	14	8%	11	4%
EXPERIENCER	4	2%	32	12%
Others (various)	8	5%	12	5%

TABLE 13: Semantic and syntactic properties typically associated with Koalib locative and malefactive extended verbs

However, this semantic core does not suffice to define all locative or malefactive extended verbs. Firstly, some other semantic and syntactic

[30] This use of the notion of 'semantic core' draws in particular on Aikhenvald (2008 [2003]: 308-317).

[31] The total of the percentages for locative (second column of TABLE 13) and malefactive (fourth column) extensions exceeds 100%, as one and the same extended verb may be associated with more than one property, according to its various attested meanings and constructions. For instance, a given verb can be involved in both CAUSATIVE and PLACE constructions. Note that the values associated with the intransitive property are based on the number of verbs exhibiting a full intransitive construction (see SECTION 2.2 above) in at least one of their meanings.

[32] For the link between *-náanà* and the more general notion of SPATIAL RELATION, see the third point of the discussion following TABLE 13.

properties have been found to be (nearly) exclusive to one of the two extensions at stake:

(i) A significant proportion of locative extensions are used as semantic CAUSATIVES (11%; see (47)) or in INTRANSITIVE constructions (8%; see (48)).

(47) Semantic causative

lèŋɻé 'be surprised (intr.)'

> locative: *lèŋɻ**ácé*** [lèŋɻ**ɜ́ʒé**] 'surprise s.o. (tr.)'

(48) Intransitive construction

a. */tEkɗ/- [basic verb unknown]

> locative: *tìkɗ**écí*** [t̪ìgɗ**ɛ́ʒí**] 'be about to give birth (intr.)'

b. *úurì* 'be much'

> locative *ùur**ècí*** [ùuɾ**èʒí**] 'cover the entry to one's hole with earth so that it may go undetected (of a mouse) (intr.)'

This intransitive use of locatives is at sharp variance with the more dominant TRANSITIVE property, which has been considered as a component of the semantic core of the locative extension. The explanation seems to go along the lines of what has been said above about intransitive V_H-causatives and malefactives (see SECTION 2.2): locative intransitives are used with extended verbs whose basic verb is not synchronically attested (48a), and/or when the object is contextually so obvious that it may be covert (48b).

(ii) Malefactive extensions are rather frequently used in EXPERIENCER constructions (12%; see (49)), a fact that was not explicitly recognized in Quint (2010), although some typical examples of EXPERIENCER constructions appear in the study (ex. 43, p. 308 and ex. 48, p. 309).

(49) Experiencer construction

a. *éurì* 'be light'

> *éurì**tè*** [ɛ́uɾì**ðè**] 'be easy to carry **for s.o.**' (= 'be light **to s.o.**')

b. *ráarè* 'suffer, hurt, be painful'

> *ráarè**tà*** [ráarè**ðà**] ‘hurt **s.o.**’ (= ‘be painful **to s.o.**’)

Secondly, the distinction between PLACE and SPATIAL RELATION is somewhat fuzzy, as the notion of SPATIAL RELATION overlaps with the more general notion of PLACE. This explains why PLACE is the most frequent property associated with both locative (69%) and malefactive (52%) extensions.

Thirdly, the use of some elements in a given construction seems to be strongly correlated with a given property. Such is the case of the ‘heavy’ postposition *-náanà* ‘over’, which is clearly associated with SPATIAL RELATION (50):

(50) *-náanà* ‘over’

*/kOɽb/- [basic verb unknown]

> *kùɽb**ècí*** [kùɽb**èʒí**] ‘cover sth. with sth. else’, exemplified in (51).

(51) *kwé-kùɽb-**ècí*** *ètnêeá* *kèrété* ***-náanà***
CL-cover-**LOC**.IPFV.CFG food.O cloth.O over
‘S/he will cover the food with a cloth.’

Here the verb conveys a SPATIAL RELATION affecting its patient (‘the food’); the postposition *-náanà*, which expresses the notion of SURFACE CONTACT, contributes to underlining this spatial relation.

This short investigation into the semantics and syntactic behavior of two Koalib verb extensions has shown that the properties defining each verb extension cannot be easily stated, nor can they easily be told apart. Rather, each extension seems to combine a certain number of properties whose relative importance varies according to the meaning of the basic verb a given extension associates with.

2.6.2 Overlap between extensions: associative and reciprocal

In SECTION 2.6.1, we saw that different verb extensions may share some of their defining semantic or syntactic properties, and that the contents of such defining properties may actually overlap. In this subsection, we shall see that, in some cases, this property sharing may lead to complete overlap between two different verb extensions.

If we apply the notion of ‘core meaning’ discussed above to associative and reciprocal (leaving aside the cases where their actual meaning is quite distant from this core meaning), it is possible to say that:

> the associative extension implies the fact of DOING SOMETHING **TOGETHER** and

the reciprocal extension implies the fact of DOING SOMETHING **TO EACH OTHER**.

These core meanings are quite similar to each other. They logically imply:

a PLURAL SUBJECT, as one cannot be alone in order to do something TOGETHER or TO EACH OTHER and

a kind of INTERACTION between the several subject participants.

This being said, it is no surprise that the meaning of both extensions may completely overlap in some instances. Some associative extended verbs have a clearly RECIPROCAL meaning (see (37) above) and, in some cases, both extensions seem to be used as exact semantic equivalents of each other (52):

(52) *èlŋé* 'beget/deliver (child)'

> associative: *èlŋàté* [èlŋàðé] 'interbreed, have children together (two communities)'

= reciprocal: *èlŋàtècé* [èlŋàðèʒé]

However, this semantic overlap between the two extensions is far from being generalized and, in other instances, each extension maintains its semantic identity (53):

(53) *tòoké* [t̪òogé] 'stab'

> associative: *tòokòté* [t̪òogòðé] '**fight** each other (with any weapon)'[33]

≠ reciprocal: *tòokàtècé* [t̪òogàðèʒé] '**stab** each other'

2.6.3 Shared semantics between extended verbs derived from the same basic verb

Some Koalib basic verbs may be derived into as many as ten different extended verbs. Usually, at least a component of the original meaning of the basic verb is retained in each of these derived forms. These 'extended families' are particular conspicuous regarding the use of ideophones (or specific adverbial modifiers): in many cases, all or most extended verbs derived from

[33] The above translation of *tòokòté* suggests a reciprocal meaning. However, this impression could be a translational artifact. One may assume that the basic meaning of *tòokòté* is 'fighting TOGETHER', or maybe even 'stabbing TOGETHER' (i.e., a fundamentally associative meaning) if we consider the meaning of the basic verb *tòoké*, although, at the same time, the lexical meaning of the basic verb necessarily implies a certain degree of RECIPROCALITY in the interpretation of the associative extension.

the same basic verb share with it the same ideophone(s) (see (54), taken from Quint (2018b: 191-192)).

(54) *pèrttɛ́* [fɛ̀rt̪ɛ́] 'sweep/gather sth.' (basic verb)

> -*nnE* (reflexive): *pèrttà**nné*** [fɛ̀rt̪à**nné**] 'cover **oneself** with sth.'

> malefactive (applicative 2): *pértt**àtà*** [fɛ́rt̪**àðà**] 'put sth. **somewhere**'

> benefactive (applicative 1): *pírttì**ccí*** [fɪ́rt̪ì**ccí**] 'sweep sth. **for** s.o.'

> -*nnE* (passive) *pìrttì**nní*** [fɪrt̪ì**nní**] '**be** swept/gather**ed**'

All members of *pèrttɛ́*'s extended family (i.e., the basic verb and its entire set of extensions) can combine with the intensive ideophone ***ppérèt-(ppèrèt)***, which highlights the ENERGY or the EFFICIENCY with which the action conveyed by the intensified verb is performed.

The fact that the basic verb and its extended forms share (or must historically have shared) a common semantic element can also be used to produce an internal reconstruction of the original meaning of a given verb (55).

(55) *àmɽɛ́* 'love, like' (basic verb)

> reciprocal: *àmɽà**tècé*** [àmɽà**ðèʒé**] 'love **each other**'

> excessive: *àmɽà**ttɛ́*** 'not be enough (for s.o.), not be full, be incomplete'

> malefactive (< concatenated extension = excessive + malefactive): *ámɽèttètà* [ámɽèẗ̪t̪è**ðà**] 'not be enough **for** s.o.'

> -*nnE* (reflexive): *àmɽà**nné*** 'want more of sth. (food), not have eaten enough of sth.'

> V_H-causative (< concatenated extension = -*nnE* + V_H-causative): *èmɽè**nní*** 'eat more than one's share (from a collective plate of food), not leave enough food for s.o. else'

In today's Koalib, *àmɽɛ́* basically expresses the fact of 'loving/liking', i.e., 'having positive feelings towards s.o. or sth.' The reciprocal extension *àmɽàtècé* 'love each other' clearly conveys the same meaning. However, the remaining extensions refer to another notion, namely the fact of 'lacking, not being/having enough' or 'being short of'. The best way to explain this contrast

is probably to admit that this notion of LACK was originally present in the basic verb itself, which must have meant 'miss s.o. or sth.' (= 'not have enough of s.o. or sth.') before evolving into its more abstract meaning of 'love/like'.

2.7 Borrowed verbs

Few verbal roots have recently been imported from other languages into Koalib (Quint 2018a: 198). However, some Arabic- and English-derived verbs are attested. Regarding verb extensions, two different strategies are observed:

(i) The borrowed verb is reanalyzed as a basic verb, in which case it may be extended like Koalib aboriginal verbs (56):

(56) Sudanese Arabic *ḥákam* 'rule, judge'

> Koalib *àkkèmé* 'judge (s.o.), sentence s.o.' (basic verb), from which are derived:

benefactive extension: *ɛ́kkìmccí* [ɛ́kkìm**cí**] 'sentence s.o. **having a relationship with** s.o. else' (e.g., 's.o.'s child')

-*nnE* (passive) extension: *àkkèmné* '**be** judg**ed**/sentenc**ed**'

(ii) The ending of the borrowed verb is formally close to an existing verb extension. In this case, the borrowed verb is considered as an extended verb without an attested basic verb (a frequent situation in contemporary Koalib; see Quint (2010: 301-302) and examples (28), (31), (48a) and (50) above). This extended status does not prevent the newcomer from producing extended forms of its own through the process of concatenation (see SECTION 2.4.2 above) (57):

(57) English *baptize* [bæpˈtaɪz]

> Koalib *bàpʈʈàcé* [bàfʈàʒé] 'baptize s.o.' (locative extension), from which are derived:

benefactive extension: *bápʈʈàccé* [báfʈà**cc**é] 'baptize s.o. **having a relation with** s.o. else'

-*nnE* (passive) extension: *bàpʈʈàcné* [bàfʈàʒ**né**] ~ *bàpʈʈànné* [bàfʈà**nné**] '**be** baptiz**ed**'

Note that the only attested verb extensions combining with borrowed verbs are the benefactive and -*nnE*, which confirms the fact that these two extensions are the most productive in the present state of the Koalib language (see also SECTIONS 2.3 and 2.5.1).

3 Derivation vs. inflection: defining verb extensions

After having dealt with the different verb extensions, two questions arise, which will be dealt with in turn in this section:

(i) How to draw the line between verb extensions (whose morphology clearly belongs to the realm of derivation) and other comparable forms of the Koalib verb, in particular frequentative and pluractional?

(ii) What exactly is a basic verb and how is it possible to distinguish it from its extended counterparts?

3.1 Frequentative and pluractional forms

Two forms of the Koalib verb paradigm display many similarities with verb extensions: frequentative and pluractional.

3.1.1 Frequentative

The Koalib frequentative expresses the fact that the action conveyed by the verb is performed often and/or repeatedly.

(58) *dùukí* [dùugí] 'dig sth. (e.g., ground) with one's snout (pig)'

> *dùkkùkkí* 'dig **often**'

The frequentative form is usually produced by geminating a simple internal consonant of the verb stem (Quint 2009: 81, 94, 98; 2006: 91, 104, 108) and repeating at least twice the syllable with the new geminate (58)-(59). In some instances, the frequentative is produced through the repetition of the first syllable of the verb, in which case the initial consonant is geminated in the new replica (see (60)-(61), (64)) and sometimes articulated in a slightly different way (62). Sometimes a geminated consonant is introduced at the end of the verbal stem (63). Although frequentatives are much more commonly produced from centrifugal imperfectives, they are also attested with other aspect-motion stems (65)-(66).

We contend that frequentatives cannot be considered to be verb extensions, for the following reasons:

(i) As shown with examples (59)-(66) in TABLE 14, Koalib frequentatives are not characterized by a specific suffix (such as those found in all verb extensions except V_H-causatives) or vowel alternation (as in V_H-causatives).

EXAMPLE	ASPECT-MOTION	VERB	MEANING	FREQUENTATIVE
(59)	IPFV.CFG	*òoné*	'harvest'	*òn**n**òn**né***
(60)	IPFV.CFG	*yèɛ́*	'eat'	*yè**yy**ɛ́*
(61)	IPFV.CFG	*bèɐlí*	'thread (beads)'	*bè**bb**ìlí*
(62)	IPFV.CFG	*bùrlí*	'jump'	***pp**ù**pp**ùrlí*
(63)	IPFV.CFG	*élŋè*	'know'	*élŋè**ŋŋ**è*
(64)	IPFV.CFG	*káttò*	'drop, throw'	*ká**kk**èttò*
(65)	PFV	*kèttù*		***kk**è**kk**ìttù*
(66)	IPFV.CPT	*kàttà*		*kà**kk**èttà*

TABLE 14: Some Koalib frequentative forms

(ii) As shown in TABLE 15, frequentative forms can be produced both from basic verbs and extended verbs, i.e., the morphology of the frequentative seems to be independent from verb extensions and to belong to another dimension of the Koalib verb morphology.

EXTENSION	VERB	MEANING	FREQUENTATIVE
basic verb	*èkɽé*	'gallop (horse)'	*è**kk**è**kk**èɽé*
locative	*èkɽàcé*	'make sth. (horse) gallop'	*è**kk**è**kk**èɽàcé*
V_H-causative	*ìkɽí*		*ì**kk**ì**kk**ìɽí*
benefactive	*íkɽìccí*	'make sth. (horse) run for s.o.'	*í**kk**í**kk**íɽìccì*
-*nnE* (passive)	*ìkɽìnní*	'be galloped (horse)'	*ì**kk**ì**kk**ìɽìnní*

TABLE 15: Frequentative forms of the Koalib basic verb *èkɽé* 'gallop (horse)' and of its attested extended verbs

(iii) In contrast to all attested verb extensions, frequentatives are not characterized by a specific tone melody. Rather, frequentative forms maintain the tone melody of the original form they modify. If we look at TABLE 15, we can see, for example, that the benefactive *íkɽìccí* |HLH| generates a frequentative with a tonal melody |HHHLH|, where the initial high tone typical of applicatives is maintained. Similarly, the melodies associated with both the -*nnE* extension *ìkɽìnní* |LLH| and its frequentative *ìkkìkkìɽìnní* |LLLLH| remain faithful to the general formula $(L)_nH$ (see SECTION 2.1) valid for all non-applicative extended verbs.

It therefore appears safer to assume that, unlike verb extensions, the frequentative forms of the Koalib verb belong to the domain of inflection (like, for example, aspect-motion forms) rather than derivation.

3.1.2 Pluractional

Pluractionality is a feature present in Koalib verbal morphology: a specific form of the verb can express the number of times an action is performed (67) or the number of the subject (68) or of the object (69) of the verb. In most cases, pluractional verbs are produced in a way similar to frequentatives, i.e., resorting to the gemination of one consonant of the basic verb:

(67) *òopé* [òové] 'shoot/explode once (rifle, canon)'

> pluractional: *òppé* [òppé] 'shoot/explode **several times** (= 'more than once')

(68) *àaɽé* 'go back (somewhere) [singular subject]'

> pluractional: *àntɽé* [à**nd**ɽé][34] 'go back **[plural subject]**'

(69) *ɔ̀ɔpɛ́* 'split sth. [singular object] open'

> pluractional: *ɔ̀ppɛ́* 'split sth. **[plural object]** open'

This similarity between pluractional and frequentative is understandable, as the fact of performing an action OFTEN or REPEATEDLY (frequentative) necessarily overlaps with the fact of associating an idea of PLURALITY with the action (pluractional).

Nevertheless, a few pluractionals exhibit a specific morphology different from that of the frequentative. In such cases, the pluractional form contrasts with the basic singular verb through the insertion of an extra consonant (70), the use of a -/ccE/ suffix (71)-(72)[35] or a partial (73) or complete suppletion (74) of the verb root.

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[34] In Koalib, the sequence *nt* [nd] has been shown to be the functional equivalent of a geminated [ɽ] (Quint 2006: 90-91; 2009: 81).

[35] In spite of the fact that the pluractional suffix *-ccE* has basically the same shape as the benefactive (applicative 1) suffix (see SECTION 2.1), the tonal melody associated with each extension is different and the two forms are therefore distinct: compare the benefactive *érmèccé* |HLH| 'hit s.o. related with s.o. else by means of sth.' with the pluractional *èrmèccé* |LLH| described in (72).

(70) *ìidǐ* 'fall **once**'

> pluractional: *ìrdǐ* 'fall **several times** [singular subject] or **one after another** [plural subject]'

(71) *àó ~ àoé* 'land (bird) [singular subject], shoot **once** at s.o./sth. (animal)'

> pluractional: *àccé ~ àòccé* 'land **several times** [singular subject] or land **[plural subject]**, shoot **several times** at s.o./sth. [singular object] or shoot at s.o./sth. (**several** people/animals) **[plural object]**'

(72) *èrmé* 'hit s.o. **once**'

> *èrmèccé* 'hit s.o. **several times**'

(73) *ímtè* [ímðè] 'catch sth./s.o. [singular or plural object]'

> *òmmé* 'catch sth./s.o. **[plural object]**'

(74) *dìmmé* 'pick sth. up (off the floor) [singular object]'

vs. *òtté* 'pick sth. up **[plural object]**'

Examples (70)-(74) are the only clear cases showing the existence of a distinctive pluractional morphology in Koalib. Note that, in addition to their reduced number, these pluractional forms, like frequentatives, fail to be characterized by a regular morphological pattern, in contrast with the verb extensions described in SECTION 2. Synchronically, these five irregular pluractionals are therefore probably better treated in Koalib as lexical exceptions rather than as a specific verb extension.

3.2 Basic verbs

The label 'basic verb' is supposed to be applied to verbs that are not extended forms of any other verb. In our database, 406 verbs comply with this requirement. Note that approximately 30 originally frequentative or pluractional forms are considered to be basic verbs, particularly when their meaning significantly differs from the uninflected corresponding basic form (75):

(75) *àapé* [àavé] 'bring sth., receive sth., take sth. over'

> *àppé* [àppé] 'carry sth., support sth.'

Within the scope of this study, although *àppé* is almost certainly formed from *àapé* (through a mechanism of frequentative or pluractional inflection), *àapé* and *àppé* are both treated as basic verbs.

However, even leaving aside the question of the originally frequentative/pluractional forms, it is quite plausible that some members of the basic verb category are in reality extended verbs whose actual basic form was lost:

(i) We have seen in TABLE 4 in SECTION 2.1 that the percentage of basic verbs whose vowels belong to the high vowel set (V_H, i.e., /i, ɐ, u/) is significantly lower (29%) than the corresponding percentage among the whole sample of Koalib verbs (48%). This is probably because many verbs with high vowels complying with the well-formedness requirement of basic verbs (see SECTION 2.5.1) are actually V_H-causatives (see SECTION 2.1.1).

(ii) A clue to identifying 'hidden' V_H-causatives is the fact that their perfective aspect-motion stem ends with an -/A/ (see SECTION 2.1.1).

As shown in TABLE 16, the percentage of -/A/ perfectives is higher (37%) among basic verbs whose vowels belong to the high set (i.e., the set that characterizes V_H-causatives) than among basic verbs whose vowels belong to the low set (22%).

			-/A/ PERFECTIVE	
VOWEL SET		TOTAL	NUMBER	%
High (V_H)		119	44	37%
of which:	intr.[36]	56	16	29%
	non-intr.	63	29	46%
Low (non-V_H)		287	62	22%
of which:	intr.	151	31	21%
	non-intr.	136	31	23%

TABLE 16: Percentage of basic verbs whose perfective ends in -/A/ according to the vowel set of their stem and their degree of transitivity

Furthermore, if we take into account the degree of transitivity, we see that non-intransitive verbs with high vowels have a significantly higher percentage of -/A/ perfectives (46%, i.e., close to half) than the other categories of verbs in TABLE 16. As V_H-causatives are typically transitive, this seems to indicate that a certain number of verbs considered throughout this study as basic, especially among those with high vowels, transitive constructions and an -/A/

[36] In TABLE 16, intr. means that at least one intransitive construction or meaning is attested for a given verb; non-intr. means that there is no intransitive construction or meaning attested.

perfective (such as (76)-(78)), are probably V_H-causatives, although it is not possible to definitely prove this in the actual state of the Koalib language.

(76) *ìtí* [ìiðí] (perfective: *ìitɛ̀*) ‘trap sth. (animal), catch sth. with a trap’

(77) *kùukí* (perfective: *kùukɛ̀*) ‘scrub sth. (scalded pig) in order to remove the burnt hair, scale sth. (fish)’

(78) *ŋɛ̀ɛŋí* (perfective: *ŋɛ̀ɛŋɛ̀*) ‘scratch s.o. or s.o.’s body part’

4 A comparative insight

4.1 Verb extensions: a Kordofanian, Nuba or Niger-Congo feature?

Hyman (2020) has convincingly shown that many of the most typical verb extensions attested in Koalib have close semantic equivalents not only in other Kordofanian languages but also in non-Kordofanian Nuba languages (belonging to the Nilo-Saharan phylum) and in other branches of Niger-Congo (see for instance Schadeberg & Bostoen (2019) for more details on Bantu verb extensions). In spite of the still limited amount of data available on Kordofanian languages, what we know now is enough to assert the following:

(i) Koalib verb extensions often closely match, both semantically and segmentally, their equivalents in the other languages of the Heibanian family (see TABLE 17 for the passive/reflexive, where all attested Heibanian forms share an /n/ element). As these languages are known to be closely related, these shared extensions are most probably cognates and some protoforms could easily be reconstructed for Heibanian.

(ii) At higher levels of the phylogenetic tree (for instance when comparing Koalib with languages belonging to other branches of Kordofanian, such as Katloid or Talodian), the semantics and derivational mechanisms of verb extensions still resemble those of Koalib; for example, Smits (2017: 560-563 – ‘combinations of derivational suffixes’) and Vanderelst (2016: 105-107 – ‘extension combinations’) describe the phenomenon of concatenated derivation in Lumun and Dagik (both Talodian languages) respectively, in a way very similar to what has been explained here for Koalib in SECTION 2.4.2. However, the segmental shapes of the actual extensions are far more diverse (see TABLE 17) and the reconstruction of proto-Kordofanian extensions appears, at least for now, a much riskier enterprise.

KORDOFANIAN BRANCH	LANGUAGE	BEN-SUFFIX	NAME	SOURCE
Heibanian	Koalib	-/(V)**nn**E/	causative/ immediate/ passive/ reflexive	Quint & Manfredi (2020: 12-13), Quint (2020: 249-251)
Heibanian	Koalib	*-(i)**n**ɛ, -(i)**n**i*	passive/ reflexive	Stevenson (1957: 29)
Heibanian	Moro	-/ə**n**/	passive/ reflexive	Rose (2013: 49-50)
Heibanian	Tira	*-i**n**o, -i**n**ɛ*	neuter-passive/ reflexive	Stevenson [1942] (Schadeberg 2009: 82-83)
Heibanian	Otoro	*-i**n**u, -i**n**i, -i**n**o*	passive/ reflexive	Stevenson [1943] (Schadeberg 2009: 282-284)
Heibanian	Heiban	*-(i)**n**u, -(i)**n**i*	passive/ reflexive	Stevenson (1957: 29)
Talodian	Dagik	-/**k**ː/-, -/a**k**ː/-, -/ə**g**/-	middle voice	Vanderelst (2016: 100-103)
Talodian	Masakin (Darra)	*-a(a)**k**ɔ*	passive	Stevenson (1957: 38)
Talodian	Talodi	*-ɔ**k**, -o**k***	passive	Stevenson (1957: 38)
Talodian	Lumun	-/(a)**k**ɔ/ ~ -(V)tta ~ -/(ʊ)ra/	passive	Smits (2017: 529-549)
Katloid	Tima	(a) -*A**k***; (b) -*V**k***	(a) antipassive; (b) causative/ passive	Alamin (2012: 112, 118), Schneider-Blum (2022: 6, 10, 19-24)[37]

TABLE 17: Attested forms of the passive/reflexive verbal suffix in Koalib and other Kordofanian languages

[37] Note that Schneider-Blum (2022: 10) mentions that the Tima antipassive "may convey a (…) reflexive notion".

(iii) Some Koalib extensions and associated values seem not to have been mentioned in the available literature on verb extensions in Kordofanian. This is the case of the excessive and the immediate. Furthermore, the distinction between the associative and the reciprocal also seems to be quite rare, and the same applies for the locative and the applicative 2. These apparent Koalib idiosyncrasies are probably at least partly due to a general challenge for Kordofanian studies: the scarcity of linguistic data, which considerably limits comparative and reconstruction approaches.

4.2 A first comparison between Koalib and Werni verb extensions

In order to take advantage of new, unpublished data, we have decided to devote a short subsection to the comparison of Koalib and Werni verb extensions. According to Schadeberg (1981: 109-115), Koalib belongs to the central sub-branch of Heibanian, whereas Werni belongs to the eastern sub-branch of the same grouping. Our own research on Werni (fieldtrips made by Quint both in situ (2008) and in the region of Khartoum (2019, 2021, 2022)) suggests that this language is in many respects an outlier within the Heibanian branch, displaying various features divergent from all the rest of its sister languages. The commonalities shared between Koalib (a rather prototypical Heibanian language) and Werni regarding their verb extension systems (see TABLE 18) therefore have particular typological and historical interest within the scope of Heibanian studies.

The data selection shown in TABLE 18 (see examples (79)-(85)) allows us to draw several important inferences about the relationship between Koalib and Werni, especially regarding their verb extensions:

(i) In spite of the fact that Koalib and Werni are not mutually intelligible, they clearly share an important number of lexical roots (e.g., ‘burp, cut, kill, sing, be sour’).

(ii) Some verb extensions are obviously cognates, as they display both formal and semantic similarities: reciprocal (79), reflexive (80) and applicative 2 (82).

(iii) In some cases, Werni makes distinctions that are not found in Koalib:

> The passive /r/ marker (81) is formally distinguished from the reflexive /n/ marker (80) shared with other Heibanian languages; see TABLE 17 above).

Another applicative (perhaps related to the Koalib associative; see TABLE 2) seems to assume certain functions of the Koalib malefactive (applicative 2; see (85)).

EX.	LAN-GUAGE	BASIC VERB		EXTENSION		
		FORM	MEANING	TYPE	FORM	MEANING
(79)	Koalib	*èɽnyé ~ ɽèɛnyé*	‘kill’	reciprocal	*èɽnyà**tècé*** [èɽnà**ðèʒé**]	‘kill **each other**’
	Werni	*áarány*			*árnyá**téðé*** [áɾɲá**t̪éðé**]	
(80)	Koalib	*èɛcé*	‘see, look’	reflexive	*èecà**nné***	‘look **at oneself**’
	Werni	*èí*			*èí**né***	
(81)	Koalib	*èlŋé*	‘sing’	passive	*èlŋè**nné***	‘**be** sung’
	Werni	*ŋòrŋè*			*ŋòrŋàa**rè***	
(82)	Koalib	*kèdrí*	‘burp’	applicative 2 (male-factive)	*kédrì**tè*** [kɛ́dɾì**ðè**]	‘burp **at** s.o.**’s face**’
	Werni	*kíiré*			*kíié**tá*** [kíiɾé**t̪á**]	
(83)	Koalib	*ɔ́ɔlè*	‘be sour’	causative	***ùulí***	‘sour sth.’
	Werni	*àolá*			*éulí**cí***	
(84)	Koalib	*nyìimí*	‘steal sth.’	benefactive	*nyíimì**ccí***	‘steal sth. **for** s.o.’
	Werni	*ŋáccí*			*ŋé**ccí***	
(85)	Koalib	*ùuɽí*	‘cut sth.’	applicative 2	*úuɽè**tè*** [úuɽè**ðè**]	‘cut sth **belonging to** s.o.’
	Werni	*uuru*		applicative	*ɐuru**ði***	

TABLE 18: Comparable verb extensions in Koalib and Werni (Heibanian)

(iv) Still in other cases, the values of the extension markers seem to have been swapped:

The Koalib benefactive (84) is marked by a suffix -/ccE/ (‘steal’), whereas Werni resorts to vowel heightening (V_H).

The reverse situation obtains for the causative (83), where Koalib frequently uses vowel heightening (V_H) as an extension marker, whereas Werni uses a suffix -/ci/, which might well be related to the

Koalib benefactive suffix -/ccE/, given the considerable phylogenetic proximity between the two languages.[38]

A possible explanation for this swap between causative and benefactive in the two languages could be the fact that both extensions trigger an increase (+1) of the valency of the basic verb (see SECTION 2.2) and the addition of a new object to the non-derived original construction. The plausibility of this swap is strengthened further by the fact that, in today's Koalib, there is at least one case of an extended verb (86) with a -/ccE/ suffix and a clearly causative meaning (Quint 2010: 303; Hyman 2020: 29):

(86) *yìí* 'drink sth.'

> *ìccí*[39] 'give s.o. sth. to drink' (i.e., '**make** s.o. drink sth.')

Although our sample of Werni verbs is much smaller (217 items) than our Koalib database, another difference between the two languages deserves to be mentioned: the most frequent verb extension in Werni seems to be the causative (at least 16 occurrences). Considering the fact that Werni causatives (suffix -/ci/) could reasonably be historically related to Koalib benefactives (suffix -/ccE/) and that benefactive is indeed the most frequent verb extension in Koalib (see SECTION 2.3), this could mean that proto-Heibanian *-/(c)cE/ is (or used to be) the most productive verb extension, independently of its original semantic value (which is yet to be reconstructed using data from more Heibanian languages).

5 Conclusion

Alongside noun classes, verb extensions are generally considered to be one of the two main markers of 'Niger-Congo-ness' (Quint 2020: 249-251). Koalib certainly provides a good example of a well-developed system of verb extensions in Kordofanian. In this paper, we have described and discussed in some detail the main characteristics associated with the verb extensions of one language. While we are fully conscious that this study is far from exhausting the subject, given the high number of Koalib extended forms, the complexity of their morphology and the still richer nuances of their semantics, we hope at least to have provided enough material to enable other researchers to make fruitful comparisons between Koalib and other languages (whether related or not) displaying varied arrays of verb extensions.

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[38] The degree of similarity between Heibanian languages is comparable to the relationships existing between the members of the Germanic family or between those of the Romance family (Quint 2020: 241).

[39] For the specific tonal profile of *ìccí*, see Quint (2010: 303).

If we turn now towards Kordofanian, the Nuba languages and Niger-Congo, the few comparative data we have presented above clearly show that it is possible to reconstruct protoforms of verb extensions for the different branches of Kordofanian and then, in a second stage, for the whole Kordofanian family (e.g., Katloid and Talodian seem to share a /k/ element in their passive/reflexive extensions, according to TABLE 17). This bottom-up, step-by-step process of reconstruction is an absolute prerequisite in order (i) to check the validity of the Niger-Kordofanian hypothesis (Greenberg 1970 [1963]) by comparing Kordofanian protoforms with other reconstructed verb extensions in the remaining subdivisions of Niger-Congo, and (ii) to assert, by comparison with other non-Kordofanian Nuba languages, whether the characteristics of some Kordofanian verb extensions may be due to areal (viz. phylogenetic) dynamics.

In all events, for the time being, what we need most in order to make progress in this type of comparative approach is to increase the amount of data available for Koalib and for the other languages spoken in the Nuba Mountains. Descriptive linguistics is definitely the only way to unravel the mystery of the origins and historical evolution of the many languages that render the linguistic landscape of Southern Kordofan so fascinating and unique.

List of abbreviations

A	central vowel (/ɐ, a/)	non-intr.	no attested intr. construction
AMS	aspect-motion stem	O	object (argument)
ASSOC	associative	O	object case
BEN	benefactive	O	back vowel (/u, o, ɔ/)
CAUS	causative	penult. ext.	penultimate extension
CFG	centrifugal	PFV	perfective
CL	class marker	PL	plural
CPT	centripetal	PN	proper name
ditr.	ditransitive	POSS	possessive
E	front vowel (/i, e, ɛ/)	REC	reciprocal
EXC	excessive	S	subject (argument)
H	high tone	S	subject agreement marker
INSTR	instrumental	SG	singular
intr.	intransitive	tr.	transitive
IPFV	imperfective	V	verb/vowel
L	low tone	V_H	high vowel (/i, ɐ, u/)
LOC	locative		
MAL	malefactive		

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Umbadda (Omdurman) – Sudanese mural art
(photos: Nicolas Quint, 2016/2019)