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Multiple Adnominal Modification in Dinka: Chaining Construct States

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In Dinka, a Western Nilotic language, most adnominal modifiers follow the head noun. Before most of these modifiers, the head noun is in one of two construct states. One construct state, CS1, occurs before, among others, demonstratives, nominal possessors and relative clauses as CS1-modifiers. The other construct state, CS2, which is morphologically more complex, occurs before, among others, possessive pronouns, a few numerals and a diminutivizer as CS2-modifiers. When a construct-state triggering modifier is added to a CS2-modifier, the latter itself gets construct state marking, and the head noun changes from CS2 to CS1. Some CS1-modifiers also get construct state marking when followed by a construct-state triggering modifier. Multiple adnominal modification in Dinka may thus result in a chain of construct states, which is similar to what is found in Iranian languages with so-called ezafe marking.

Keywords: Dinka, Western Nilotic, adnominal modification, construct state, ezafe

1. Introduction

In Dinka, a Western Nilotic language spoken in South Sudan, a noun may be in a morphologically marked construct state, which indicates that it is followed by a modifier, while an unmodified noun is in the morphologically unmarked absolute state (Andersen 2002). There are two morphologically distinct construct states, *First Construct State* (CS1), which is triggered by one set of modifiers (*CS1-modifiers*), and *Second Construct State* (CS2), which is triggered by another set of modifiers (*CS2-modifiers*).[1] The present article deals with noun phrases in which the head noun is followed by more than one modifier. It is demonstated that some modifiers themselves get a construct state when followed by another modifier and that this may also affect the form of the head noun. Such constructions seem typologically similar to chains of Ezafe-marked words in Iranian languages.[2]

A noun or noun phrase in Dinka is in one of four cases. The *Nominative* is morphologically unmarked and is the citation form. It is used in clause-initial position before the finite verb whether the NP is subject, object or adverbial. It is also used postverbally as object and as complement of most prepositions; for a description of the order of clausal constituents in Dinka, see Andersen (1991, 2019). The *Genitive* is used as possessor and as postverbal subject. The remaining two cases have spatial meaning and are used with adverbial function in clause-final position: The *Allative* expresses a goal, and the *Essive/Ablative* expresses a location or a source; when they syncretize, I call them *Locative*. The description of construct state inflection given in Andersen (2002) is restricted to NPs that occur in Nominative positions, while Andersen (2016) describes state

[1] Following Comrie (1976: 10), I use initial capitals for names of language-particular grammatical categories.

[2] This article is based on fieldwork carried out during a number of trips to South Sudan and Sudan between 1984 and 1995 and again in 2009. I gratefully acknowledge financial support from the Danish Research Council for the Humanities and from the Nordic Africa Institute. I also wish to thank my principal Dinka informants Isaac Maker, Kuyok Abol Kuyok, David Daniel Marial and Peter Gum Panther for their assistance. In addition, I wish to thank an anonymous reviewer for useful comments on an earlier version of this article.

inflection in the three other case positions, showing how case marking interacts with state marking. The present article deals with multiple adnominal modification in Nominative positions only. It remains to be seen how non-Nominative positions affect the expression of construct states in such constructions. The variety of Dinka described here is the Agar dialect.

The article is organized as follows. Section 2 summarizes the facts of construct state marking described in Andersen (2002) and provides information on postverbal modifiers that do not trigger a construct state and on prenominal modifiers. Section 3 examines constructions in which a CS2-modifier is followed by an additional modifier. Section 4, correspondingly, examines constructions in which a CS1-modifier is followed by an additional modifier. Section 5 shows that an NP may contain more than two postnominal modifiers, which may lead to longish chains of construct state forms, and it exemplifies some of the restrictions on and variations in the order of postnominal modifiers. Section 6 points out some typological similarities of multiple adnominal modification in Dinka with such constructions in Iranian languages and Dogon languages. Section 7 concludes the article.

My transcription of Dinka basically uses IPA. Thus, while /ɟ/ is a voiced palatal stop, /j/ is a palatal glide; but /t̪, d̪, n̪/ have interdental rather than dental point of articulation. Dinka has three constrastive vowel lengths, here distinguished by the number of vowel symbols: short /a/, long /aa/, and overlong /aaa/. In addition, there is a binary phonation contrast in vowels: non-breathy (modal or creaky) /a̰/ and breathy /a̤/. Moreover, Dinka is a tone language, and the Agar dialect has three contrastive tones: high /á/, low /à/, and falling (i.e. high-low) /â/.[3] Phonation and tone diacritics are placed on the first symbol in a sequence of vowel symbols.

A "(t.)" following the translation of an example indicates that the example is from my text corpus rather than elicited. In the interlinear translation of examples, brackets indicate phrasal boundaries (but phrasal boundaries are not always indicated).

2. Construct states and adnominal modifiers

2.1. Formation of the construct states. Most nouns in Dinka, whether singular or plural, are monosyllables with the shape C(w)(j)V(V)(V)C; that is, they begin with a consonant, optionally followed by one or both of the glides /w/ and /j/ (in that order), followed by a vowel which is short, long or overlong, and ending in a consonant. Another common noun type is disyllabic with /à̰/ before C(w)(j)V(V(V))C.[4] Very few monosyllabic nouns lack a root-final consonant, and they have the shape CV.

In the construct states, many singular nouns have either a suffix *-n* or traces of a former nasal suffix as an exponent of construct state. Firstly, the suffix appears as *-n* or *-ŋ* in the few nouns that end in a vowel, as seen in Table 1. The first column shows the absolute state form (ABS), and the next columns show the forms of First Construct State (CS1) and Second Construct State (CS2).

[3] However, it is uncertain whether there is a contrast between a high tone and a falling tone in short vowels. In such cases my choice of tone symbol (high or falling) reflects my perception in each individual instance.

[4] This /à̰/ is either a prefix, as in *à̰-lwɛ̰ɛ̰t̪* 'liar' derived from the noun *lwɛ̰ɛ̰t̪* 'lie' and as in *à̰-bṵur* 'cowless person' derived from the verb *bṵur* 'get cowless', or it is part of the root, as in *à̰gɟɔɔk* 'monkey' and *à̰lâa̰t̪* 'cloth'.

Table 1. Construct state inflection of singular CV nouns

ABS	**CS1**	**CS2**	
wa̱	*wé̱-n*	*wé̱-n, wá̱a-n*	‘son’
ɲa̱	*ɲa̱-n*	*ɲa̱-n, ɲa̱a-n*	‘girl’
ɟó̱	*ɟó̱-ŋ*	*ɟɔ̱́ɔ-ŋ*	‘dog’

For ‘son’ and ‘girl’ in Table 1, there are two alternating Second Construct State forms. The CS2 forms *wé̱n* ‘son’ and *ɲa̱n* ‘girl’ occur before possessive pronouns, as in *wé̱n=djè̱* ‘my son’ and *ɲa̱n=dè̱* ‘his daughter’, while the CS2 forms *wá̱an* and *ɲa̱an* occur before the numeral *tò̱k* ‘one’. Such alternations are rare.

Secondly, if the absolute state ends in a glide /w/ or /j/, then for many such nouns (but not all) the construct state suffix *-n* is added, while the root-final glide is deleted, as seen in Table 2. If the root vowel of the absolute state is short, then the deletion of the root-final glide normally causes compensatory lengthening of the vowel.

Table 2. Construct state inflection of singular nouns ending in a glide

ABS	**CS1**	**CS2**	
là̱j	*lâ̱a-n*	*lâ̱a-n*	‘animal’
à̱bwɔ̱̀ɔ	*àbwɔ̱̀ɔ-n*	*à̱bjà̱a-n*	‘net’
à̱ŋʉ̀ʉ	*à̱ŋʉ̀ʉ-n*	*à̱ŋwò̱o-n*	‘hyena’
ró̱w	*rô̱o-n*	*rwɔ̱̂ɔ-n*	‘thirst’
kò̱ɔ	*kò̱ɔ-n*	*kà̱a-n*	‘back’
tò̱w	*tó̱o-n*	*twɔ́ɔ-n*	‘death’
à̱bè̱e	*à̱bè̱e-n*	*à̱bè̱ɛ-n*	‘maize’
rjà̱aj	*rjá̱a-n*	*rjá̱a-n*	‘boat’
ɖjè̱eej	*ɖjé̱e-n*	*ɖjé̱e-n*	‘white ant’
pwó̱ow	*pwó̱o-n*	*pjá̱a-n*	‘heart’

Thirdly, if the absolute state of the noun ends in a stop, then for many such nouns (but not all) this stop is replaced with a homorganic nasal, which presumably reflects an original suffixal /n/ seen in the examples given above. Some instances are given in Table 3.

Table 3. Construct state inflection of singular nouns ending in a stop

ABS	**CS1**	**CS2**	
ljé̱p	*ljé̱m*	*ljê̱ɛm*	‘tongue’
à̱lâ̱at̪	*à̱lá̱n̪*	*à̱lá̱an̪*	‘cloth’
dí̱t	*dí̱n*	*djê̱ɛn*	‘bird’
mò̱c	*mò̱ɲ*	*mwɔ̱̀ɔɲ*	‘man’
ɖɔ̱̀ɔk	*ɖɔ́ɔŋ*	*ɖáan*	‘boy’
tʃi̱ik	*tʃí̱ŋ*	*tjê̱ɛŋ*	‘woman’

For nouns ending in a nasal in the absolute state, there is no trace of a nasal suffix, as illustrated in Table 4.

Table 4. Construct state inflection of singular nouns ending in a nasal

ABS	**CS1**	**CS2**	
dɔ̀m	*dɔ̀m*	*dwɔ̀ɔm*	‘field’
cwɪ̀in	*cwɪ́in*	*cwjɛ̀en*	‘porridge’
pɪ̀n	*pɪ̀n*	*pjɛ̀ɛn*	‘ground’
tɔ̀ŋ	*tɔ̀ŋ*	*tɛ̀aŋ*	‘spear’
wɔ́ŋ	*wɔ̀ŋ*	*wɛ̀ɛŋ*	‘cow’

In plural nouns, there is no trace of a nasal suffix in the construct state forms. Thus, plural nouns do not exhibit alternation in the root-final consonant. When First Construct State differs phonologically from the absolute state, the difference concerns vowel length and/or tone and/or occasionally also vowel quality. Examples are given in Table 5. For more details, see Andersen (2002).

Table 5. Construct state inflection of plural nouns

ABS	**CS1**	**CS2**	
lɛ̀aj	*lɛ̀aj*	*lɛ̀aj*	‘animals’
bɔ̀ɔc	*bɔ́ɔc*	*bɛ̀ɔc*	‘castrated bulls’
jɪ̀iɪ̯t	*jɪ́iɪ̯t*	*jjɛ́eɛ̯t*	‘ears’
rɪ́m	*rɪ̂m*	*rjɛ̂ɛm*	‘bloods’
tɔ̀ɔɔŋ	*tɔ́ɔɔŋ*	*tɛ́aaŋ*	‘spears’
kɔ́c	*kɔ̂ɔc*	*kɛ̂ac*	‘people’

There seems to be only one monosyllabic plural noun that ends in a vowel in the absolute state, namely the lexically plural noun *cɛ́* ‘milk’. This noun has the form *cɛ̂ɛk* in First Construct State, as in *cɛ̂ɛk=kɛ̀* ‘this milk’, and the forms *cɛ̂ɛk* and *cɛ̂ak* in Second Construct State, as in *cɛ̂ɛk ɟ̀i* ‘little milk’ and *cɛ̂ak=cjɛ̀* ‘my milk’. The added /k/ in the construct state forms suggests that suffixal /k/ was originally the plural counterpart of singular /n/ as an exponent of construct state.

Although the state category clearly has three members, there are many nouns that exhibit syncretism, as exemplified in Table 6.

Table 6. Syncretism in construct state inflection

ABS	**CS1**	**CS2**	
rjɛ̂ɛm	*rjɛ̂ɛm*	*rjɛ̂ɛm*	‘blood’
kɛ́aw	*kɛ́aw*	*kɛ́aw*	‘seed’
rɛ̀ap	*rɛ̀ap*	*rɛ̀ap*	‘sorghum’
ɛ̀gwɛ́ɔɟ	*ɛ̀gwɛ́ɔɟ*	*ɛ̀gwɛ́ɔɟ*	‘kind of bean’
tjɛ́ɛt	*tjɛ́ɛt*	*tjɛ́ɛt*	‘witch-doctor’

Tables 1–6 above also illustrate that Second Construct State (CS2) shares the changes made in First Construct State (CS1) relative to the absolute state and adds two changes on top of them. Firstly, a root vowel that is short in CS1 normally becomes long in CS2. For instance, CS1 *ɛ̀lɛ́ɲ* ‘cloth’ becomes *ɛ̀lɛ́aɲ* in CS2, and CS1 *dɪ́n* ‘bird’ becomes *djɛ̂ɛn* in CS2 (Table 3). Secondly, there may be a change in the quality of the root vowel in terms of the vowel grade system described in Andersen (1993, 2002) and according to which a root vowel may alternate morphophonologically between three grades as summarized in Table 7, taken from Andersen (2017: 9). For each root there is a basic vowel quality, Grade 1, from which Grades 2 and 3 may be derived. The table distinguishes between non-breathy vowels and breathy vowels, and between three phonological contexts for

Grade 1 vowels: not preceded by a postconsonantal glide, preceded by a postconsonantal /j/, and preceded by a postconsonantal /w/. In Grade 2 the basic vowel quality /a/ is raised and fronted to /ɛ/ or /e/, and in Grade 3 the other basic vowel qualities are either lowered or turned into a glide plus a lowered vowel. A root vowel that belongs to Grade 1 or 2 in First Construct State regularly changes to Grade 3 in Second Construct State. For instance, Grade 1 in CS1 *ɖ̰ɔ̰ɔŋ* 'boy' is changed to Grade 3 in CS2 *ɖ̰a̰aŋ*, and Grade 1 in CS1 *dı̰́n* 'bird' is changed to Grade 3 in CS2 *djɛ̰̂ɛn* (Table 3).

Table 7. Vowel grade system (simplified)

		Series												
		Without postcons. glide						**With postcons. /j/**			**With postcons. /w/**			
Non-breathy	Grade 1	ḭ	ḛ	a̰	ɔ̰	o̰		jḛ	ja̰	jɔ̰	wḭ	wḛ	wa̰	wɔ̰
	Grade 2	ḭ	ḛ	ɛ̰	ɔ̰	o̰		jḛ	jɛ̰	jɔ̰	wḭ	wḛ	wɛ̰	wɔ̰
	Grade 3	jɛ̰	ɛ̰	a̰	a̰	wɔ̰		jɛ̰	ja̰	ja̰	wjɛ̰	wɛ̰	wa̰	ja̰
Breathy	Grade 1	ḭ	ḛ	a̰	ɔ̰	o̰	ṵ	jḛ	ja̰	jo̰	wḭ	wḛ	wa̰	wo̰
	Grade 2	ḭ	ḛ	ɛ̰	ɔ̰	o̰	ṵ	jḛ	jḛ	jo̰	wḭ	wḛ	wɛ̰	wo̰
	Grade 3	jḛ	ɛ̰	a̰	a̰	ɔ̰	wo̰	jḛ	ja̰	ja̰	wjḛ	wɛ̰	wa̰	ja̰

The exponents of First Construct State may be both affixal, namely the nasal suffix, and non-affixal, primarily changes in the root-final consonant and in the length and the tone of the root vowel. Since Second Construct State shares these exponents and in addition may have two non-affixal exponents, namely vowel lengthening and Grade 3, it may be analysed as based on First Construct State and thus as involving two construct state morphemes, CS1 and CS2. This analysis will be used in the interlinear morphemic translation of examples.

2.2. Uses of the construct states. First Construct State of the head noun is used before the types of modifier exemplified in (1), among others: nominal possessors (1a), demonstratives (1b), the pronoun 'other' (1c), interrogative pronouns (1d), time particles (1e), adverbials (e.g. a noun in a spatial case) (1f), adjectival verbs as relative clauses (1g), and ordinary relative clauses (1h).[5] The examples use some of the head nouns shown in tables of Section 2.1.

(1) a. wɛ̰́-n ḛ̀ bà̰n
son.SG-CS1 [of chief.SG.GEN]
'the chief's son

b. dı̰́n =ḛ̀
bird.SG.CS1 =DEM1.SG
'this bird'

c. ɖ̰ɔ̰ɔŋ dà̰
boy.SG.CS1 other.SG
'another boy'

d. tı̰́ŋ nı̰́in
woman.SG.CS1 which.SG
'which woman?'

[5] Time particles used as modifiers mean 'aforementioned' and distinguish four degrees of temporal distance from the utterance time: *njɑ́* 'recent past of today' (P1), *wɑ́n* 'distant past of today' (P2), *wɛ̀ɛɛr* and *wɑ̀aar* 'earlier than last midnight' (P3), and *ɯ̰̀n* and *ɖ̰ɛ̀ɛɛr* 'long ago' (P4).

e. mɔ̀ŋ wà̰n
man.SG.CS1 P2
'the aforementioned man'

f. kɔ̰̀c pɛ̰̀een
person.PL.CS1 town.LOC
'town people'

g. ɲà̰-n pà̰t̰
girl.SG-CS1 be_good
'good girl'

h. ɟó̰-ŋ cɛ̰́ mɛ̀t̰ cɑ̰̂am
dog.SG-CS1 [PF child.SG eat.NF]
'the dog which has bitten the child'

Second Construct State of the head noun is used before the types of modifier exemplified in (2), among others: possessive pronouns (2a), the numeral 'one' (2b), the diminutivizer *t̰ìi* (2c), and adjectival nouns (2d).[6] Again the examples use some of the head nouns listed in tables in Section 2.1.

(2) a. wɛ̰̂ɛŋ =d-jɛ̀
cow.SG.CS1.CS2 =SG-1SG
'my cow'

b. wɛ̰̂ɛŋ tɔ̰̀k
cow.SG.CS1.CS2 one
'one cow'

c. tjɛ̰́ɛŋ t̰ìi
woman.SG.CS1.CS2 DIM
'junior wife'

d. mwɔ̰̀ɔŋ à̰bṵ̂ur
man.SG.CS1.CS2 cowless_one.SG
'cowless man'

2.3. Postnominal modifiers that do not trigger construct state marking. The only postnominal modifiers that do not trigger a construct state in the head noun are numerals above 'one' (or 'two') and some other quantifiers. Numerals from 'two' to 'nine' are preceded by a quantification marker, which is *kɑ̰̂a* if the head is third person as in (3).[7]

(3) d̰à̰ak kɑ̰̂a d̰jɛ̰̀ec
boy.PL [3PL.QUANT five]
'five boys'

[6] The construction with what I call an "adjectival noun" as modifier seems to correspond to what Nikolaeva and Spencer (2013: 221) call "modification-by-noun".
[7] The numeral 'two' may alternatively be a CS2-modifier, see Section 3.2.2.

For numerals above 'nine' there is an alternative to the construction with the marker *kə̀a*, namely a construction without this marker and with the noun being singular rather than plural, and also here the noun is in the absolute state. Thus, (4b) is an alternative to (4a).

(4) a. ə̀=nɔ̀ŋ ʈɔ̀ok kə̀a ʈjə̀aar.
D.SG=have [goat.PL [3PL.QUANT ten.SG]]
'He has ten goats.'

b. ə̀=nɔ̀ŋ ʈɔ̀ɔk ʈjə̀aar.
D.SG=have [goat.SG ten.SG]
'He has ten goats.'

The fact that numerals above 'one' and other quantifiers do not trigger a construct state form of the head noun may be related to another property of such modifiers, namely that numerals with the marker *kə̀a* and some other quantifiers may occur outside the NP of their scope, a possibility that does not exist for other modifiers. Thus, they may be right-dislocated so that they are separated from the NP by other constituents of the clause, as exemplified in (5). In (5a) the numeral phrase *kə̀a rɔ̀w* 'two' occurs within the same NP as the modified noun in preverbal position, but in (5b), with the same meaning, it occurs clause-finally and separated from the NP in its scope by the finite Perfect auxiliary verb *cɛ́* and the non-finite main verb *mə̀aar* 'get lost'.[8]

(5) a. ɯə̀ak =c-jɛ̀ **kə̀a** **rɔ̀w** ə̀a=cɛ́ mə̀aar.
[[cow.PL.CS1.CS2 =PL-1SG] [3PL.QUANT two]] D.PL=PF get_lost.NF
'Two of my cows got lost.'

b. ɯə̀ak =c-jɛ̀ ə̀a=cɛ́ mə̀aar **kə̀a** **rɔ̀w**.
[cow.PL.CS1.CS2 =PL-1SG] D.PL=PF get_lost.NF [3PL.QUANT two]
'Two of my cows got lost.'

Similarly, the quantifier *ɛ́bə̀n* 'all' may occur both inside and outside the NP of the head noun. Thus, in (6a) it occurs in preverbal position together with 'our money', while in (6b) and (6c), it occurs clause-finally and separated from 'your people' and 'cow' by other clausal constituents.

(6) a. wɛ́ɛw =k-wə̀ **ɛ́bə̀n** ə̀a=cī̀i kwə̀al nɛ̀ rə̀aan.
[money.PL.CS1.CS2 =PL-1PL all] D.PL=PF.PASS steal.NF by person.SG.GEN
'All our money has been stolen by somebody.'

b. jī̀ik kə̀ac =k-ù̀ k=ə́a=bɛ́ rjɛ̀ɛl **ɛ́bə̀n**.
[ASSOC person.PL.CS1.CS2 =PL-2SG] ASS=D.PL=FUT be_strong.NF all
'All your people will be strong.' (t.)

c. wɔ́ŋ ə̀=cī̀i ɖwɔ̀ol cɛ̀een **ɛ́bə̀n**.
cow.SG D.SG=PF.PASS return.CP.NF back.ALL all
'All the cows have been brought back.'

So, quantifiers are clearly less strongly tied to the head noun than the construct state triggering modifiers.

[8] As mentioned in footnote 1, I use initial capitals for names of language-particular grammatical categories, such as Perfect.

2.4. Prenominal modifiers. In addition to postnominal modifiers, Dinka also has a few (types of) prenominal modifiers, but they have no morphological effect on the following head noun. These modifiers include (i) the associative plural marker *jɪ̈ɪ̈k*, as in (7a) and as in (6b) above; (ii) the demonstrative proclitic *ɛ́=*, which is neutral both with respect to distance from the deictic center and with respect to number, and which seems only to occur in combination with a postnominal modifier, as in (7b); and (iii) personal pronouns which agree in person and number with the head noun and which emphasize the particularity of what the head noun refers to, as *jɛ̂ɛn* in (7c).

(7) a. **jɪ̈ɪ̈k** ɲä̱
ASSOC girl.SG
'the girl and her family'

b. **ɛ́=** tɪ̱̈im =kä̱
DEM= tree.PL.CS1 =DEM1.PL
'these trees'

c. kʊ̈ **jɛ̂ɛn** ɛ̱́= wä̱ar =ɛ́ ɛ̱̀e tɔ̱̂oc.
and [3SG DEM= river.SG.CS1 =DEM2.SG] D.SG.be swamp.SG
'And that very river is a swampy area.' (t.)

In some syntactic contexts (Andersen 2019: 151–156), moreover, the possessor of a body-part noun precedes its possessum, as in (8), where the possessum *cɪ̀n* 'hands' is preceded by the third person singular possessor pronoun *ɛ̀*, which is coreferential with the subject *mɛ̀ɛ̱̈t* 'child'.

(8) mɛ̀ɛ̱̈t à̱=cà̱w **ɛ̀** cɪ̱̀n.
child.SG D.SG=wash [3SG hand.PL]
'The child is washing his hands.'

2.5. Multiple postnominal modification. In the examples given in Section 2.2 above, the head noun is followed by a single modifier. However, a head noun may be followed by more than one modifier, and the addition of a modifier may affect the morphological composition of both the preceding modifier and the head noun. Thus, multiple postnominal modification involves more than mere juxtaposition. First I will show what happens when a CS1-modifier or CS2-modifier is added to a CS2-modifier (Section 3), and then what happens when a modifier is added to a CS1-modifier (Section 4).

3. CS2-modifier + modifier

In the following subsections, I will show that CS2-modifiers can be followed by another construct-state triggering modifier and that when they do so, they themselves get construct state marking, while the head shifts state from Second Construct State to First Construct State. CS2-modifiers with this possibility include at least possessive pronouns, the numerals 'one' and 'two', and the diminutivizer. It is unknown (to me) whether adjectival nouns have the same possibility.

3.1. Possessive pronoun + modifier. Possessive pronouns, which are CS2-modifiers, may be followed by any of the following CS1-modifiers: demonstrative, time particle, adverbial, 'other', adjectival verb, nominal possessor, and relative clause. They may also be followed by the following CS2-modifiers: diminutivizer and 'one'. Each of these combinations is illustrated below.

3.1.1. Possessive pronoun + demonstrative. The NPs in (9) illustrate what happens when a possessive pronoun as the first modifier is followed by a demonstrative as a second modifier. (9a) shows the noun *tɪ̀ik* 'woman' in the absolute state. In (9b) this noun is followed by the demonstrative enclitic *=ɛ̀* 'this' and is thereby changed to the First Construct State form *tɪ́ŋ*. In (9c) the same noun is instead followed by the possessive pronominal enclitic *=d-jɛ̀* 'my' and is thereby changed to the Second Construct State form *tjɛ́ɛŋ*. In (9d) these two modifiers are combined, the demonstrative following the possessive pronoun, and this operation causes two changes relative to (9c). Firstly, the head noun gets the First Construct State form *tɪ́ŋ* just like in (9b). Secondly, the possessive pronoun changes from *=d-jɛ̀* to *=d-jɛ́e-n*, with the short vowel /ɛ/ lengthened to /ɛe/, with the alveolar nasal /n/ added, and with the tone changed from low to high.

(9) a. tɪ̀ik
'woman' (sg.)

b. tɪ́ŋ =ɛ̀
woman.SG.CS1 =DEM1.SG
'this woman'

c. tjɛ́ɛŋ =d-jɛ̀
woman.SG.CS1.CS2 =SG-1SG
'my wife'

d. tɪ́ŋ =d-jɛ́e-n =ɛ̀
[[woman.SG.CS1 =SG-1SG-CS1] =DEM1.SG]
'this wife of mine'

A parallel set of NPs is given in (10) with the head noun *dɔ̀m* 'field'. As seen in (10d), the addition of the modifier 'this' to 'your field' again causes a change in both the head noun and the possessive modifier. The head *dwɔ̀ɔm* (10c) changes to *dɔ̀m* (10d), the form also found in (10b), and the modifier *=d-ʊ̀* 'your' (10c) changes to *=d-ʊ́u-n* (10d).

(10) a. dɔ̀m
'field' (sg.)

b. dɔ̀m =ɛ̀
field.SG.CS1 =DEM1.SG
'this field'

c. dwɔ̀ɔm =d-ʊ̀
field.SG.CS1.CS2 =SG-2SG
'your field'

d. dɔ̀m =d-ʊ́u-n =ɛ̀
[[field.SG.CS1 =SG-2SG-CS1] =DEM1.SG]
'this field of yours'

The nasal suffix *-n* which is added to the possessive pronouns when another modifier follows is analysed as an exponent of construct state (glossed as CS1 in the interlinear translation) along with the vowel lengthening and the tone change. This suffix is taken to be the same morpheme as the construct state suffix *-n* found in singular nouns whose root ends in a vowel and in many singular nouns whose root ends in a glide, cf. Section 2.1 above.

Moreover, if the CS2 form of the head noun is analysed as consisting of a CS1 form plus a CS2 morpheme, as argued in Section 2.1 above, then what happens to the head noun when a modifier is added to its modifier is that the CS2 morpheme is removed.

In the interlinear translation the bracketing indicates my analysis of the constituent structure of NPs with multiple modification. The assumption is that each additional modifier has scope over the preceding part of the NP, which is thus an extended head being modified. This is schematized in (11) for an NP with three postnominal modifiers.

(11) [NP [Head [Head [Head Noun] Modifier] Modifier] Modifier]

The fact that both the head noun and the following modifier are morphologically sensitive to the addition of a second modifier may be taken as evidence for this structure.

Table 8 shows full paradigms with the possessive pronouns modifying the singular noun 'meat', which is *rɪ́ɪŋ* in the absolute state, and the plural noun 'meats', which is *rɪ̀ŋ* in the absolute state. The table displays these expressions both in the absolute state (i.e., unmodified) and in the construct state (i.e., modified).

Table 8. Possessive pronouns after the singular (*rɪ́ɪŋ*) and the plural (*rɪ̀ŋ*) of the noun for 'meat', unmodified and modified

	Singular		**Plural**	
	unmodified, absolute state	modified, construct state	unmodified, absolute state	modified, construct state
1SG	*rjɛ́ɛŋ=d-jɛ̱̀*	*rɪ̱ɪŋ=d-jɛ̱̀e-n/=d-jɛ̱́e-n*	*rjɛ̀ɛŋ=c-jɛ̱̀*	*rɪ̀ŋ=c-jɛ̱̀e-n/=c-jɛ̱́e-n*
2SG	*rjɛ́ɛŋ=d-ụ̀*	*rɪ̱ɪŋ=d-ụ̀u-n/=d-ụ́u-n*	*rjɛ̀ɛŋ=k-ụ̀*	*rɪ̀ŋ=k-ụ̀u-n/=k-ụ́u-n*
3SG	*rjɛ́ɛŋ=d-ɛ̱̀*	*rɪ̱ɪŋ=d-ɛ̱̀e-n/=d-ɛ́e-n*	*rjɛ̀ɛŋ=k-ɛ̱̀*	*rɪ̀ŋ=k-ɛ̀e-n/=k-ɛ́e-n*
1PL	*rjɛ́ɛŋ=d-ą̀*	*rɪ̱ɪŋ=d-ą̀a-n/=d-ą́a-n*	*rjɛ̀ɛŋ=k-wą̀*	*rɪ̀ŋ=k-wą̀a-n/=k-wą́a-n*
2PL	*rjɛ́ɛŋ=d-wɔ́on*	*rɪ̱ɪŋ=d-wɔ̀on/=d-wɔ́on*	*rjɛ̀ɛŋ=k-wɔ́on*	*rɪ̀ŋ=k-wɔ̀on/=k-wɔ́on*
3PL	*rjɛ́ɛŋ=d-ɛ̱́ɛn*	*rɪ̱ɪŋ=d-ɛ̱̀ɛn/=d-ɛ́ɛn*	*rjɛ̀ɛŋ=k-ɛ́ɛn*	*rɪ̀ŋ=k-ɛ̀ɛn/=k-ɛ́ɛn*

As can be seen in the table, all possessive pronouns that end in a vowel in the absolute state take the suffix *-n* and lengthen their vowel from short to long in the construct state. The rest of the pronouns (2PL and 3PL) end in a long vowel plus /n/ in the absolute state, so they do not exhibit any segmental change in the construct state. Although the construct state suffix *-n* is specifically singular in nouns, it not only occurs in the singular possessive pronouns, but also in 1PL. This is presumably due to analogy with the other plural possessive pronouns (whose /n/ is not a construct state suffix).

The tones of the possessive pronouns in Table 8 should also be noticed. In their absolute state (whether singular or plural), 1SG, 2SG, 3SG and 1PL are low-toned, while 2PL and 3PL are high-toned. In their construct state, by contrast, all six pronouns, whether singular or plural, have the same tone, which is either low or high as determined by the following modifier. The low tone occurs before certain high-toned modifiers, such as the demonstratives *=ɛ́* 'that' (DEM2.SG) and *=kɛ́* 'those' (DEM2.PL) and the time particles *njɛ́* (P1) and *wą́n* (P2), while the high tone occurs before other modifiers. The tone alternation is seen in (12), where 'our' is high-toned *=ɖą́a-n* before low-toned *=ɛ̀* 'this' and low-toned *=ɖą̀a-n* before high-toned *=ɛ́* 'that'.

(12) a. pą́al =d-ą́a-n =ɛ̀
[[knife.SG.CS1 =SG-1PL-CS1] =DEM1.SG]
'this knife of ours'

b. pà̱al =d-à̱a-n =è̱
[[knife.SG.CS1 =SG-1PL-CS1] =DEM2.SG]
'that knife of ours'

The same tone alternation occurs in (13), with 'my' being high-toned *=c-jé̱e-n* before low-toned *=kà̱* 'these' and low-toned *=c-jè̱e-n* before high-toned *=ká̱* 'those'.

(13) a. ɟó̱ok =c-jé̱e-n =kà̱
[[dog.PL.CS1 =PL-1SG-CS1] =DEM1.PL]
'these dogs of mine'

b. ɟó̱ok =c-jè̱e-n =ká̱
[[dog.PL.CS1 =PL-1SG-CS1] =DEM2.PL]
'those dogs of mine'

In this way, possessive pronouns behave tonally like one of three tonal classes of nouns in First Construct State (Andersen 2002: 21–23). This is illustrated in (14)–(15) with *dí̱t* 'bird' and *ń̩ir* 'girls'. In (14) 'bird' is high-toned before *=è̱* and low-toned before *=é̱*. In (15), similarly, 'girls' is high-toned before *=kà̱* and low-toned before *=ká̱*.

(14) a. dí̱n =è̱
bird.SG.CS1 =DEM1.SG
'this bird'

b. dì̱n =é̱
bird.SG.CS1 =DEM2.SG
'that bird'

(15) a. ń̩ir =kà̱
girl.PL.CS1 =DEM1.PL
'these girls'

b. ǹ̩ir =ká̱
girl.PL.CS1 =DEM2.PL
'those girls'

*3.1.2. Possessive pronoun + time particle***.** Other additional modifiers have the same effect on noun + possessive pronoun as demonstratives have. In the sets of examples given in this and the following subsections, I show NPs in the following order (a) unmodified noun, (b) noun + CS1-modifier, (c) noun + possessive modifier, and (d) noun + possessive modifier + modifier. In this way it can be seen how the head noun changes its form.

In (16) and (17) the extra modifier is the P2 time particle *wá̱n*. The possessive pronouns get CS1 form, and consequently, CS2 *rjé̱eŋ* 'meat' (16c) changes to CS1 *ŕ̩iŋ* (16d), and CS2 *kâ̱ac* 'people' (17c) changes to CS1 *kâ̱ɔc* (17d).

(16) a. ŕ̩iŋ
'meat' (sg.)

b. ŕ̩iŋ è̱ má̱rjà̱al
meat.SG.CS1 of Marial.SG.GEN
'Marial's meat'

c. rjɛ́ɛŋ =d-jɛ̀
meat.SG.CS1.CS2 =SG-1SG
'my meat'

d. rɻ́iŋ =d-jɛ̀e-n wa̱n
[[meat.SG.CS1 =SG-1SG-CS1] P2]
'my aforementioned meat'

(17) a. kɔ̰̀c
'people' (pl.)

b. kɔ̰̀ɔc =kà̱
person.PL.CS1 =DEM1.PL
'these people'

c. ka̱̰ac =k-ɛ̀
person.PL.CS1.CS2 =PL-3SG
'his people'

d. kɔ̰̀ɔc =k-ɛ̀e-n wa̱n
[[person.PL.CS1 =PL-3SG-CS1] P2]
'his aforementioned people'

3.1.3. Possessive pronoun + adverbial. In (18d) the additional modifier is an adverbial, the word *cɛ̰ɛɛm*, which is the Locative form of the noun *cɻ̀am* 'left-hand side'. In (18d) this adverbial modifier causes the head noun 'hand' to change from CS2 *cjɛ̰ɛn* to CS1 *cɻ́in*.

(18) a. cɻ́in
'hand' (sg.)

b. cɻ́in ɛ̀ ra̱̰aan
hand.SG.CS1 of person.SG.GEN
'hand of person'

c. cjɛ̰ɛn =d-jɛ̀
hand.SG.CS1.CS2 =SG-1SG
'my hand'

d. à̱=cá̱a̱t̪ ɛ̀ cɻ́in =d-jɛ́e-n cɛ̰ɛɛm.
D.SG=walk [PREP [[hand.SG.CS1 =SG-1SG-CS1] left_hand_side.LOC]]
'He is walking on my left side.'

3.1.4. Possessive pronoun + 'other'. In (19) the additional modifier is the singular pronoun *dɻ̀* 'other, some'. The noun for 'thing' shown in (19) is always followed by a modifier, so it has no absolute state form. Before a modifier beginning with a consonant, this head noun has no *-n* suffix,[9] and there is syncretism between its First Construct State and Second Construct State. In (19d) the 3SG possessive pronoun *=d-ɛ̀* seen in (19c) gets the construct state form *=d-ɛ́e-n*.

(19) a. (non-existent in absolute state)

[9] Before a modifier beginning with a vowel, however, the noun for 'thing' does have the *-n* suffix, as in *kɛ́-n=ɛ̀* 'this thing' (thing.SG-CS1=DEM1.SG) and *kɛ́-n ɛ̀ ŋ̰jɻ̀lɻ̰̂c* 'something of God' (thing.SG-CS1 of God.SG.GEN).

b. kɛ̰̀ =tṵ̀j
thing.SG.CS1 =DEM3.SG
'that thing'

c. kɛ̰̀ =d-ɛ̰̀
thing.SG.CS1.CS2 =SG-3SG
'his thing'

d. kɛ̰̀ =d-ɛ́e-n dą̀
[[thing.SG.CS1 =SG-3SG-CS1] other.SG]
'his other thing' (t.)

The plural counterpart of sg. *dą̀* 'other, some' is *kɔ̰̀k*, which is the additional modifier in (20d). The grammatically plural head noun 'name(s)' here changes from CS2 *rjɛ̰̀ɛn* (20c) back to CS1 *rǹ̰n*, which is also seen in (20b).

(20) a. rǹ̰n
'name(s)' (pl.)

b. rǹ̰n ɛ̰̀ kɔ̰̀ɔc kɔ̰̀k
[name.PL.CS1 [of [person.PL.CS1.GEN other.PL.GEN]]]
'names of other people'

c. cɔ̰̀ɔl rjɛ̰̀ɛn =k-ṵ̀ ŋą̀?
call.PASS [name.PL.CS1.CS2 =PL-2SG] who.SG
'What is your name?'
Lit. 'Who is your name called?'

d. rǹ̰n =k-ɛ́e-n kɔ̰̀k
[[name.PL.CS1 =PL-3SG-CS1] other.PL]
'his other name' (t.)

3.1.5. Possessive pronoun + adjectival verb. In (21) the additional modifier after the possessive pronoun 'my' is the adjectival verb *mɔ̀ɻ* 'be sharp'. The head noun *pą́al* 'knife' syncretizes all three states, so in this case there is no observable difference between its forms in (21d) and (21c).

(21) a. pą́al
'knife' (sg.)

b. pą́al =ɛ̰̀
knife.SG.CS1 =DEM1.SG
'this knife'

c. pą́al =d-jɛ̰̀
knife.SG.CS1.CS2 =SG-1SG
'my knife'

d. pą́al =d-jɛ́e-n mɔ̀ɻ
[[knife.SG.CS1 =SG-1SG-CS1] be_sharp]
'my sharp knife'

3.1.6. Possessive pronoun + nominal possessor. A nominal possessor, which is expressed by a prepositional phrase with the preposition *ɛ̰̀* 'of', has the same effect as other CS1-modifiers, as seen

in (22)–(24). In (22d), *gwo̱on=d-e̱* ‘his gourd’ (22c) is changed to *gu̱un=d-e̱̱en* before the possessor *e̱ ta̱ap* ‘of tobacco’. And in (23d), *rje̱̱n=c-je̱* ‘my name’ (23c) is changed to *rṉ=c-je̱̱-n* before the possessor *e̱ mo̱or* ‘of bull’.

(22) a. gu̱ut
‘type of gourd’ (sg.)

b. gu̱un e̱ ke̱ṯ
gourd.SG.CS1 of cow_urine.PL.GEN
‘gourd of cow urine’

c. gwo̱on =d-e̱
gourd.SG.CS1.CS2 =SG-3SG
‘his gourd’

d. gu̱un =d-e̱̱e-n e̱ ta̱ap
[[gourd.SG.CS1 =SG-3SG-CS1] [of tobacco.SG.GEN]]
‘his tobacco gourd’ (t.)

(23) a. rṉ
‘name(s)’ (pl.)

b. rṉ e̱ mo̱or
name.PL.CS1 of bull.PL.GEN
‘nickname’ (Lit. ‘name of bulls’)

c. rje̱̱n =c-je̱
name.PL.CS1.CS2 =PL-1SG
‘my name’

d. rṉ =c-je̱̱e-n e̱ mo̱or
[[name.PL.CS1 =PL-1SG-CS1] [of bull.PL.GEN]]
‘my nickname’

In the textual example (24) with the head noun *bu̱̱r* ‘fishing camp’, ‘their fishing camp’ first occurs unmodified as *bwo̱̱or=d-e̱̱en* and then as *bu̱̱r=d-e̱̱en* modified by *e̱ re̱̱c* ‘of fish’.

(24) ko̱̱oc e̱ re̱̱c a̱a=le̱w
[person.PL.CS1 of fish.PL.GEN] D.PL=be_able

bi̱ik na̱̱aŋ **bwo̱̱or** **=d-e̱̱en**,
FUT.3PL have.NF [fishing_camp.SG.CS1.CS2 =SG-3PL]

bu̱̱r **=d-e̱̱en** e̱ re̱̱c.
[[fishing_camp.SG.CS1 =SG-3PL.CS1] of fish.PL.GEN]
‘Fishermen can have their own camp, their camp of fish.’ (t.)

3.1.7. Possessive pronoun + relative clause. The effect of relative clauses as additional modifiers is shown in (25)–(26). In (25d), *tje̱̱ŋ=d-je̱* ‘my wife’ (25c) is changed to *tṉŋ=d-je̱̱e-n* before the relative clause *co̱̱ol jo̱̱om* ‘who is called Yom’.

(25) a. to̱ik
‘woman’ (sg.)

b. tɪ̰ŋ ɛ̀ bà̰ɲ
woman.SG.CS1 of chief.SG.GEN
'the chief's wife'

c. tjɛ̰ɛŋ =d-jɛ̀
woman.SG.CS1.CS2 =SG-1SG
'my wife'

d. tɪ̰ŋ =d-jɛ̰e-n cɔ̰ɔl jɔ̰ɔm à̰=ɲjà̰aar à̰pɛ̰ɛj.
[[woman.SG.CS1 =SG-1SG-CS1] [call.PASS Yom.SG]] D.SG=love.1SG very_much
'My wife called Yom I love very much.' (t.)

In (26d), similarly, *kɑ̰ɔ̂c=k-ɛ̰ɛn* 'their people' (26c) becomes *kɔ̰ɔ̂c=k-ɛ̰ɛn* before the relative clause *ɛ̀ ɟwà̰r à̰tɑ̰̂p* 'who collect tax'.

(26) a. kɔ̰c
'people' (pl.)

b. kɔ̰ɔc ɛ̀ bà̰ɲ
person.PL.CS1 of chief.SG.GEN
'the chief's people'

c. kɑ̰̂ac =k-ɛ̰ɛn
person.PL.CS1.CS2 =PL-3PL
'their people'

d. bɑ̰̂aɲ á̰a=nɔ̰ŋ kɔ̰ɔc =k-ɛ̰ɛn ɛ̀
chief.PL D.PL=have [[person.PL.CS1 =PL-3PL.CS1] [HAB
ɟwà̰r à̰tɑ̰̂p.[10]
collect.AP.NF PREP.tax.SG]]
'Chiefs have their own people who collect tax.' (t.)

3.1.8. Possessive pronoun + CS2-modifiers 'small' and 'one'. The additional modifiers shown above are CS1-modifiers. But possessive pronouns may also be followed by the CS2-modifiers *ɪ̰ì* 'small' as diminutivizer and the numeral *tɔ̰̀k* 'one'. These modifiers have the same effect as CS1-modifiers, as illustrated in (27)–(28). In (27) the possessive pronoun 'our' has the form *=k-wá̰a-n*, rather than *=k-wà̰*, before the diminutivizer *ɪ̰ì* 'small'.[11]

(27) lɪ̰im **=k-wá̰a-n** ɪ̰ì
[[vegetable.PL.CS1 =PL-1PL-CS1] DIM]
'our small vegetables' (t.)

In (28d), similarly, the possessive pronoun 'your' has the form *=d-ɪ́u-n*, rather than *=d-ɪ̀*, before the numeral 'one'. In this example the numeral is itself followed by a modifier (a relative clause) and therefore has the construct state form *tɔ̰̀ŋ* rather than the absolute state form *tɔ̰̀k*, cf. Section 3.2 below.

[10] In (26d) the noun *à̰tɑ̰̂p* 'tax' is a demoted patient of the antipassive verb *ɟwà̰r* 'collect'. A demoted patient is preceded by the preposition *ɛ̀*, but this preposition is deleted before nouns beginning with /à̰/.
[11] The absolute state of 'vegetables' in (27) is *lɪ́im*. Second Construct State has not be attested for this plural noun.

(28) a. mɛ̀t̪
'child' (sg.)

b. mán̪ =ɛ̀
child.SG.CS1 =DEM1.SG
'this child'[12]

c. mán̪ =d̪-ù̱
child.SG.CS1.CS2 =SG-2SG
'your child'

d. mán̪ =d̪-úu-n tɔ̀ŋ ɛ̀en cá̱ d̪jɛ́eet̪
[[[child.SG.CS1 =SG-2SG-CS1] one.CS1] [3SG PF.2SG bear.NF]]
'your only child that you have borne' (t.)

3.2. Numerals 'one' and 'two' + modifier. Like the possessive pronouns, the numerals 'one' and 'two' as CS2-modifiers can be followed by another modifier, as illustrated below. In Section 3.2.1 the additional modifier is a demonstrative, in Section 3.2.2 it is a relative clause.

3.2.1. Numeral + demonstrative. The CS2-modifier *tɔ̀k* 'one' behaves in the same way as possessive pronouns when followed by another modifier. This is illustrated in (29) with *tɔ̀k* modifying the noun for 'heifer'. The latter is *dàw* in the absolute state (29a), *dàn* in First Construct State (29b), and *dàan* in Second Construct State, as in (29c), where it is modified by the numeral *tɔ̀k* 'one'.[13] In (29d) 'one' is followed by another modifier, namely the demonstrative enclitic *=ɛ́* 'that'. As seen here, 'one' changes from *tɔ̀k* to *tɔ̀ŋ*, and the preceding head noun 'heifer' changes from *dàa-n* (29c) to *dà-n*, which is identical to the First Construct State form seen in (29b). So when followed by another modifier, the numeral 'one' shifts from being a CS2-modifier to being a CS1-modifier and itself enters First Construct State.

(29) a. **dàw** à=d̪ɔ̀t̪ lɛ́c.
heifer.SG D.SG=extract peg.SG
'The heifer is pulling the peg out.'

b. **dà-n** ɛ̀ wɔ̀ŋ
heifer.SG-CS1 of cow.SG.GEN
'heifer'

c. ɯɔ̰ok á=cwɛ̀t **dàa-n** **tɔ̀k**.
1PL D.PL=eat [heifer.SG.CS2-CS1 one]
'We'd better eat one heifer.' (t.)

[12] The alternation between the vowel qualities /e/ and /a/ in 'child' is irregular.

[13] Since the CS2 morpheme is not affixal, but expressed by alternations in the root, the gloss CS2 occurs before the gloss CS1 in the interlinear morphemic translation in (29c) and (33a), where the suffix *-n* is one of the exponents of First Construct State. In cases without this suffix, I use the opposite order, which reflects the order of the morphological layers in the noun, cf. Andersen (2002: 29). For instance, the translation of *ɲjɛ́er* as "girl.PL.CS1.CS2" in (33b) indicates that the Second Construct State is based on the First Construct State, which is based on the plural of 'girl'.

d. kɛ̀ jɛ̗̀en ɛ̗́= **dä̱-n** **tò̱ŋ** =ɛ̗́,
then [3SG DEM= [[heifer.SG-CS1 one.CS1] =DEM2]]

k=ä̱=bʊ̀uk tɛ̗̀ek.
then=D.SG=FUT.1PL divide.NF
'then we can share that one heifer.' (t.)

The shift from root-final /k/ to /ŋ/ in 'one' is the same as in the construct state of nouns, cf. Section 2.1 above.

3.2.2. Numeral + relative clause. In (30) it is seen that *tò̱k* 'one' behaves in the same way as in (29) when the following modifier is a relative clause. In (30c) 'one' modifies the noun *rà̱aan* 'person', a Second Construct State form which happens to be phonologically identical to the absolute state form seen in (30a), but different from the First Construct State form *rà̱n* seen in (30b). In (30d) 'one person' is followed by the relative clause *ɛ̗́ tɪ̗̂it kɛ̗́ kä̱̂ac=k-ɛ̗̀* 'who was expected with his people' as another modifier, and here *tò̱k* changes to the First Construct State form *tò̱ŋ*, and at the same time the head noun changes back to the First Construct State form *rà̱n*.

(30) a. **rà̱aan** ä̱=mʊ̀ut ɛ̗́ tò̱k.
person.SG D.SG=shave [3SG mouth.SG]
'Somebody is shaving.' (Lit. 'A person is shaving his mouth.')

b. mɛ̀t̗ ä̱=là̱t **rà̱n** dɪ̀it.
child.SG D.SG=insult [person.SG.CS1 be_big]
'The child is insulting an elder.'

c. **rà̱aan** **tò̱k** ä̱=cɛ́ dɔ̗̀oŋ.
[person.SG.CS1.CS2 one] D.SG=PF remain.CF.NF
'One person remained.'

d. kʊ̀ **rà̱n** **tò̱ŋ** ɛ̗́ tɪ̗̂it kɛ̗́
and [[person.SG.CS1 one.CS1] [PST expect.PASS COM

kä̱̂ac =k-ɛ̗̀ ɛ̗́e=jɛ̗̀e wʊ̗́l ä̱atɲä̱aan.
person.PL.CS1.CS2 =PL-3SG]] D.SG.PST=be Wuol.SG.CS1 of.Athian.SG.GEN
'and one person who was expected with his people was Wuol Athian.' (t.)

As an alternative to being preceded by the numeral marker *kä̱̂a*, the numeral *rɔ̗̀w* 'two' may be used as a modifier without this marker, but in that case it means 'a few' or 'a little' rather than strictly 'two' and thus has paucal meaning. When used in this way, *rɔ̗̀w* triggers Second Construct State in the head noun, just like *tò̱k* 'one'. This is exemplified in (31) with the plural noun 'water' as head. In the absolute state (31a) and in First Construct State (31b), 'water' has the form *pɪ̗̂iiw*, and in Second Constuct State it has the form *pjɛ̗̂eew* as seen in (31c) before the possessive pronoun *=c-jɛ̗̀* 'my' and in (31d) before *rɔ̗̀w* 'two'.

(31) a. pɪ̗̂iiw
'water' (pl.)

b. pɪ̗̂iiw =kä̱
water.PL.CS1 =DEM1.PL
'this water'

c. ä̱=dɛ̱̀k pjɛ̱̂ɛɛw =c-jɛ̱̀.
D.SG=drink water.PL.CS1.CS2 =PL-1SG
'He is drinking my water.'

d. mwɔ̱̂ɔc ɛ̱̀ pjɛ̱̂ɛɛw rɔ̱̀w.
give.2SG [PREP [water.PL.CS1.CS2 two]]
'Give him a little water!'

The CS2-modifier *rɔ̱̀w* 'two' gets a construct state form when followed by another modifier, just like *tɔ̱̀k* 'one'. As seen in (32d) this form is *rɛ̱̀e-n*, with the construct state suffix *-n* having replaced the root-final glide /w/ and the root vowel having undergone compensatory lengthening from short to long. The examples in (32) show NPs with the plural noun 'money' as head. The absolute state of this noun is *wɛ̱̀ɛw* (32a), First Construct State is *wɛ̱́ɛw* (32b), and Second Construct State is *wɛ̱́ɛw* (32c). In (32d), the shift of 'two' from *rɔ̱̀w* to *rɛ̱̀e-n* occurs before the relative clause *cɛ̱́ dɔ̱̂ɔŋ* 'which remained', and the head noun 'money' shifts from the CS2 form *wɛ̱́ɛw* to the CS1 form *wɛ̱́ɛw*.

(32) a. **wɛ̱̀ɛw** ä̱́a=tɛ̱́k.
money.PL D.PL=divide.PASS
'The money is being divided.

b. wɛ̱́ɛt kɛ̱́ec jɪ̱́in ä̱̂a jjɛ̱́ek **wɛ̱́ɛw** ɟwɛ̱̀c.
because PF.NEG.NTS 2SG.GEN 1SG give.APPL.NF [money.PL.CS1 be_many.PL]
'because you did not give me much money.'

c. **wɛ̱́ɛw** =k-wä̱ ɛ́bä̱̂n ä̱̀a=cɪ̱̂i kwä̱̂al nɛ̱̀ rä̱̂aan.
[[money.PL.CS1.CS2 =PL-1PL] all] D.PL=PF.PASS steal.NF by person.SG.GEN
'All our money has been stolen by somebody.'

d. kʉ̀ nɔ̱̀ɔŋ **wɛ̱́ɛw** rɛ̱̀e-n cɛ́ dɔ̱̂ɔŋ [...]
and have.3SG [[money.PL.CS1 two-CS1] [PF remain.CF.NF]]
'and if there was a little money left [...]'[14] (t.)

The shift in vowel quality from /o/ to /e/ in 'two' (32d) is irregular. Presumably, the root vowel was originally /e/, which rounded to /o/ by assimilating to the root-final /w/. A similar change has taken place in the word for 'cow', which in the Agar dialect (the variety described here) is *wɔ́ŋ*, but which in other dialects is *wɛ́ŋ*.

3.3. Diminutivizer + modifier. In its absolute state, the diminutivizer (DIM) *ɪ̱̀i* 'small' is neutral with respect to number, as seen in (33), where it modifies both the singular noun *ɲɔ̱̀n* 'girl' and the plural noun *ɲjɛ́er* 'girls'.

(33) a. ɲä̱̀-n ɪ̱̀i
girl.SG.CS2-CS1 DIM
'small girl'

[14] Example (32d) is a cosubordinate clause in the sense of Foley and Van Valin (1984: 240—242). It gets its function as a conditional clause from the clause preceding it in the text from which it has been extracted.

b. ɲjɛ́̈er ṯ̈i
girl.PL.CS1.CS2 DIM
'small girls'

When followed by another modifier, however, the diminutivizer makes a distinction between singular *ṯ̈ii(i)n* and plural *ṯ̈i(i)k* in agreement with the number of the head noun. This is exemplified in (34), where the diminutivizer is followed by a demonstrative, in (34a) the singular enclitic *=ɛ̀* 'this', in (34b) the plural enclitic *=kɑ̀* 'these'.

(34) a. ɲɑ̀-n ṯ̈ii-n =ɛ̀
[[girl.SG-CS1 DIM-SG.CS1] =DEM1.SG]
'this small girl'

b. ɲɪ̈ir ṯ̈ii-k =kɑ̀
[[girl.PL.CS1 DIM-PL.CS1] =DEM1.PL]
'these small girls'

The singular construct state form of the diminutivizer has the suffix *-n*, which is also seen in the construct state of some singular nouns, for instance *ɲɑ̀-n* 'girl' in (34a). The plural construct state form has the suffix *-k*, which is also found in the construct state form of the plural noun 'milk', cf. Section 2.1 above. Both the singular form and the plural form seem to vary freely in vowel length between long and overlong. The plural is invariably low-toned, but the singular varies tonally between high and low, apparently in a polar manner relative to the tone of some following modifiers in the same way as possessive pronouns. Thus, while the singular is high-toned before the low-toned demonstrative *=ɛ̀* in (34a), it is low-toned before the high-toned demonstrative *=ɛ́* in (35a). By contrast, the plural form is low-toned both before the low-toned demonstrative *=kɑ̀* in (34b) and before the high-toned demonstrative *=kɑ́* in (35b) as well as before the low-toned modifier *kɔ̀k* 'other' in (35c) and the relative clause beginning with the high-toned Perfect auxiliary verb *cɛ́* in (35d).

(35) a. ɲɑ̀-n ṯ̈ii-n =ɛ́
[[girl.SG-CS1 DIM-SG.CS1] =DEM2.SG]
'that small girl'

b. ɲɪ̈ir ṯ̈ii-k =kɑ́
[[girl.PL.CS1 DIM-PL.CS1] =DEM2.PL]
'those small girls'

c. bɑ̰ɑ̰ŋ ṯ̈ii-k kɔ̀k
[[chief.PL.CS1 DIM-PL.CS1] other.PL]
'other subchiefs' (t.)

d. kɑ́ ṯ̈ii-k cɛ́ dʊ̈oŋ wɛ́j
[[thing.PL.CS1 DIM-PL.CS1] [PF remain.CF.NF away]]
'small things left out'[15] (t.)

When there is no syncretism between the two construct state forms of a noun, it is seen again that an additional modifier causes a change from CS2 to CS1 in the head noun. This can be

[15] The First Construct State form *kɑ́* is an irregular counterpart of the absolute state form *kɑ́ŋ* 'things'.

observed with the noun for 'girls', which changes from the CS2 form *ɲjɛ̱̀er* in (33b) to the CS1 form *ɲɪ̱̀ir* in (34b).

The additional modifiers in (34)–(35) are CS1-modifiers, but the diminutivizer may also be followed by a CS2-modifier, namely the numeral *tɔ̱̀k* 'one', as in (36). Since the vowel of the diminutivizer does not change from Grade 1 /ɪ̱/ to Grade 3 /jɛ̱/, I assume that the non-affixal morpheme CS2 is not present here.[16]

(36) ɲà̱-n [[girl.SG-CS1
'one young girl'

tɪ̱̀i-n DIM-SG.CS1]

tɔ̱̀k one]

Unlike many other property concepts in Dinka, the diminutivizer *ɪ̱̀i* is not a verb, the corresponding verb being *kɔ̱̀or* 'be small' as in (37).

(37) a. mɛ̱̀ɪ̱ child.SG
'The child is small.'

à̱=kɔ̱̀or. D.SG=be_small

b. à̱là̱ŋ̱ cloth.SG.CS1
'small cloth'

kɔ̱̀or be_small

The diminutivizer is likely to go back to a noun meaning 'small one' and thus to a construction in which other adjectival nouns as modifiers also trigger Second Construct State in the head noun, as in (38b).[17] The adjectival noun *à̱ŋ̱â̱aŋ* 'poor one' in (38b) is derived from the adjectival verb *ŋɔ̱̀ɔŋ* 'be poor' in (38a).

(38) a. tɪ̱ŋ woman.SG.CS1
'poor woman'

ŋɔ̱̀ɔŋ be_poor

b. tjɛ̱̀ɛŋ woman.SG.CS1.CS2

à̱ŋ̱â̱aŋ poor_one.SG

'poor woman (who has nothing to eat)'

4. CS1-modifier + modifier

In the following subsections, it will be shown that most CS1-modifiers can be followed by another modifier. When this happens, some of them themselves get construct state marking. This is the case for adjectival verbs and some other intransitive verbs functioning as relative clauses. Other CS1-modifiers do not receive construct state marking. They are, among others, the pronoun 'other', time particles, adverbials, nominal possessors, and transitive relative clauses. Demonstratives can apparently not be followed by another modifier. In constructions with CS1-modifier + modifier, the additional modifier has no effect on the head noun, since the latter is already in First Construct State.

[16] As noted above, there seems to be free vowel length variation between long and overlong in the First Construct State forms of the diminutivizer, with the vowel being long in (36) and overlong in (34)–(35).

[17] The diminutivizer *ɪ̱̀i* is probably cognate with *ɪ̱̀ɪ̱̈*, the adjectival verb for 'small' in Päri (Andersen 1988: 94), which belongs to the Northern Lwoo subbranch of the Western Nilotic family.

4.1. Adjectival verb + modifier. The inflectionally unmarked form of virtually all non-derived adjectival verbs has the shape CV̀C or CV̀VC; that is, its vowel is short or long, and its tone is low; moreover, its vowel quality has Grade 1. When the adjectival verb is followed by another modifier, its form changes. This is exemplified in (39)–(40) with the adjectival verbs *dɩ̀ɲ* 'be sweet', which has a short vowel, and *bạ̀ar* 'be tall', whose vowel is long. The (a)-examples are clauses in which the adjectival verb is used predicatively, while the (b)-examples are NPs in which the adjectival verb is used attributively without any additional modifier. The verbs are followed by the low-toned demonstrative =*ɛ̀* 'this' in the (c)-phrases and by the high-toned demonstrative =*ɛ́* 'that' in the (d)-phrases.

(39) a. cjɛ̀ɛc ạ̀=dɩ̀ɲ.
honey.SG D.SG=be_sweet
'The honey is sweet.'

b. cjɛ̀ɛc dɩ̀ɲ
[honey.SG.CS1 be_sweet]
'sweet honey'

c. cjɛ̀ɛc dɩ̂iiɲ =ɛ̀
[[honey.SG.CS1 be_sweet.CS1] =DEM1.SG]
'this sweet honey'

d. cjɛ̀ɛc dɩ̀iiɲ =ɛ́
[[honey.SG.CS1 be_sweet.CS1] =DEM2.SG]
'that sweet honey'

(40) a. ɲà̰ ạ̀=bạ̀ar.
girl.SG D.SG=be_tall
'The girl is tall.'

b. ɲà̰-n bạ̀ar
[girl.SG-CS1 be_tall]
'tall girl'

c. ɲà̰-n bɛ̂ɛɛr =ɛ̀
[[girl.SG-CS1 be_tall.CS1] =DEM1.SG]
'this tall girl'

d. ɲà̰-n bɛ̀ɛɛr =ɛ́
[[girl.SG-CS1 be_tall.CS1] =DEM2.SG]
'that tall girl'

As illustrated in (39)–(40), three changes occur in an adjectival verb when followed by another modifier. Firstly, the vowel is (generally) lengthened to overlong. Secondly, the vowel quality changes from Grade 1 to Grade 2; that is, /a/ changes to /ɛ/. And thirdly, the low tone changes to a high tone, except before certain high-toned modifiers. I call the changed form a construct state (CS1) form, since it shares one essential function with the construct state forms of nouns, namely that of indicating that what follows is a modifier. Again, however, what that modifier modifies is not the adjectival verb itself, but the whole preceding part of the noun phrase.

The tone alternation between high and low in the adjectival verbs in (39c) and (39d) and in (40c) and (40d) is identical to what is found in some nouns in First Construct State, as in (14)–

(15), and in some other modifiers followed by a modifier, namely possessive pronouns, as in (12)–(13), and the singular diminutivizer, as in (34a) and (35a).

The same changes in the form of an adjectival verb occur when it is followed by other modifiers that trigger First Construct State in a modified noun. This is illustrated in (41)–(43) with the verbs *mɔ̰̀t̪* 'be sharp', *cɔ̰̀ol* 'be black' and *cɛ̰̀ek* 'be short'. Here the (a)-examples show the verbs used attributively without any additional modifier. In (41b) the additional modifier is the P2 time particle *wà̰n*, before which the short vowel of *mɔ̰̀t̪* 'be sharp' becomes overlong.

(41) a. pà̰al mɔ̰̀t̪
[knife.SG.CS1 be_sharp]
'sharp knife'

b. pà̰al mɔ̰̀oot̪ wà̰n
[[knife.SG.CS1 be_sharp.CS1] P2]
'the aforementioned sharp knife'

In (42b) the additional modifier is the pronoun *dä̰̀* 'other', before which the long vowel of *cɔ̰̀ol* 'be black' also becomes overlong.

(42) a. à̰làà̰n̪ cɔ̰̀ol
[cloth.SG.CS1 be_black]
'black cloth'

b. à̰làà̰n̪ cɔ̰́ool dä̰̀
[[cloth.SG.CS1 be_black.CS1] other.SG]
'another black cloth'

In (43b) the additional modifier is another adjectival verb, *d̪ɛ̰̀ɛ̰ŋ* 'be beautiful', before which *cɛ̰̀ek* 'be short' becomes *cɛ́ɛ̰ek*.

(43) a. ɲä̰̀-n cɛ̰̀ek
[girl.SG-CS1 be_short]
'short girl'

b. ɛ̰̀e ɲä̰̀-n cɛ́ɛ̰ek d̪ɛ̰̀ɛ̰ŋ à̰pɛ̰̂ɛj.
D.SG.be [[girl.SG-CS1 be_short.CS1] be_beautiful] indeed
'She is indeed a beautiful short girl.'

The same changes in adjectival verbs are seen before a nominal possessor, as in (44), where *cɔ̰̀ol* 'be black' again becomes *cɔ́ool* before the possessor phrase *ɛ̰̀ wú̱uur* 'of your father'. In (45b), similarly, *pà̰t̪* 'be good' (45a) becomes *pwɔ̰́ɔɔt̪* before *ɛ̰̀ wú̱un=k-wä̰̀* 'of our fathers'. The vowel quality alternation between /a/ and /wɔ/ in 'be good' is irregular.

(44) à̰làà̰n̪ cɔ́ool ɛ̰̀ wú̱uur
[[cloth.SG.CS1 be_black.CS1] of father.2SG.GEN]
'your father's black cloth'

(45) a. ɲä̰̀-n pà̰t̪
[girl.SG-CS1 be_good]
'a beautiful girl'

b.	cɛ́ɛɛŋ	pwɔ́ɔ̀ɔt̪	è	wʊ̀un	=k-wa̰
	[[live.NMLZ.SG.CS1	be_good.CS1]	[of	[father.PL.CS1.CS2.GEN	=PL-1PL]]]
	‘our fathers’ good way of living’ (t.)				

In (46b) the adjectival verb *tjɔ̰ɔp* ‘be wet’ (46a) becomes *tjɔ́ɔɔp* before the relative clause *pwɔ́c mą́aaj* ‘which has recently been caught’.

(46) a. rɛ́ɛc tjɔ̰ɔp
[fish.SG.CS1 be_wet]
‘fresh fish’

b. rɛ́ɛc tjɔ́ɔɔp pwɔ́c mą́aaj
[[fish.SG.CS1 be_wet.CS1] [do_recently.PASS fish.NF]]
‘fresh fish caught recently’

4.2. Non-adjectival intransitive verbs as relative clauses + modifier. Unlike adjectival verbs, non-adjectival intransitive verbs which function as relative clauses keep their segmental form when followed by another modifier. That is, they do not change vowel length and vowel quality. However, intransitive verbs with a high tone become low-toned before some high-toned modifiers, apparently the same modifiers that cause tone alternation in adjectival verbs. This is illustrated in (47) with the verb *cą́at̪* ‘walk’ and in (48) with the verb *pwɔ́ot* ‘fight’. The (a)-examples are clauses in which the verb is used predicatively, while the (b)-examples are NPs with the verb used attributively (as a relative clause) without any additional modifier. The verb *cą́at̪* keeps its high tone before the low-toned enclitic =*ḛ* ‘this’ (47c), but gets a low tone before the high-toned =*é* ‘that’. The final stop /t̪/ in ‘walk’ is phonetically [d̪] in (47c) and (47d) as a result of a general process of intervocalic voicing of root-final stops word-internally. So phonologically, the demonstratives are clearly part of the same word as the preceding verb, although grammatically, what they modify is not that verb, but the whole preceding part of the NP.

(47) a. mɔ̰c a̰=cą́at̪
man.SG D.SG=walk
‘The man is walking.’

b. mɔ̰n cą́at̪
[man.SG.CS1 walk]
‘walking man’

c. mɔ̰n cą́at̪ =ḛ
[[man.SG.CS1 walk.CS1] =DEM1.SG]
‘this walking man’

d. mɔ̰n cą̀at̪ =é
[[man.SG.CS1 walk.CS1] =DEM2.SG]
‘that walking man’

The same tonal alternation is seen in (48), with the verb ‘fight’ keeping its high tone before the low-toned demonstrative enclitic =*kɑ̰̀* ‘these’, but changing it to a low tone before the high-toned enclitic =*kɑ́* ‘those’.

(48) a. mɪ̈ɪ̱ṯ ą̱a=pwo̱ot.
child.PL D.PL=fight
'Children are fighting.'

b. mɪ̈ɪ̱ṯ pwo̱ot
[child.PL.CS1 fight]
'fighting children'

c. mɪ̈ɪ̱ṯ pwo̱ot =kà̱
[[child.PL.CS1 fight.CS1] =DEM1.PL]
'these fighting children'

d. mɪ̈ɪ̱ṯ pwò̱ot =ká̱
[[child.PL.CS1 fight.CS1] =DEM2.PL]
'those fighting children'

Intransitive verbs with a low or falling tone do not exhibit any tone alternation. This is illustrated in (49) with the low-toned verb *ɖjà̱aw* 'cry' and in (50) with *dâ̱al* 'laugh', which has a falling tone. As before, the (a)-examples are clauses in which the verb is used predicatively, while the (b)-examples are NPs with the verb used attributively without any additional modifier. The additional modifiers in (49c) and (49d) and in (50c) and (50d) are again demonstrative enclitics.

(49) a. mɛ̀ṯ à̱=ɖjà̱aw.
child.SG D.SG=weep
'The child is weeping.'

b. má̱ṉ ɖjà̱aw
[child.SG.CS1 weep]
'weeping child'

c. má̱ṉ ɖjà̱aw =ɛ̱̀
[[child.SG.CS1 weep] =DEM1.SG]
'this weeping child'

d. má̱ṉ ɖjà̱aw =ɛ̱́
[[child.SG.CS1 weep] =DEM2.SG]
'that weeping child'

(50) a. tɪ̱ik à̱=dâ̱al.
woman.SG D.SG=laugh
'The woman is laughing.'

b. tɪ̱́ŋ dâ̱al
[woman.SG.CS1 laugh]
'laughing woman'

c. tɪ̱́ŋ dâ̱al =ɛ̱̀
[[woman.SG.CS1 laugh] =DEM1.SG]
'this laughing woman'

d. tɪ̱́ŋ dâ̱al =ɛ̱́
[[woman.SG.CS1 laugh] =DEM2.SG]
'that laughing woman'

4.3. CS1-modifiers without a construct state. Some CS1-modifiers are morphologically unaffected by a following modifier. As shown in the following subsections, such modifiers include the pronoun *dạ̀* 'other' and its plural counterpart *kɔ̀k* (Section 4.3.1), the time particles (Section 4.3.2), adverbials (Section 4.3.3), nominal possessors (Section 4.3.4), and relative clauses that are not adjectival verbs or a high-toned non-adjectival intransitive verbs (Section 4.3.5). So it seems that, apart from adjectival verbs and high-toned non-adjectival intransitive verbs, CS1-modifiers do not get construct-state marking before another modifier. Demonstratives, which are also CS1-modifiers, are never followed by another modifier that triggers construct-state marking.

4.3.1. Pronoun 'other, some' + modifier. That *dạ̀* 'other, some' does not get a construct state is seen in (51a) and (51b), where it is followed by a relative clause. The same applies to its plural counterpart *kɔ̀k*, as seen (51c), here followed by a demonstrative.

(51) a. kʉ̀ ạ̀=nɔ̀ŋ rạ̀n **dạ̀** dɛ́ɛ̀k ɯɔ̀k.
and D.SG=have [[person.SG.CS1 other.SG] [be_insufficient.NTS cow.PL.GEN]]
'and there is somebody whose cows are insufficient' (t.)

b. rạ̀n **dạ̀** kɛ̂ec ʈɟɛ́eek
[[person.SG.CS1 other.SG] [PF.NEG marry.AP.NF]]
'some person who has not married' (t.)

c. kɛ̂ek ɛ́= wwʊ́ot **kɔ̀k** =ká
[3PL DEM= [clan.PL.CS1 other.PL] =DEM2.PL]
'those other clans' (t.)

4.3.2. Time particle + modifier. The absence of construct state marking in time particles is illustrated in (52). In (52a) the P4 time particle *ɯɔ̀n* is followed by a demonstrative. In (52b) and (52c), P2 *wạ́n* and P1 *njá*, respectively, are followed by a relative clause.

(52) a. ká **ɯɔ̀n** =ká
[[thing.PL.CS1 P4] =DEM2.PL]
'those past things'[18] (t.)

b. rʉ̀m **wạ́n** cạ̀ lwɛ̂eel
[[Rup.SG.CS1 P2] [PF.1SG say.NF]]
'that Rup which I mentioned'[19] (t.)

c. jɔ́ɔl =d-ɛ̀e-n **njá** dʉ́ur ɛ́en wàatʉ̀
[[[tail.SG.CS1=SG-3SG-CS1] P1] [almost_do.NTS 3SG.GEN transform_oneself.NF]]
'his aforementioned tail with which he was about to transform himself
(into a lion)' (t.)

*4.3.3. Adverbial + modifier.*That adverbial modifiers are unaffected by a following modifier is illustrated in (53). In (53a) the adverbial *twɛ́ɛŋ* 'in front', which is the Essive/Ablative case form of the noun *twɛ̂ɛŋ* 'front', is followed by the distant demonstrative *tʉ̀j* 'that'. In (53b) the adverbial *bɛ̀eec* 'outside', which is also in the Essive/Ablative case, is followed by a relative clause.

[18] The absolute state form of 'things' is *ká̰ŋ*, while CS1 of this plural noun is *ká̰* or *ká* (alternating with *kạ̀* and *kạ̀*) before a consonant and *ká̰k* before a vowel.
[19] Rup is a section of the Agar subtribe.

(53) a. ɛ̀ bɑ́ak =d-ɛ́e-n **twɛ́ɛŋ** =tʊ̀j
[PREP [[[dawn.NMLZ.SG.CS1 =SG-3SG-CS1] front.ESS/ABL] =DEM3.SG]]
'the day after the day after tomorrow' (Lit. 'on that (far) its dawn in front')

b. pɑ̀n =d-jɛ́e-n **bɛ̀ɛec**
[[[home.SG.CS1 =SG-1SG-CS1] outside.ESS/ABL]

lɛ̀ɛw bɑ̀ lɔ̂ooj lɔ̀ŋ =tʊ̂uuj
[be_able.1SG [FUT.1SG make.NF side.SG.CS1 =DEM3.SG.ESS/ABL]]]
'my house in the village which I will be able to construct on the other side' (t.)
Lit. 'my outside home which I will be able to make on the other side'

4.3.4. Nominal possessor + modifier. A complex head consisting of a head and a following nominal possessor is not inflectionally affected by an additional modifier, as illustrated with four sets of examples here. In (54a), the addition of the possessive pronoun *=d-ɛ̀ɛn* 'his' to *tɔ̀ɔ̀n ɣàmɑ̀ɑal* 'bull of sheep, ram' does not impose any construct state marking on the latter.[20] That is, *ɣàmɑ̀ɑal* 'sheep', the final word of 'bull of sheep', is in the absolute state with an overlong root vowel.[21] If 'sheep' were in First Construct State, its root vowel would be short, as in (54b), and if it were in Second Construct State, its root vowel would be long, as in (54c). Semantically, moreover, what the possessive pronoun modifies is not 'sheep', but 'bull of sheep'.

(54) a. tɔ̀ɔ̀n **ɣàmɑ̀ɑal** =d-ɛ̀ɛ-n wɑ̀n
[[[bull.SG.CS1 of.sheep.SG.GEN] =SG-3SG-CS1] P2]
'his aforementioned ram' (t.)

b. **ɣàmɑ́l** ɛ̀ wɑ́aa
sheep.SG.CS1 of father.SG.1SG.GEN
'my father's sheep'

c. **ɣàmɑ́al** =d-ɛ̀
sheep.SG.CS1.CS2 =SG-3SG
'his sheep'

In (55a), similarly, the addition of the possessive pronoun *=dʊ̀* 'your' has no morphological effect on the head *ɲíŋ ɛ̀ kɑ̀ŋ* 'knowledge of things, wisdom'. That is, the head NP is in the absolute state just as in (55b), where it is unmodified. Note also that the morpheme /d/ in the possessive pronoun cross-references the possessum as singular and thus agrees with the singular head *ɲíŋ* 'knowledge' in 'knowledge of things', not with the plural possessor *kɑ̀ŋ* 'things'. This also shows that the possessive pronoun is a phrasal enclitic rather than a suffix.

(55) a. ɲíŋ ɛ̀ **kɑ̀ŋ** =d-ʊ̀
[[know.NMLZ.SG.CS1 of thing.PL.GEN] =SG-2SG]
'your wisdom'

[20] The initial long vowel of *ɣàmɑ̀ɑal* in (54a) results from contraction of the preposition *ɛ̀* 'of' with the noun *ɣàmɑ̀ɑal* 'sheep'.
[21] The possessor 'sheep' in (54a) is in a Genitive position, but the Genitive case here syncretizes with the Nominative case.

b. ɲɪ́ŋ ɛ̰ kàn̰
[know.NMLZ.SG.CS1 of thing.PL.GEN]
'wisdom'

In (56), the plural demonstrative *=kà* 'these' modifies the head NP *wɛ́ɛ̰w a̰arjo̰op* 'money of payment'.[22] In this head NP, the head noun *wɛ́ɛ̰w* 'money' is plural and the possessive modifier 'of payment' is singular. Clearly, therefore, the plural demonstrative does not modify the immediately preceding noun 'payment' but the whole NP 'money of payment', which is plural because its head is plural. That the whole NP 'this money of payment' is plural is also evidenced by the fact that the Declarative particle *a̰a=* is plural (Andersen 1991: 271–272 and Andersen 2019: 142–143). This particle exhibits number agreement with the Topic, which here is the patient-object of the ditransitive applicative main verb *dɔ̰ɔ̰m* 'catch for'.

(56) kʉ̀ kɛ̰ɛk ɛ́= wɛ́ɛw **a̰arjo̰op** =kà
and [3PL DEM= [money.PL.CS1 of.payment.SG.GEN] =DEM1.PL]

a̰a=jâakʉ̂uma̰ dɔ̰ɔm ì
D.PL=HAB.NTS.government.SG.GEN catch.APPL.NF 2SG
'and this amount the government used to pay you' (t.)
Lit. 'and this money of payment the government used to catch for you'

In (57a) the head NP *mʉ̀uc ɛ̰ la̰j* 'shooting of animal' is modified by the nominal possessor *ɛ̰ d̰ɔ̰ɔk* 'of boy' without having any morphological change imposed on it. The constituent structure of the full NP in (57a) is [[X of Y] of Z], as opposed to that of the NP (57b), which is a male name based on patronymy and whose constituent structure is [X of [Y of Z]].

(57) a. mɔ̰c a̰=ma̰an mʉ̀uc ɛ̰ **la̰j** ɛ̀ d̰ɔ̰ɔk.
man.SG D.SG=hate [[shoot.NMLZ.SG.CS1 of animal.SG.GEN] of boy.SG.GEN]
'The man hates the boy's shooting of the animal.'

b. ma̰tja̰aŋ ɛ̰ ma̰wɪ̰it ɛ̰ márja̰al
[Mathiang.SG.CS1 of [Mayuit.SG.CS1.GEN of Marial.SG.GEN]]
'Mathiang Mayuit Marial' (t.)
Lit. 'Mathiang (son) of [Mayuit (son) of Marial]'

4.3.5. Relative clause + modifier. A relative clause can be followed by a demonstrative, and unless the relative clause is an adjectival verb (Section 4.1) or a high-toned non-adjectival intransitive verb (Section 4.2), it is not morphologically affected by the demonstrative. This is exemplified in (58), where the singular demonstrative *=ɛ̰* 'this' encliticizes to the relative clause *jɛ́ɛ̰ t̰ɛ̂ɛl* 'which you pull' headed by the singular noun *kɛ́* 'thing'.

(58) ɛ́= kɛ́ jɛ́ɛ̰ t̰ɛ̂ɛl =**ɛ̰**
[DEM= [thing.SG.CS1 [HAB.2SG pull.NF]] =DEM1.SG]
'this thing which you pull along' (t.)

Thus, there is a contrast between (59a) and (59b). In (59a) the postverbal subject of the relative clause has the First Construct State form *t̰ɪ̀ŋ* 'woman' before the demonstrative *=ɛ́* 'that',

[22] The initial long vowel of *a̰arjo̰op* in (56) results from contraction of the preposition *ɛ̰* 'of' with the noun *a̰rjo̰op* 'payment'. [jâakʉ̂uma̰] in the same example is a contraction of the Habitual auxiliary verb *jɛ́ɛ̰* and the borrowed noun *a̰kʉ̂uma̰* 'government'.

and the latter therefore modifies this immediately preceding noun. In (59b), by contrast, the postverbal subject of the relative clause has the absolute state form *tɪ̰̀ik* 'woman' before the demonstrative *=ɛ́*, and the latter therefore does not modify 'woman' but the whole preceding part of the NP.

(59) a. rɛ̰́ɛc ʈɛ̰́ɛɛl **tɪ̰̀ŋ** =ɛ́ ä̰=pä̰̀t̪.
[fish.SG.CS1 [cook.NTS [woman.SG.CS1.GEN =DEM2.SG]]] D.SG=be_good
'The fish which that woman is cooking is good.'

b. rɛ̰́ɛc ʈɛ̰́ɛɛl **tɪ̰̀ik** =ɛ́ ä̰=pä̰̀t̪.
[[fish.SG.CS1 [cook.NTS woman.SG.GEN]] =DEM2.SG] D.SG=be_good
'That fish which the woman is cooking is good.'

5. Order of postnominal modifiers

In a noun phrase with multiple postnominal modifiers, some variation in word order is possible, but there are also some restrictions. If one of the modifiers is a numeral in the form of a *kä̰̂a*-phrase or is the quantifier *ɛ́bä̰̂n* 'all' (cf. Section 2.3), it comes last, as in (60). In (60a) and (60b) 'two' and 'all', respectively, are preceded by the demonstrative *=ká̰́* 'those'. In (60c) 'three' is preceded by the possessor phrase 'of my father'.

(60) a. ɯɪ̰̂ɔk =ká̰́ kä̰̂a rɔ̰̀w
[[cow.PL.CS1 =DEM2.PL] [3PL.QUANT two]]
'those two cows'

b. ɯä̰̀an =ká̰́ ɛ́bä̰̂n ä̰́a=nɔ̰̀ŋ wwɔ̰̀ot.
[[place.PL.CS1 =DEM2.PL] all] D.PL=have cattle_camp.PL
'All those places have cattle camps.' (t.)

c. ɟɔ́ɔk ɛ̰̀ wä̰́aa kä̰̂a djä̰́ak ä̰́a=cɛ́ ʈɔ̰̀w.
[[dog.PL.CS1 of father.SG.1SG.GEN] [3PL.QUANT three]] D.PL=PF die.NF
'My father's three dogs have died.'

Otherwise, if there is a demonstrative, it has the phrase-final position, as seen in (61)–(64), whose head nouns are followed by three or four modifiers. In (61) the demonstrative *=tṵ̀j* 'that' is preceded by two adjectival verbs in construct state.

(61) tɔ̰̂ɔŋ dɪ̰̀iit mɛ́eec =tṵ̀j
[[[swamp.SG.CS1 be_big.CS1] be_far.CS1] =DEM3.SG]
'that far big swamp'

In (62) the same demonstrative is preceded by three modifiers: two adjectival verbs in construct state and a relative clause in the form of the non-adjectival intransitive verb *dä̰̂al* 'who is laughing', which lexically has a falling tone and therefore does not exhibit construct state marking.

(62) tɪ̰̀ŋ pwɔ̰̀ɔɔʈ̰ dɛ́eeŋ dä̰̂al =tṵ̀j
[[[[woman.SG.CS1 be_good.CS1] be_beautiful.CS1] laugh] =DEM3.SG]
'that beautiful charming woman laughing over there'

In (63) the demonstrative *=ɛ́* is preceded by a possessive pronoun followed by a relative clause.

(63) ɛ̰en ɛ́= tɪ̰ŋ =d-jɛ́e-n cɔ̰ɔl jɔ̰ɔm =ɛ́
[3SG [DEM= [woman.SG.CS1 =SG-1SG-CS1] [call.PASS Yom.SG]] =DEM2.SG]
'that wife of mine who is called Yom' (t.)

And in (64) the demonstrative *=ɛ̰́* is preceded by three other modifiers: the possessive pronoun *=d-ɣ́a-n* 'our' in construct state, the numeral *tɔ̰ŋ* 'one', also in construct state, and the relative clause *cɛ́ dɔ̰́oŋ* 'which has remained', to whose last word the demonstrative encliticizes.

(64) jɛ̰́en ɛ́= dä̰-n =d-ɣ́a-n tɔ̰ŋ
[3SG [DEM= [[[heifer.SG-CS1 =SG-1PL-CS1] one.CS1]

cɛ́ dɔ̰́oŋ =ɛ̰́
[PF remain.CF.NF]] =DEM1.SG]]
'this one heifer of ours which has remained' (t.)

So (61), (62) and (64) each contains a chain of three construct states.

The order of a possessive pronoun and an adjectival verb is variable, at least before a demonstrative. Thus, there are alternatives like those in (65). In (65a) the possessive pronoun precedes the adjectival verb, while in (65b) the order is reversed. The same two orders are found in (66).

(65) a. pä̰́al =d-jɛ́e-n d̰ɛ́ɛɛn =ɛ̰́
[[[knife.SG.CS1 =SG-1SG-CS1] be_blunt.CS1] =DEM1.SG]
'this blunt knife of mine'

b. pä̰́al d̰ɛ́ɛɛn =d-jɛ́e-n =ɛ̰́
[[[knife.SG.CS1 be_blunt.CS1] =SG-1SG-CS1] =DEM1.SG]
'this blunt knife of mine'

(66) a. lɔ̰́om pä̰́al =d-ɛ́ɛn mɔ̰̀oo̰t̰ =ɛ́.
take.2SG [[[knife.SG.CS1 =SG-3PL.CS1] be_sharp.CS1] =DEM2.SG]
'Take that sharp knife of theirs!'

b. lɔ̰́om pä̰́al mɔ̰́oo̰t̰ =d-ɛ̰́ɛn =ɛ́.
take.2SG [[[knife.SG.CS1 be_sharp.CS1] =SG-3PL.CS1] =DEM2.SG]
'Take that sharp knife of theirs!'

6. Typological similarities in other languages

The fact that construct state forms in Dinka may be chained makes this language typologically similar to some other languages with construct state marking. Such languages are, for instance, the Iranian languages, in whose description the construct state (marker) is called "Ezafe". Samvelian (2007) gives example (67) from Persian. Here the head 'book' is followed by three modifiers: the adjective 'ancient', the prepositional phrase 'without value' and the possessor 'Maryam'. Both the head and the non-final modifiers take the construct state suffix, which is here glossed as "EZ" for Ezafe.

(67) (Det) N-EZ AP-EZ PP-EZ NP(Poss)
in ketâb-e kohne-ye bi arzeš-e maryam
this book-EZ ancient-EZ without value-EZ Maryam
'this ancient worthless book of Maryam's' (Samvelian 2007: 606)

Gutman (2018) gives a similar example from the Sorani dialect of Kurdish, seen in (68). Here the head noun 'city' is followed by two modifying adjectives, 'big' and 'modern', and both the head and the first adjective take the construct state suffix.

(68) [shar-êk-î gewre]-y taze
city-INDEF-EZ big-EZ modern
'a big modern city' (Gutman 2018: 269)

Chained construct state forms are also found in Dogon languages as described by Heath and McPherson (2013), although they do not use the concept "construct state".[23] Examples of NPs with multiple modifiers in Jamsay (Heath 2008) are given in (69)–(70). In (69) the head 'dog' is followed by the adjectival modifiers 'black' and 'large'. The lexical tones of 'dog' and 'black' are L.H and H, respectively, but in this construction they are low-toned, thereby indicating that they are followed by a modifier. "L" in the interlinear translation indicates a syntactically conditioned low-tone overlay.

(69) ìjù jɛ̀m dùgú
dog.L black.L large
'a big black dog' (ìjú, jɛ́m) (Heath 2008: 245)

In (70) the head noun 'aunt' is preceded by a possessor NP consisting of the possessor 'I' and the possessum 'father', and it is followed by a relative clause. Both the possessed noun 'aunt' and the possessed noun 'father' are affected by low-tone overlay, which shows that they are modified.

(70) [[mì dè:] nɛ̀r^{n}ɛ̀] bàmàkó wɔ̂-n kù^{n}
[[1SgP.L father.L] aunt.L] Bamako be.Hum-Ppl.Sg Def
'my father's aunt who lives in Bamako'[24] (Heath 2008: 240)

7. Conclusion

As demonstrated in this article, multiple postnominal modification in Dinka to a large extent involves chains of construct state forms. The head noun and, to some extent, all but the final modifier are marked as being in a construct state. Thus, multiple postnominal modification in Dinka is strikingly similar to multiple postnominal modification in Iranian languages, which may have chains of words marked by an ezafe suffix, and also similar to Dogon languages, where tonal overlays function in an analogous way.

In single postnominal modification in Dinka, the construct state inflection of the head noun indicates to which of two classes the modifier belongs, CS1-modifiers triggering First Construct State, and CS2-modifiers triggering Second Construct State. This binary distinction in the head noun between First and Second Construct State is cancelled when the construct-state triggering modifier is followed by another construct-state triggering modifier. In this construction the head invariably is in First Construct State. Since Second Construct State is morphologically based on First Construct State, what happens is that the non-affixal Second Construct State morpheme is removed.

[23] That it is, in fact, a construct state construction is also noted by Creissel (2018: 732).
[24] Abbreviations used in example (70): 1SgP = first person singular possessor; Def = Definite; Hum = Human; Ppl = Participle; L = low-tone overlay; Sg = Singular.

The means used for forming the construct state of (singular) CS2-modifiers are the same as those used for forming First Construct State of singular nouns: (i) addition of the suffix *-n* to a root that ends in a vowel, (ii) replacement of a root-final glide with the suffix *-n* with compensatory lengthening of the preceding vowel, (iii) nasalization of a root-final stop, and (iv) tone shift.

Among the CS1-modifiers, two subclasses of intransitive verbs used as relative clauses get construct state form: adjectival verbs and high-toned non-adjectival verbs. Adjectival verbs undergo vowel lengthening from short or long to overlong, their vowel shifts from Grade 1 to Grade 2, and their tone shifts from low to variable high. High-toned non-adjectival intransitive verbs undergo tone shift to variable high. The other CS1-modifiers are not morphologically affected by a following construct-state triggering modifier.

Abbreviations

1PL	first person plural	EZ	Ezafe
1SG	first person singular	FUT	Future
2PL	second person plural	GEN	Genitive
2SG	second person singular	HAB	Habitual
3PL	third person plural	INDEF	indefinite
3SG	third person singular	IPA	International Phonetic Alphabet
ABS	absolute state	LOC	Locative
ALL	Allative	NEG	negation
AP	antipassive	NF	NonFinite
APPL	Applicative	NMLZ	nominalizer
ASS	Assertive	NP	noun phrase
ASSOC	associative plural	NTS	followed by a Non-Topical subject
C	consonant	P1	recent past of today
CF	Centrifugal	P2	distant past of today
COM	Comitative	P3	earlier than last midnight
CP	Centripetal	P4	long ago
CS1	First Construct State	PASS	passive
CS2	Second Construct State	PF	Perfect
D	Declarative	PL	plural
DEM	demonstrative	PREP	preposition
DEM1	first person demonstrative	PST	Past
DEM2	second person demonstrative	QUANT	quantification
DEM3	third person demonstrative	SG	singular
DIM	diminutivizer	V	vowel
ESS/ABL	Essive/Ablative		

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