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Analysis and Reconstruction**

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REMARKS ON THE DISTRIBUTION OF POST- CONSONANTAL GLIDES IN NUER

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In Nuer, glides /w/ and /j/ frequently occur root-internally between the initial consonant of the root and the root vowel. This article examines possible combinations of the glides with adjacent segments, identifying meaningful patterns in the data. It establishes several synchronic phonological processes which obscure the underlying segmental composition of the glide-containing sequences in Nuer, as well as some relatively recent diachronic developments that resulted in emergence of post-consonantal glides in new phonological contexts. The original distribution of post-consonantal glides in the ancestral language (Proto-Dinka-Nuer) is then reconstructed, taking these findings into account, and compared to a similar reconstruction based on the data from Agar Dinka (Flego, this volume).

Keywords: Western Nilotic, Nuer, Dinka, glides, syllable structure

INTRODUCTION

Nuer is a Western Nilotic language spoken by about 1,700,000 people predominantly in South Sudan and Ethiopia. Its closest relatives are Dinka and Thok Reel. Crazzolara (1933) offers one of the earliest descriptions of Nuer grammar. More recent work on Nuer includes Faust (2017), Gjersøe (2019), Baerman et al. (2019), Monich & Baerman (2019), Monich (2020, 2023a,b), Baerman & Monich (2021), Faust and Grossman

(2023), Reid (2019, 2024), Reid & Remijsen (2025).

Native Nuer roots are of the shape $C(G)VC-$, where G represents a glide j or w . These post-consonantal glides may occur in various combinations with adjacent segments. However, not all combinations are possible, and systematic gaps exist. In this article, I look closely at the possible CGV -sequences in present-day Nuer to determine their underlying segmental composition and diachronic origin. The ultimate objective of this task is to arrive at the “original” distribution of post-consonantal glides as inherited from the language ancestral to both Nuer and Dinka (Proto-Dinka-Nuer or PDN).

The article is structured as follows. In Section 1, I lay out the most relevant background information regarding Nuer morphophonology. In Section 2, I present the data. Section 3 is focused on the analysis of the different patterns observed in the data. In Section 4, the original distribution of the glides is reconstructed, while Section 5 compares it to a similar reconstruction based on Agar Dinka (Flego, this volume).

1 BASICS OF NUER MORPHOPHONOLOGY

Table 1 shows Nuer vowel inventory. The diacritic $\langle \cdot \rangle$ indicates breathy phonation. Each vowel occurs in one of three length grades: short (V), long ($V:$), or overlong ($V::$).

TABLE 1. VOWEL INVENTORY

MONOPHTHONGS			DIPHTHONGS		
\dot{i}, i		u, u	$\dot{i}e, ie$	uo, uo	
e, e	θ, θ				
$\varepsilon (\varepsilon^1)$		\ddot{u}, \ddot{u}	$\varepsilon a (\varepsilon a^2)$	\ddot{a}, \ddot{a}	
	Δ				
	a, a				

¹ The monophthong ε is marginal, occurring in a few items only in specific morphophonological contexts. It is therefore omitted from further discussions of the vowel system.

² The diphthong εa is marginal, occurring in a few items only in specific morphophonological contexts. It is therefore omitted from further discussions of the vowel system.

Nuer morphology is highly non-concatenative with most grammatical information indicated via mutations of the root. There are four mutation targets: root vowel quality, quantity, tone, and phonation/manner of articulation of the root-final consonant. Table 2 illustrates mutation of all four targets in the paradigm of the noun *dê:l* “sheep/goat”.

TABLE 2. SAMPLE NOMINAL PARADIGM

GLOSS	SG		PL	
	NOM	OBL	NOM	OBL
‘sheep/goat’	<i>dê:l</i>	<i>dĕa:l</i>	<i>dĕt</i>	<i>dĕ:t</i>

Vowel quality mutation is relevant to the issue of post-consonantal glides and needs a more detailed explanation.

Nuer vowels can be organized into a system of morphological vowel grades shown in Table 3 (a slightly differently organized version of the system appears in Reid, 2019, 2024, and Monich & Baerman, 2019). Only 11 vowel phonemes are found in morphologically basic forms (i.e., in roots): *i*, *ɪ*, *u*, *ʊ*, *e*, *ɛ*, *ø*, *ɘ*, *ɚ*, *ɛ̄*, *a*. These 11 developed out of 10 vowels which are reconstructed in Proto-Western-Nilotic (PWN) (Andersen, 1999a). The modern Nuer root vowels correspond to the PWN vowels straightforwardly, except for the following two developments: 1) the PWN [+ATR] vowels acquired a breathy phonation in Nuer; and 2) the PWN **o* underwent a phonemic split and has two reflexes in Nuer – *ɘ* and *ø*³.

³ The expected outcome of this PWN vowel in Nuer would have been *ɘ*. Instead, the PWN **o* has two reflexes in Nuer: *ɘ* and *ø*. The first of these lost the [+ATR] feature but preserved backness; the second kept [+ATR] but became [-back]. All the other features of the two phonemes, including breathiness, are as expected. The exact environments which triggered the development of one reflex vs. the other have not yet been fully established, since relevant cognates in other WN languages are not available in sufficient quantity. It is clear, however, that those instances of the PWN **o* which arose due to ATR harmony between the root vowel **ɔ* with *i*-mutating suffixes, always yielded *ø* in Nuer. The latter fact suggests that at least in some cases the split was conditioned by fronting environments.

TABLE 3. NUER VOWEL GRADE SYSTEM

PWN	ROOT VOWEL	A-MUTATION	I-MUTATION	IA-MUTATION
*i	i	iɛ	i	iɛ
*ɪ	ɪ	ɪɛ		
*e	e	e	e	e
*ɛ	ɛ	ɛa		
*ʌ	ʌ	ʌ	ʌ	ʌ
*a	a	a		
*o	ɔ	ɔa	ɔ	ɔa
	ø	ø	ø	ø
*ɔ	ɔ	ɔa		
*u	u	uɔ	u	uɔ
*ʊ	ʊ	ʊɔ		

The terms for the mutations that are used in Table 3 (*a*-mutation and *i*-mutation) refer to the presumed diachronic source of the mutations⁴. Comparative data suggests that present-day Nuer forms where the root vowel is modified either through diphthongization or through removal of breathiness/ATR, are reflexes of the forms which contained suffixes with **a* in the ancestral language (Monich & Baerman, 2019). Thus, in Mayak (another WN language), the plural form of the noun *tuj* ‘horn.SG’ is a suffixed form *tuj-ak* ‘horn.PL’, and it corresponds to the *a*-mutated plural form *tɯɔ:ɲ* ‘horn.PL’ in Nuer derived

⁴ A different labeling convention is used to refer to the mutations in many other works (Reid 2019, 2023, 2024; Monich & Baerman, 2019; Baerman et al. 2019, Baerman & Monich, 2021). In that system, grade 2 corresponds to *i*-mutation, and grade B corresponds to *a*-mutation, while root vowels belong either to grade 1A (non-breathy) or grade 2A (breathy).

from *túŋ* ‘horn.SG’. Another example is the Mayak singular ~ plural pair *ɔin* ‘intestine.PL’ ~ *ɔin-ɔɪ* ‘intestine.SG’ corresponding to the Nuer *cín* ‘intestine.PL’ ~ *cíɛn* ‘intestine.SG’.

Similarly, comparative data suggests that those Nuer forms where the root vowel is modified via addition of breathiness/ATR, developed out of forms containing a suffixal vowel **i* in the ancestral language. Consequently, the modifications introduced by these affixes in Nuer are termed here “*i*-mutation”. For example, the plural form of the Mayak noun *lɛk* ‘tooth.PL’ is *lɛy-ɪɪ* ‘tooth-SG’ with the root vowel shifted to [+ATR] due to the ATR-vowel harmony with /i/ in the suffix (Andersen 1999a). The corresponding Nuer cognate pair *lɛc* ‘tooth.PL’ ~ *lɛc* (WNuer *lɛj*) ‘tooth.SG’ demonstrates that the ATR harmony between the suffix and the root survives in Nuer as *i*-mutation. We find similar evidence for the origin of *i*-mutation in the verbal domain. For example, the antipassive Surkum suffix $-(C)^5i$ - likewise triggers ATR harmony in the root (Andersen 2009), as can be illustrated by the antipassive stem *wá:ŋ-gí* ‘burn-AP’ derived from the root *wá:ŋ* ‘burn.TR’. The corresponding antipassive form in Nuer *wá:ŋ* ‘burn.AP’, and it is derived from the root *wa:ŋ*- via *i*-mutation. Note also that just as [+ATR] root vowels undergo no quality changes in the presence of the suffixal *-i*- in WN languages such as Mayak and Surkum, so the *i*-mutation in Nuer has no effect on breathy root vowels: for example, the basic plural noun *wáɪr* “dung.PL” has the singulative form *wá:ɪ:r* “dung.SG” in Nuer, corresponding to the Mayak cognates *wáɪr* “dung.PL” and *wáɪr-ɪɪ* “dung.SG”.

The two mutations have different functional roles. Root vowels are *i*-mutated in many derived verbal stems, such as the antipassive, the centripetal, the applicative and in deverbal nouns. For example, the antipassive stem derived from the root *nɛ:n*- “see.TR” is *nɛ:n*- “see.AP”. Root vowels may also show *i*-mutation in marked number forms of some nouns, e.g., the “basic plural”⁶ noun *rɛc* “fish.PL” yields the singular form *rɛc*

⁵ The consonant (C) appears as a homorganic voiced stop after nasals; after stops, it is manifested non-segmentally by blocking intervocalic voicing of the preceding consonant (see Section 5.2).

⁶ See Storch (2005) for the discussion of the “basic plural” class of nouns in Western Nilotic languages. These nouns have a morphologically basic plural form and a derived singular (or singulative) form. Typically, they represent things that come in multiples or mass nouns: body parts (teeth, hair, intestines, etc.)

“fish.SG” via *i*-mutation. In contrast, *a*-mutation is usually involved in inflectional morphological operations, such as derivation of case forms and subject agreement. For example, the root vowel is always *a*-mutated in the 1SG form of a verb (e.g., *nêa::n-ǎ* “see.TR-1SG” < *nɛ:n-* “see.TR”), and in unsuffixed oblique nominal forms (e.g., *dî:t* “bird.SG.OBL” < *dîɛ::t* “bird.SG.NOM”).

As Table 3 shows, *a*-mutated variants of high vowels *ɯ*, *ʊ*, *i*, *ɪ* are diphthongs consisting of a high vowel followed by a mid vowel – i.e., *iɛ* *ɯɔ*, *ʊɔ*, *iɛ*, and *ɪɛ* correspondingly. Phonetically, there is no difference between a first segment of such a diphthong and an underlying postconsonantal glide. Both types of segments can be realized as glides or as vowels, depending on the length of the syllable nucleus. Since the Nuer syllable exhibits a three-way opposition in length – the short, the long and the overlong – we find that the underlying glides and diphthongs can adopt one of the following three surface realizations:

- if the syllabic nucleus is *short*, both underlying glides and underlying high vowels in diphthongs will be realized as secondary articulation on the preceding consonant:

Glide: /Cwa/ → [C^wa]

High vowel: /Cʊɔ/ → [C^wɔ]

- if the syllabic nucleus is *long*, both underlying glides and underlying high vowels in diphthongs will be realized as glides, with the following vowel shortened:

Glide: /Cwa:/ → [Cwa]

High vowel: /Cʊɔ:/ → [Cwɔ]

- if the syllabic nucleus is *overlong*, both underlying glides and underlying high vowels in diphthongs will be realized as vowels with the following vowel shortened.

animals that live in groups (antelope, fish, etc.), substances and materials (porridge, meat, urine, grass, medicine, etc.).

Glide: /Cwa:./ → [Cɔa:]

High vowel: /Cɔɔ:./ → [Cɔɔ:]

For the purposes of transcribing Nuer words in this article, I abstract away from these details of the phonetic implementation of glides and diphthongs. However, it is important to note that some underlying glide + vowel sequences are homophonous with *a*-mutated diphthongs, which in some cases renders such sequences analytically ambiguous. Since this article focuses specifically on underlying post-consonantal glides, and not on those which arise as a result of the phonetic implementation of *a*-mutation, it is important to keep the possibility of this structural ambiguity in mind.

Following this basic explanation of the vowel mutation phenomenon, we now proceed to the data.

2 THE DATA

Tables 4-5 list the documented environments in which post-consonantal glides *j* and *w* are encountered in Nuer⁷. Compatibility of the two glides with various adjacent segments (the preceding C-segment and the following V-segment) is illustrated with actual lexical items – roots and, less often, stems. Glosses for the lexical items in Tables 4-5 can be found in Appendix, where the relevant Nuer items are compiled together with their Agar Dinka cognates.

Whether a given root-initial consonant is compatible with the following *w* or *j* is determined primarily by its place of articulation. Therefore, in Tables 4-5, consonants with the same place of articulation are grouped together.

⁷ The list of attested lexemes in Tables 4-5 is based on the aggregate data elicited from 12 native speakers of Nuer: four speakers of the Western dialect (Bentiu) and eight speakers of the Eastern dialect (Jikany). While both dialectal varieties were consulted for the information relevant to the post-consonantal glides (and found to agree on all pertinent points), transcription of Nuer words in this article is based exclusively on the Eastern Nuer dialect.

TABLE 4. DISTRIBUTION OF POST-CONSONANTAL /j/ IN NUER

INITIAL C	MODAL ROOT VOWEL						BREATHY ROOT VOWEL				
	i	ε	a	ɔ	u	ĩ	ɛ̥	ʌ̥	ɔ̥	ɛ̥	u̥
p b m							<i>pjér-</i>			<i>mjət</i>	
t ɬ n̥⁸		<i>tjek-</i>	<i>tjâ:ŋ</i> <i>tjap-</i> <i>tja:c-</i> <i>tjâm</i> <i>tjâ::l</i> <i>tjâ:l</i>				<i>tjɛ:ŋ₁-</i> <i>tjɛ̣:ŋ₂</i> <i>tjek₁-</i> <i>tjek₂-</i> <i>tjɛ:c-</i>			<i>tjəŋ-</i>	
t d n			<i>djâ::r</i>	<i>djɔp-</i>			<i>djɛ:n-</i>		<i>djɔk</i>	<i>tjɔp</i>	
c ɟ (ŋ⁹)		<i>cjék-</i> <i>cjět</i> <i>cjɛ:ŋ-</i> <i>cjɛ̣:ŋ-</i> <i>jjɛ:j-</i> <i>jjɛ:n</i>	<i>jjâ:r</i> <i>jjâ:t</i> <i>jjâ::c</i>	<i>jjɔm</i>			<i>cjék</i> <i>jjɛ:k-</i> <i>jjɛ̣:k-</i>			<i>cjəm</i> <i>cjət-</i> <i>cjɛ::k</i> <i>jjɛ:k</i> <i>jjɛ̣</i> <i>jjɔp</i> <i>jjɔw</i> <i>jjəm-</i>	
k g ŋ											
r			<i>rjâ:l</i> <i>rjaŋ-</i> <i>rjak-</i>				<i>rjɛ:l</i> <i>rjɛj</i> <i>rjɛŋ-</i>			<i>rjɔp</i>	
l			<i>ljak-</i>						<i>ljɔk-</i>		

⁸ Dental stops are indicated with the diacritic <̣>. The corresponding stops without the diacritic are alveolar.

⁹ The onset /ŋ/ cannot be combined with a palatal glide. This gap is possibly due to the underlying /ŋ/ + /j/-onsets merging with simple /ŋ/-onsets.

TABLE 5. DISTRIBUTION OF POST-CONSONANTAL /w/ IN NUER

INITIAL C	MODAL ROOT VOWEL					BREATHY ROOT VOWEL						
	ɪ	ɛ	a	ɔ	ʊ	i	ɛ̥	ʌ̥	ɔ̥	ə̥	u̥	
p b m				<i>pwɔ:j- bwɔ:c bwɔ:j bwɔj- mwɔ:j-</i>					<i>pwɔ̥r- pwɔ̥:t- pwɔ̥:k- pwɔ̥:j- pwɔ̥:r- pwɔ̥r- pwɔ̥t pwɔ̥t mwɔ̥l-</i>			
t d n			<i>twác twá::r twár dwal- dwá::j</i>				<i>twéc dwɛ̥:l</i>	<i>twák dwɛ̥c- dwɛ̥j-</i>	<i>twɔ̥t dwɔ̥::r</i>			
c j (ɲ)	<i>cwít cwīj cwīj</i>	<i>cwèk- cwe:l- cwè::j cwèr- jwe:j- jwèr-</i>	<i>jwàc jwa:r-</i>				<i>cwéj cwéc cwér- cwe:n-</i>	<i>cwá::j jwá:l jwá:t jwá:t-</i>				
k g ŋ	<i>kwíc- kwīj- kwír- kwíl- kwín- kwít- gwíl gwí:k- gwíc-</i>	<i>kwél kwe:t- kwet- kwem- kwe:n1- kwe:n2- gwèk gwè::j gwe:t- gwe:j- ŋwèt ŋwej-</i>	<i>kwác1 kwác2- kwal- kwán kwa:j- ŋwan</i>			<i>kwíc kwín- gwí::r</i>	<i>kwér- kwéj kwél- gwéc gwét</i>	<i>kwá::r gwá:t gwár- ŋwá:c- ŋwák</i>	<i>gwɔ̥:r</i>			
r		<i>rwét- rwe:t- rwéj</i>	<i>rwác- rwá:t</i>				<i>rwe:t- rwét- rwél</i>	<i>rwák</i>				
l		<i>lwèk- lwe:ŋ1- lwe:ŋ2- lwe:t</i>	<i>lwa:ŋ- lwál- lwàŋ lwá:k</i>				<i>lwél lwét-</i>	<i>lwák-</i>				

As much as possible, Tables 4-5 show the morphologically basic form of each word or the root. For most nouns, the morphologically basic (unmutated) form is either the NOMSG or the NOMPL, e.g., *lwá:k* “cattle_byre.SG.NOM”. In other kinds of nouns and in all verbs, the root is either modified (mutated) or suffixed throughout the paradigm. Such lexical items appear with a hyphen in Tables 4-5 to indicate that the entry is not a complete word but only a root or a stem, e.g., *tjak-* “touch.TR”. In cases where the length of the root vowel is unclear, it is shown as observed in the most morphologically simple attested form. In cases where the data is ambiguous in regard to the lexical tone of the root, the tone is left unspecified.

In compiling the data for Tables 4-5, the two types of vowel quality mutations had to be approached differently. Presence of post-consonantal glides is not impacted by *a*-mutation: if a glide is present before the unmutated root vowel of a word, it is also present before its *a*-mutated variant. Any generalization made in this article regarding co-occurrence of a glide with a specific root vowel holds for the co-occurrence of the glide with the *a*-mutated variant of the vowel. Consequently, all forms with *a*-mutated vowels were safely omitted from the tables. The same principle does not hold for *i*-mutated vowels, however: in some cases (which will be discussed in detail in Section 3.2), post-consonantal glides are absent with the unmutated root vowel but present with its *i*-mutated variant, e.g., *cjét-* “call.AP” < *cɔ:l-* “call.TR”. Such stems are listed in Tables 4-5, even though they are not morphologically basic¹⁰.

Although the guiding principle in putting Tables 4-5 together was to list every root only once and in its most basic form, analytically ambiguous forms and forms with an uncertain relationship to basic roots are all listed to avoid inadvertent omissions in possible sound combinations. Thus, lexical items derived from the same root but related to each other in a non-transparent manner are listed separately. For example, the singular

¹⁰ Multiple *i*-mutated stems may be derived from the same root (the antipassive, the applicative, the centripetal, etc.). If a glide is present in one *i*-mutated stem, it is present in all others. Therefore, to be concise, only a single example of an *i*-mutated stem for each such root is listed in the Tables 4-5.

noun *jjɑ:t* “tree.SG.OBL” and its suppletive plural form *jjɛ:n* “trees.PL.OBL” both appear in Table 4. Moreover, items that are likely to be related to each other but cannot be claimed to be so in full confidence, are also listed in the tables. Thus, the nominal root *pwɔ̣r-* in the noun *(μ)-pw(ɔ̣)ar*¹¹ “cloud” is plausibly related to the verb *pwɔ̣:r-* “boil over (like milk)”, but, since it is not certain, both items appear in the list.

3 ANALYSIS

The distribution of post-consonantal glides in Tables 4 and 5 is not completely random and unconstrained. Even before phonological processes relevant to realization of post-consonantal glides are established, some patterns and restrictions on combinations of segments are easy to spot. Here are some preliminary observations.

The glide *j* may be preceded by any non-velar consonant. There is a hard prohibition against combining *j* with a velar consonant. There are also no sequences where *j* is followed by a high vowel. In most words where *j* combines with a non-breathy vowel, the vowel in question is *a*. Combining *j* with *ɛ* is also possible, but only when *j* is preceded by a palatal stop (apart from a single item *tʃɛk-* where it is preceded by a dental stop). The glide *j* is attested with all breathy mid vowels: most prominently, *ə*, but also *ɛ̣* and *ɔ̣*; however, there are no cases where *j* is followed by the low breathy vowel *ɑ̣*.

Onsets containing *w* are more numerous than those with a post-consonantal *j*. However, there are likewise several constraints on possible combinations. Thus, there are absolutely no sequences where *w* combines with dental consonants. There are also no sequences where *w* combines with back vowels *ɔ*, *ʉ*, *ə*. The phonemes *ɔ̣*, *ɔ̣* are the only back vowels may follow the glide *w*.

¹¹ The noun *(μ)-pwɔ̣ar* contains a moraic prefix which is unrealized in items pronounced in isolation but has some specific effects when preceded by another word (see Monich 2003a, 2003b, and Reid & Remijsen 2025 for description and analysis of the phenomenon). If the preceding word ends in a vowel, the prefix causes its lengthening. Additionally, if the final syllable of the preceding word has a low tone, the prefix influences its change to a rising tone. Since the objective of Tables 4-5 is to show the inventory of possible sound combinations in the onset of roots, the moraic prefix is omitted in them. However, the prefixes appear in the APPENDIX, which compares Nuer and Dinka cognates.

In the next three sections, we consider several subsets of the data in Tables 4 and 5 to establish the underlying segmental structures of these sequences and, where possible, their likely diachronic origin. Specifically, I will claim 1) that the absence of $j + \text{ɹ}$ sequences is the result of vowel raising (Section 3.1); 2) that the sequences labial + $w + \text{ɔ}/\text{ɔ}$ and the sequences palatal + $j + \text{ø}/\text{e}/\text{ɛ}$ contain excrescent glides (Sections 3.2-3.3); and 3) that the existing sequences $w +$ basic root vowel ɔ resulted from reanalysis of originally a -mutated root vowel ɹ (Section 3.4).

3.1 RAISED LOW VOWELS

In this first section of the analysis, we account for the absence of $Cj\text{ɹ}$ -sequences in Nuer. by positing a synchronic phonological process raising ɹ to e after j . This proposal explains not only the gap in the data but also some unusual morphophonological patterns.

According to the vowel grade system in Table 3, the expected a -mutated variant of the basic root vowel ɹ is e . For example, the oblique form of *réc* “fish.SG.NOM” is *rě:c*, while the 1SG form of the verb *kɛ:r-* ‘awaken.INTR’ is *ké::r-ɹ̣*. However, we find that in many lexical items where the root vowel ɹ follows j , the a -mutated variant for the root vowel is not e , but ɹ ! The list of documented instances of the morphological alternation between e and ɹ is provided in Table 6.

TABLE 6. ALTERNATION $e \sim a$

BASIC VOWEL		A-MUTATED VOWEL		GLOSS
<i>pjé:r-à</i>	OBL.SG	<i>pjá::r</i>	NOM.SG	“ceremonial scarification”
<i>tjé:η</i>	NOM.SG	<i>tjá::η</i>	OBL.SG	“antelope (sp.)”
<i>rjé:l</i>	NOM.SG	<i>rjá::l</i>	OBL.SG	“eel (sp.)”
<i>rjéj</i>	NOM.SG	<i>rjá:j</i>	OBL.SG	“boat”
<i>tjék</i>	UNINFL	<i>tjá:k-à</i>	UNINFL	“to be close to something”
<i>rjéη</i>	UNINFL	<i>rjá:η-à</i>	UNINFL	“be full”
<i>jjé::k</i>	UNINFL	<i>jjá::k-à</i>	UNINFL	“be bad”
<i>djé:n-à</i>	OBL.SG	<i>djá::n</i>	NOM.SG	“lotion”

The vowel a as the a -mutated variant of e makes sense only if the underlying basic vowel is $à$ but the $à$ is raised to e next to the palatal glide. In other words, the items listed in Table 6 – *pjé:r*, *tjé:η*, *rjé:l*, etc. – are /*pjàr*, /*tjà:η*, /*rjà:l*/ underlyingly and the vowel in their a -mutated forms is derived from the underlying $à$, not from the surface e . Since a is not subject to raising in the environment of the glide, we witness the unusual alternation between the basic root vowel e and the a -mutated vowel a in these words.

The fact that $à$ raises to e after j is evidenced most plainly in those morphological contexts where one would expect i -mutation of the root vowel: in i -mutated forms, roots with $-ja-$ always show the sequence $-jé-$ instead of the expected $-jà-$. For example, when applied to roots with a , the antipassive morphology (which always involves i -mutation) normally yields $à$ in the stem, e.g., *pat-* “slap.TR” > *pàt-* “slap.AP”. However, the root vowel a yields e in those antipassive stems where it is preceded by j , e.g., *tjap-* “touch.TR” > *tjèp-* “touch.AP”. Some i -mutated plurals derived from nominal roots with a after j show

the same phenomenon, e.g., *ɲjàm* “face.SG” > *ɲjé:m* “face.PL”¹². All these examples indicate that the palatal glide *j* conditions raising of the following *ɛ* to *e*.

The post-consonantal *w* triggers raising of *ɛ* to *e* also but with an additional conditioning factor: the vowel *ɛ* raises to *e* after *w* only if *ɛ* is an outcome of *i*-mutation of the basic root vowel *a*. For example, the antipassive stem derived from the root *kwal-* “steal” is *kwɛ̀l-* – the *i*-mutated vowel in the antipassive is expected to be *ɛ* but it surfaces as *e*. The same can be said for the antipassive *jwɛ̀:r-* derived from the root *jwa:r-* “scoop out”.^{13,14} In contrast, the basic *ɛ* does not undergo raising to *e* after *w*, as evidenced by such forms as *gwɛ̀r-í* “grind.TR-2SG”.

Interestingly, the vowel *e* that is derived from *ɛ* due to post-glide raising has two different *a*-mutated variants, depending on whether the underlying *ɛ* is itself basic or derived through *i*-mutation. When the basic root vowel *ɛ* raises to *e* under the influence of the glide, its *a*-mutated variant is *ɛ*, which is an expected *a*-mutated variant of the root vowel *ɛ* according to Table 3. For example, *ɛ* is assimilated to *e* in *pjɛ̀:r* “ceremonial_scar.SG.NOM”, with the *a*-mutated variant *ɛ* in *pjɛ̀r* “ceremonial_scar.PL.NOM”. However, when the root vowel *a* is *i*-mutated into *ɛ* due to some morphological process, and then raised to *e* after a glide, its *a*-mutated variant is *e* (realized as [ɪ] after *j*) – which is the expected *a*-mutated variant of the root vowel *e*, not *ɛ*! Thus, the vowel *e* in the antipassive stem *tjɛ̀p-* is derived from the root vowel *a* (*tjap-* “touch”) through *i*-mutation and subsequent raising. Correspondingly, its *a*-mutated variant is *tjɛ̀p-* (realized as [tɪp]), as in *tjɛ̀p-ɛ̀* [tɪpɛ̀] “touch.AP-1SG”. The same process applies when *ɛ* is raised to *e* after *w*:

¹² The rule of *ɛ* to *e* raising applies also after the palatal nasal if the vowel is short: for example, the plural of *ɲá:l* “girl” is *ɲér*, with *i*-mutated and raised vowel. The raising is blocked in non-short vowels, e.g., *ɲá:r* “gum”.

¹³ The same change appears to take place in Agar Dinka in derived verb stems with added breathiness, e.g. *jwɛ̀ar* “collect.BARE” vs. *jwɛ̀r* “collect.AP” (Andersen, 2017:29).

¹⁴ It appears that *ɛ* also raises to *e* after *w* when followed by a palatal nasal, and only if it is short (see fn. 12 for similarities with the *ɛ* → *e* after *j*). For example, the noun *cwɛ̀n* “liver” has oblique form *cwɛ̀:n*. The *a*-mutated variant *ɛ* in the oblique form is expected only if the root vowel in *cwɛ̀n* is *ɛ* underlyingly. Moreover, the related noun *cwɛ̀:n* “a cow of liver color”, where the root vowel does not undergo raising (due to its length), also demonstrates that the vowel in the root meaning “liver” is *ɛ*.

the *a*-mutated variant of the basic root vowel ɛ in *cwɛŋ* “liver” is ɛ̄ as in *cwɛ̄:n* “liver.SG.OBL”, but the *a*-mutated variant of the vowel in the antipassive stem *kwɛ̄l-* (derived from *kwal-* “steal”) is *e* as in *kwɛ̄l-ɛ̄*. Therefore, the vowel ɛ̄ , which is derived via raising of ɛ , displays an asymmetry in its paradigmatic behavior: if it is derived from a basic ɛ , its *a*-mutated variant is produced as if it is still ɛ underlyingly; if it is derived from ɛ̄ that is an *i*-mutated *a*, its *a*-mutated variant is produced as if it were an underlying ɛ^{15} .

This difference can be explained if the rule of the post-glide $\text{ɛ} \rightarrow \text{ɛ̄}$ -raising applies cyclically. The morphemes which induce *i*-mutation in the root vowels can all be described as “derivational” – their affixation triggers application of cyclic phonological rules, such as ɛ -raising. The derived stem is then fed as an input to the next cycle, where inflectional morphological processes, including *a*-mutation, apply. These inflectional processes have no access to the lexical information available at the preceding cycle, including the quality of the basic root vowel. Consequently, all derived stems with ɛ̄ behave identically in regard to inflectional *a*-mutation, whether the stem vowel is an underlying ɛ̄ or a ɛ raised to ɛ̄ , and yield the expected *a*-mutated variant *e* for both. In words where the inflectional morphology applies directly to the root, without an intervening derivational cycle, *a*-mutation of the root vowel ɛ takes place first, before $\text{ɛ} \rightarrow \text{ɛ̄}$ raising can apply, so that the regular *a*-mutated variant ɛ̄ is yielded. Consequently, the root vowel in such inflectional paradigms shows alternation between the basic ɛ and the *a*-mutated ɛ̄ .

In this section, we argued that the majority of postconsonantal sequences *-jɛ-* attested in Nuer are actually *-jɛ̄-* underlyingly. They are either derived from a root with a basic vowel *a* or show the unusual *a*-mutated variant ɛ̄ in the root. In fact, Table 4 contains only three lexical items in which the sequence *-jɛ-* cannot be shown to derive from the underlying *-jɛ̄-*: *cjɛ̄k* “woman.SG”, *tjɛ̄:c-* “ask”, *tjɛ̄k-* “aggravate”.

¹⁵ Flego (p.c.) points out that the same phenomenon exists in Agar Dinka (based on the data in Andersen, 2017). For example, for the verb *jwɔ̄ar* “collect”, the progression through *a*- and *i*-mutation is */wɔ̄/-/wɔ̄/-/wɛ̄/-/wɛ̄/*. The last two derived breathy forms behave just like inherently breathy */wɛ̄/*, but not like inherently breathy */wɔ̄/*. Similarly, for the verb *tjɔ̄ak* “marry”, the progression is */jɔ̄/-/jɔ̄/-/jɛ̄/-/jɛ̄/*. The last two derived breathy forms pattern just like inherently breathy */jɛ̄/* rather than like inherently breathy */jɔ̄/*.

3.2 EXCRESCENT GLIDES

Practically all combinations of root-initial consonant and the root vowel listed in Tables 4 and 5 also occur without the interfering glide. For example, the root-initial sequences *kwe-* and *ke-* are both attested, as in *kwet-* ‘kick.TR’ vs. *ket-* ‘swim.TR’. However, there are two consonant + vowel combinations which do not occur without an interfering glide. Sequences *Pwɔ/ɔ-* (where *P* represents any labial stop) are attested but sequences *Pɔ/ɔ-* are not: there are no roots beginning in *pɔ-/pɔ-*, *bɔ-/bɔ* or *mɔ-/mɔ* in Nuer. Similarly, sequences *Cjɘ-* (where *C* represents any palatal stop) are attested but sequences *Cɘ-* are not: there are no *cɘ-* or *jɘ-* in Nuer. Therefore, presence of the glides in *Pwɔ/ɔ-* and *Cjɘ-* sequences is completely predictable.

Moreover, since in some instances the vowel *ɘ* represents the *i*-mutated variant of *ɔ* (see Table 3), we find that a glide appears after the root-initial consonant in *i*-mutated forms derived from *Cɔ*-initial roots. For example, the root *cɔ:l-* ‘call.TR’ is *cjɘt-* in the antipassive. The glide is articulated especially clearly in *i*-mutated forms with an overlong root syllable since in this context glides are vocalized. Thus, the agentive noun derived from the root *cɔ:l-* ‘call’ is *cjɘ:l* ‘caller’, pronounced [cɘ:l] due to glide vocalization. Another example is the verb *jɔm-* ‘scoop.TR’. This verbal root forms a minimal pair with the noun *jjɔm* ‘wind’, indicating that presence of the glide between the palatal stop and the vowel *ɔ* is unpredictable from the context, i.e., phonemic. However, the glide *j*, while clearly absent in the root *jɔm-* ‘scoop.TR’, is inserted in the *i*-mutated stems derived from it, for example, in the antipassive form *jjɘm-* ‘scoop.AP’.

An opposite relationship links *i*-mutation and presence of post-consonantal *w*. The glide *w*, which is predictable between a labial consonant and the vowel *ɔ*, disappears when *ɔ* is *i*-mutated to *ɘ*. For example, *w* is observed in the singular form *bwɔ:c* ‘coward.SG’ but not in its *i*-mutated plural form *bɘc* ‘coward.PL’.

The fact that the mutation of the root vowel is accompanied by the insertion and deletion of the glides, indicates that in sequences *Pwɔ/ɔ-* and *Cjɘ-*, the glides are not part of the segmental root structure (i.e. not lexical), but are instead epenthetic or, more precisely,

excrecent. The palatal glide is inserted between a palatal stop and the vowel ϵ (and its a -mutated variant θ) while the labial glide is inserted between a labial stop and vowels \mathfrak{c} and \mathfrak{q} (and their a -mutated variants $\mathfrak{c}a$ and $\mathfrak{q}a$). The exceptionless nature of the rule suggests that it is a synchronically active process which applies in all contexts where the phonological conditions are met.

What is the phonological motivation for this rule, and why does it apply only after labials and palatals? The answer to this question lies in the nature of consonantal excrecence: it results from the overlap in features of two adjacent segments. The textbook example of this is the insertion of a labial non-nasal segment between m and r in Vulg. Lat. *camra* → Fr. *chambre*, or between m and r in OEng. *æmtig* → *empty*, or the insertion of a dental non-nasal between n and r in OEng *θunre* → *θundre* → *thunder*. In all of these cases, the excrecent consonant combines the place of articulation of the preceding consonant with the non-nasality of the following segment. In Nuer, glide excrecence occurs between a consonant and a vowel, rather than between two consonants, but the overall principle remains the same: the excrecent glide emerges in contexts where it can share some features with both the preceding and the following segment. The specific features shared between the glide and the following vowel will be established in the next section. As far as the characteristics of the preceding segment are concerned, however, we observe that the excrecent w and j share the preceding consonant's place of articulation: labial for the excrecent w and palatal for the excrecent j . As a result, the process of glide insertion occurs exclusively in roots beginning with labials or palatals. Lexical glides may follow other types of consonants, but the excrecent glides are restricted to contexts where the preceding consonant has the same place features.

3.3 MORE ON CJ-SEQUENCES: PUSHING EXCRESCENCE TO DO MORE WORK

There are several roots beginning with a $j + \epsilon/\theta$ sequence in which the glide j makes an unexpected appearance in certain derived forms. For instance, the glide is absent from the form $j\epsilon n$ “tree.PL.NOM” but surfaces in its oblique plural form $jj\hat{\epsilon}:n$ “tree.PL.OBL”. Another

example is the root *jék* “find/encounter.TR” which does not have a glide after *j* in its transitive form but features one in the antipassive stem derived from it: *jjé:k* “find/encounter.AP” = “meet”.¹⁶ In both cases the glide missing from the short root syllable, makes an appearance in its lengthened form.

Aside from *jên* “tree.PL.NOM” and *jék* “encounter.TR”, there exists a single additional lexical item where a palatal stop is followed by a front mid vowel directly, without an intervening *j* – the pronoun *jěn* “he/she (sg.)”. The three lexical items – *jên*, *jék*, and *jěn* – all begin with a voiced palatal stop *j* and have a short vowel in the root. All palatal-initial words which do not share these characteristics, either by beginning with *c* instead of *j* or by having a non-short vowel, contain the glide *j* between the palatal stop and the following *ɛ/ɛ*. Moreover, words that combine *j* in the onset with a post-consonantal *j* and a short front mid vowel (*ɛ, e, ε, εa*) do not seem to exist.

This complementarity in the distribution of *j* suggests that the process of *j*-excrescence applies more broadly than proposed in Section 3.2. It appears that in addition to the previously determined context (the palatal consonant followed by *ə*), the glide is inserted in sequences where a palatal stop is followed by a mid non-back vowel. The rule of *j*-excrescence can therefore be reformulated to apply in all instances where a palatal stop is followed by a [-back, -high, -low] vowel (*ə, ε, ɛ* and their *a*-mutated variants). The only exception to this generalization is presented by those words where *j* is followed by a short *ε* or *ɛ*. The absence of the excrescent *j* specifically in this context can be seen as the outcome of the differences in realization of glides in syllabic nuclei of different lengths (see Section 1). In short syllabic nuclei, the palatal glide is realized as a secondary articulation. However, the palatal glide cannot be successfully realized as a secondary articulation on *j* due to the similarity of the two segments: they share both place and voicing features. The glide is truly “lost” in this environment.¹⁷

¹⁶ In verbal roots with a short vowel, formation of the antipassive stem involves *i*-mutation if the basic vowel is modal, and lengthening of the root vowel if it is breathy. (Monich, 2022)

¹⁷ Note that the excrescent labial glide *w* is not lost in parallel contexts: the excrescent *w* is still realized as

We can now name the phonological features that the excrescent glides share with the following mid vowels. The labial glide *w* is inserted between labial consonants and [+back] mid vowels, i.e., before *ɔ*, *ɔ̄*. The palatal glide *j* is inserted between palatal consonants and [-back] mid vowels, i.e., *ə*, *ɛ*, *ɛ̄*. The process of *j*-insertion and the process of *w*-insertion thus are fully complementary.

At this point, there remain only three items in Table 4 where the combination of *j* with a mid front vowel cannot be explained either through $\text{ɛ} \rightarrow \text{ɛ̄}$ raising or through *j*-epenthesis. These items are *tjɛk*- “weigh”, *tjɛc*- “ask for”, *tjɛk*- “aggravate”. It is in principle possible that the vowel *ɛ̄* in *tjɛc*- and *tjɛk*- originated from *ɛ* through $\text{ɛ} \rightarrow \text{ɛ̄}$ raising and then was reanalyzed as an underlying *ɛ̄* but there seems to be no evidence of it in the synchronic Nuer grammar.

Taking the findings in Sections 3.1-3.3 into consideration, the distribution of the post-consonantal glide *j* appears even more limited. The hard prohibitions against combining *j* with velars on one hand and with high vowels on the other have already been established at the start of Section 3. At this point, we can add the following generalizations. The glide *j* can be combined with a preceding non-velar consonant and a following (underlying) low vowels *a*, *ɛ̄* (i.e., reflexes of PDN low vowels **a*, **ɛ̄*). A sequence of *j* + non-front mid vowels *ɔ*, *ɔ̄*, *ə* (i.e. reflexes of PDF back mid vowels **ɔ*, **o*) can also combine with any non-velar consonants but are overall less numerous (discounting all instances where /*j*/ is excrescent). Finally, there are a couple of sequences *tjɛ̄*-/*tjɛ̄*-, where the glides and the front vowels may or may not be underlying.

3.1 REANALYZED BASIC /U/

Based on the data presented in Table 5, it is evident that the possible sound combinations involving the non-excrescent glide *w* follow a certain logic. The vast majority of

secondary articulation on all labial stops when the syllabic nucleus is short. This may be because labialization of a labial consonant is realized as rounding (i.e., there is no full identity in place features between the stop and the glide), so in this case, the glide is not completely "lost" when the syllabic nucleus is short.

postconsonantal occurrences of the glide *w* are found between an alveolar, palatal, or velar consonant and a non-back vowel. In this section, we focus on the relationship between *w* and the following vowel, arguing that in its original distribution in PDN, the glide *w* was followed by non-back vowels exclusively and that all apparent exceptions result from a reanalysis of basic root vowel *u*.

As the data in Table 5 shows, the distribution of *w* is largely determined by the contrast between the features of the glide *w* ([+round, +back]) and those of the vowel ([-round, -back]). One major pattern that runs counter to this general generalization is the one where the glide *w* is between a labial consonant and a mid back [-ATR] vowel (i.e., sequences *Pwɔ̃/Pwɔ̃*). However, such sequences do not undermine the generalization since have been shown to contain excrescent glides (see Section 3.2). Nevertheless, there exists a small set of lexical items containing the sequence *-wɔ̃-* in combination with non-labial consonants, specifically alveolars or velars. Although only three such lexical items have been documented—*dwɔ̃::r* ("thing.SG.NOM"), *twɔ̃t* ("goose.SG.NOM"), and *gwɔ̃:r* ("elephant.SG.NOM") — their existence suggests that postconsonantal *w* can occur together they would compel us to conclude that the post-consonantal *w* can be combined with back vowels, against the generalization above.

In this section, I propose that the glides in these lexical items are recent innovations. In their original distribution, inherited from Proto-Dinka-Nuer, the postconsonantal glide *w* was incompatible with the following *ɔ̃* (< PDN *o*).

As noted in Section 2, postconsonantal glide and the first segment of a diphthong representing an *a*-mutated high vowel (i.e., i.e. *iɛ uɔ̃*, *oɔ̃*, *iɛ̃*, and *iɛ̃*) are implemented identically: both types of segments are realized as secondary articulation in short syllabic nuclei, glides in long syllabic nuclei, and vowels in overlong syllabic nuclei. In this article, we are only interested in those sequences where the glide is a structural property of the root, not those where glides represent the first segment of an *a*-mutated (diphthongized) high vowel. Only “true”, i.e., underlying, glides are listed in Tables 4 and 5 – or, at least, such was the intention in compiling the data for the tables.

Crucially, however, there exists an inherent structural ambiguity between *a*-mutated high vowels and combinations of postconsonantal glides with mid root vowels. Whether a particular *wɔ̣*-sequence should be analyzed as one versus the other can be established only by knowing the other forms of the paradigm. For example, the stem vowel in the uninflected form of the verb (used with a postverbal subject) is never *a*-mutated (e.g., *nê::n* “see.UNINFL”), while the stem vowel in the 1 SG form of the verb is always *a*-mutated (e.g., *nêa::n-ǎ* “see.TR-1SG”). Identification of the basic root vowel in nouns is more complicated, but normally can be done by looking at the Singular Oblique form. The unsuffixed Singular Oblique form (of a common noun) will have an *a*-mutated vowel in the stem, while the suffixed Singular Oblique form will have the basic (not *a*-mutated) vowel in the stem. For example, the noun *gɔ̣::k* “monkey.SG.NOM” has two alternative oblique form – an unsuffixed form with an *a*-mutated vowel *gɔ̣ak* “monkey.SG.OBL” and a suffixed form with a basic root vowel *gɔ̣::k-ǎ* “monkey.SG.OBL”.

The lexical items listed in Table 5 were all established as containing a post-consonantal glide because the glide persists throughout the paradigm, co-occurring with expected changes in vowel quality according to the specific morphological context. For instance, in lexical items such as *dwɔ̣::r* “thing.SG.NOM” and *twɔ̣t* “goose.SG.NOM”, the sequence *-wɔ̣-* is retained in the suffixed Singular Oblique forms, which invariably feature the basic root vowel (*dwɔ̣::r-ǎ* “thing.SG.OBL” and *twɔ̣t-ǎ* “goose.SG.OBL” correspondingly). In items such as *gwɔ̣::r* “elephant.SG.NOM”, the vowel quality undergoes expected *a*-mutation in the unsuffixed Singular Oblique form. The mutated vowel in the inflected form *gw(ɔ̣)ǎ::r¹⁸* “elephant.SG.OBL”, indicates that the oblique form is derived from the Singular Nominative form containing the basic vowel /ɔ̣/ (in combination with the preceding lexical glide *w*).

However, the three lexical items with the unusual post-consonantal sequence *-wɔ̣-* –

¹⁸ The first part of the diphthong is unrealized after the post-consonantal glide, if the two segments share backness features.

dwɔ̃::r “thing”, *twɔ̃t* “goose”, and *gwɔ̃:r* “elephant” – display an intriguing quirk: these nouns have alternative oblique forms, which show a different root vowel. Specifically, the first two of these nouns have been elicited with the root vowel *u* in the suffixed singular oblique form. Some speakers preferred *dɯ̃::r-ɔ̃* to *dwɔ̃::r-ɔ̃* as the Singular Oblique form of *dwɔ̃::r*, and some (not necessarily the same ones) preferred *tɯ̃:t-ɔ̃* to *twɔ̃:t-ɔ̃* as the Singular Oblique form of *twɔ̃t* “goose”. To these, we can add another item: *bwɔ̃t* “wound”. Although this noun starts with a labial and does not present an unusual combination of sounds, it shows the same kind of an alternation: some speakers prefer *bwɔ̃t-ɔ̃*, while others are adamant about *bɯ̃:t-ɔ̃* being the correct form. Since suffixed obliques *always* show the unmutated stem vowel without any lexical exceptions, the availability of the alternative forms in this case indicates that individual Nuer speakers disagree on the basic *identity of the root vowel* in these nouns, not on the type of morphological process that applies to derive the oblique form. Disagreements of this kind are highly atypical: speakers are often at odds on whether a suffixed vs. unsuffixed oblique form is appropriate for a particular noun, but not on the identity of the root vowel! Existence of such alternants as *dwɔ̃::r-ɔ̃* ~ *dɯ̃::r-ɔ̃* suggests that some speakers interpret the sequence *-uɔ̃-* in the nominative case forms of these items as the underlying combination of the glide *w* + the root vowel *ɔ̃*, while others interpret it as the *a*-mutated variant *-uɔ̃-* of the basic vowel *-u-*.

The third noun *gwɔ̃:r* “elephant” is especially interesting. In addition to the regular oblique form *gw(ɔ̃)ɔ̃:r* which shows the regular *a*-mutated variant for the basic vowel *ɔ̃*, there is also the oblique form *Gɯr* of the proper noun *Gwɔ̃:r*, which is a personal name meaning “elephant”. In contrast to common nouns, which have *a*-mutated unsuffixed oblique forms, proper nouns derive unsuffixed oblique forms without *a*-mutation and show the basic root vowel. For example, the personal name *Rɔ̃a::m* “Rɔ̃aam.NOM” derived from a common noun *rɔ̃a::m* “sheep”, has the oblique form *Rɔ̃m* “Rɔ̃aam.OBL” (compare to the oblique form of the common noun *rɔ̃::m-ɔ̃* “sheep.SG.OBL”). The *a*-mutated root vowel in the Nominative form is replaced with the basic root vowel in the Oblique form of the proper name. However, in case of *Gɯr* the vowel *u* in the oblique is

unexpected: it is derived as if the nominative singular form contains an *a*-mutated variant $u\grave{\zeta}$ of the root vowel u ; such structural interpretation is incompatible with the Oblique form of the common noun $gw(\zeta)\check{\zeta}r$ which contains an *a*-mutated variant of the root vowel ζ ! In other words, the Oblique form of the common noun $gw\zeta':r$ “elephant” looks as if it is derived from the Nominative form containing a post-consonantal glide w + a basic vowel ζ , while the oblique form of the proper noun $Gw\zeta':r$ “a personal name meaning *elephant*” looks as if it is derived from the nominative form containing the *a*-mutated variant of the root vowel u !

The three nouns – $dw\zeta':r$ “thing”, $tw\check{\zeta}t$ “goose”, and $gw\zeta':r$ – are the only ones which violate the principle of opposition in frontness and roundness features between the non-excrecent post-consonantal w and the following vowel. It seems too much of a coincidence that these same items should be the only ones which also permit interpretation of their root structure as lacking the glide entirely. This combination of factors suggests a possibility that the sequence $-w\zeta-$ in these words arose as the *a*-mutated variant of u but was reanalyzed as the basic sequence $-w\zeta-$ in some dialects¹⁹. The noun $gw\zeta':r$ “elephant” is especially interesting in this regard. According to the proposal advanced in this section, the oblique form Gur shows the more archaic root vowel. It is plausible that, when the sequence $-w\zeta-$ in the nominative case form $gw\zeta':r$ was reanalyzed as basic and the new oblique form $gw(\zeta)\check{\zeta}:r$ arose by analogy with similar nouns that have ζ in the root (e.g., $mw(\zeta)\check{\zeta}l$ “knee.SG.OBL” < $mw\zeta'l$ “knee.SG.NOM”), the more archaic oblique form became specialized for the use with proper nouns.

The assumption that the diphthong $u\grave{\zeta}$ was reanalyzed as a glide w + ζ in these cases and not *vice versa*, allows us to claim that the labial glide combined exclusively with non-

¹⁹ There are cases where reanalysis proceeded in the opposite direction. For example, the noun $[p\grave{u}\zeta':t]$ ‘hammer.SG.NOM’ is derived from a common verbal root $pw\zeta':t$ ‘strike/hit’ with the root vowel ζ . The expected *a*-mutated variant of the root occurs in some inflected forms of the verb, e.g., $p\grave{u}(\zeta)q':t-\grave{\zeta}$ ‘strike/hit.TR-1SG’. Crucially, the GEN SG form of $p\grave{u}\zeta':t$ is $p\grave{u}':t-\grave{\zeta}$. The suffixed oblique form should have the basic vowel ζ in the stem but has u instead. It is a false root vowel derived due to re-analysis of the sequence $-u\zeta-$ in $p\grave{u}\zeta':t$ as an *a*-mutated variant of u .

front vowels in PDN. The subsequent processes – emergence of the excrescent *w* and reanalysis of some *uɔ*-sequences as *w + ɔ* – have obscured the original pattern.

4 THE PROPOSED DISTRIBUTION OF POST-CONSONANTAL GLIDES IN PDN

In this article, I have argued that some of the glides in Tables 4 and 5 are relatively recent innovations in Nuer. These glides can be categorized into two types: 1) excrescent glides which emerge between palatal or labial stops and certain mid vowels (see Sections 3.2-3.3); and 2) glides arising from a reanalysis of original *u*-containing roots, which were reinterpreted as having the glide *w* followed by the root vowel *ɔ* (see Section 3.4). Furthermore, some sequences were shown to reflect an underlying *ɹ* that was raised to *ɛ* in the context of the glide (Section 3.1).

Due to these innovations and phonological processes, the distribution of post-consonantal glides appears to be less constrained in the modern-day Nuer than it was in the system inherited from PDN.

Factoring out the post-consonantal glides that arose due to the above-mentioned processes of epenthesis, reanalysis and assimilation, the distribution of glides in PDN can be reconstructed as follows:

- 1) The glide **w* was found between alveolar, palatal or velar stops and non-back vowels (**e, *ɛ, *i, *i, *a, *ʌ*).
- 2) The glide **j* was found between non-velar consonants and either low or back mid vowels (**ɔ, *o, *a, *ʌ*)²⁰

These combinations of sounds are not random but constructed in accordance with certain guiding principles.

As briefly noted in the previous section, the PDN glide + vowel sequences were likely constructed based on the *opposition* in frontness/backness (and roundness) of the two

²⁰ As pointed out at the end of Section 3.1, this generalization discounts at least one lexical item *tjek* “weigh”.

segments. The labial glide *w* ([+back]) could be followed only by a [-back] vowel. Similarly, the palatal glide *j* ([+front]) could be followed only by a [-front] vowel. This distribution means that both glides were compatible with central low vowels ([-front, -back]) and were contrastive in that context. An additional constraint against combining specifically the glide *j* with [+high] vowels was the main source of asymmetry in the distribution of the two glides.

Combinations of consonants with the following glides also show curious gaps: in the reconstructed PDN system, the labial glide could not combine with labial and dental consonants, while the palatal glide could not combine with velar consonants. This distribution is guided by some language-specific constraints and may be of interests to typologists working on the featural organization of segments. Interestingly, the Nuer pattern finds a close cross-linguistic parallel.

Duanmu (1999, 2002) observes that in Mandarin Chinese, where words/roots are likewise monosyllabic and have the shape CGV(N), certain C + glide onsets are unattested. Mandarin Chinese has three glides – *w*, *j* and *ɥ* -- and four underlying plosive series – labials, dentals, velars and retroflex. The glide *w* occurs after dental, velar, or retroflex stops, but not after labials. The glide *j* occurs after labial and dental stops but not after velar or retroflex stops. Finally, the glide *ɥ* occurs only after dental stops. Duanmu (1999) explains this distribution by proposing that the unattested combinations are those where the consonant and the glide have the same articulator features (i.e. Dorsal, Coronal, or Labial) but with different featural specification (i.e., [+back] and [-back], or [+round] and unspecified for [round]). When two segments using the same articulators are combined in the onset of the syllable, the articulator feature of the consonant replaces that of the glide, as each articulator can occur only once in the CG cluster. Consequently, the glide fails to be realized in the surface structure of the syllable, which manifests itself as a gap in that particular C + G combination.

There is a great deal of similarity between the structure of syllable onset in Mandarin and in Nuer (or, rather, the relevant reconstructed stage of PDN). In both languages the

labial glide cannot follow labial consonants and the (underlying) palatal glide cannot follow velar consonants. In Duanmu's terms, labial consonants are incompatible with labial glides because the Labial articulator with no value for feature [round] is incompatible with the glide which has the Labial articulator specified for feature value [+round]. Similarly, velar consonants are incompatible with palatal glides because the Dorsal articulator is specified as [+back] in velar consonants and as [-back] in palatal consonants, again, leading to their incompatibility. One gap that remains unexplained using this approach is the incompatibility of dental consonants with the labial glide, but I leave this to future research.

Excrescent glides, discussed in Sections 3.2–3.3, are excluded from this analysis as later-stage developments. However, their existence raises the following question: if the above-stated constraints governing the possible combinations of articulatory features remain active in Nuer, how could glide excrescence arise at all? Interestingly, Duanmu (1998, p. 24) describes a phenomenon in Mandarin Chinese that closely parallels vowel excrescence in Nuer. When a labial consonant is followed by a long round vowel in Mandarin Chinese, a glide emerges between the two, such that /poo/ (or any other similar combination with a labial) is realized as [p^woo]. Duanmu stipulates that the feature [+round] is allowed to be linked to a consonant if it is also linked to a vowel. This process of introducing an intervening homo-organic glide between a consonant and a vowel that share certain features mirrors what is observed in Nuer. For the excrescence of the labial glide in Nuer, the relevant shared feature is likely [+round], consistent with Duanmu's suggestion. In the case of the palatal glide, the relevant feature appears to be [-back], as this feature characterizes all three segments: the palatal stop, the palatal glide, and the set of the vowels that trigger *j*-excrescence – namely *ø*, *e*, and *ɛ*.

It is important to emphasize that the principles and constraints proposed here are not intended to be universal. However, from a typological perspective, the striking parallels between languages as distinct as Nuer and Mandarin may point to deeper structural similarities.

5 COMPARISON WITH DINKA

In Section 4, the distribution of post-consonantal glides at an earlier stage in Nuer's development was reconstructed—a stage predating the processes outlined in Section 3. Throughout the article, it has been assumed that the proposed glide distribution reflects the system inherited from the common ancestor of both Nuer and Dinka (PDN). In this section, this assumption is substantiated by comparing the reconstruction of post-consonantal glides proposed in this article to a similar reconstruction based on data from the Agar dialect of Dinka (Flego 2024, this volume²¹). The two proposals are found to align closely, in support of the view that the reconstructed stage predates the split between the two languages.

According to Flego's study, (Agar) Dinka shows some of the same phonological processes obscuring the original pattern of the glide distribution, as Nuer.

In both languages, the low vowel ɹ undergoes raising after glides, subject to additional language-specific conditions. In Nuer, this raising results in e , as seen in examples like $\text{rj}\hat{\text{e}}:\text{t}$ ("boat.PL") < $\text{rj}\hat{\text{ɹ}}:\text{t}$ and $\text{kw}\hat{\text{e}}\text{l}$ - ("steal.AP") < $\text{kw}\hat{\text{ɹ}}\text{l}$ -. In Agar Dinka, the outcome of ɹ -raising is typically o , as illustrated by $\text{gw}\hat{\text{o}}:r$ ("grind.NF") < $\text{gw}\hat{\text{ɹ}}:r$ and $\text{rj}\hat{\text{o}}\text{ool}$ ("eel.PL") < $\text{rj}\hat{\text{ɹ}}\text{ool}$.

Moreover, like Nuer, Agar Dinka exhibits an excrescent w between a labial consonant and an underlying vowel ɔ or ɔ̄ . This process was previously noted and referred to as "labialization" by Andersen (1993). Examples include $\text{pw}\hat{\text{o}}:l$ < $\text{pw}\hat{\text{ɔ}}:l$ < $\text{p}\hat{\text{ɔ}}:l$ < $\text{p}\hat{\text{ɹ}}:l$ ("let go.NF") and $\text{mw}\hat{\text{ɔ}}:c$ < $\text{m}\hat{\text{ɔ}}:c$ ("give to"). Especially interesting is a pair of forms $[\text{bw}\hat{\text{ɔ}}\text{ɔ}c] \sim [\text{b}\hat{\text{ɔ}}\text{oc}]$ ("castrated bull.SG ~ PL") where the glide is present before the [-ATR] vowel but absent before the mutated [+ATR] vowel in the same root (cf. Nuer $\text{bw}\hat{\text{ɔ}}:c \sim \text{b}\hat{\text{e}}c$ "coward.SG ~ PL"). The presence of w in these words is conditioned by the place of articulation

²¹ The study by Flego is based on the analysis of the Agar Dinka data found in a series of publications by Andersen (1987, 1990, 1993, 2002, 2007, 2014, 2016, 2017, 2019, 2023).

of the preceding consonant and the quality of the following root vowel, as in Nuer. However, unlike in Nuer, the process of glide excrescence in Agar Dinka does not apply symmetrically to generate both glides *w* and *j*. Agar Dinka prohibits combining palatal consonants with *j*, and this constraint is inviolable. Nevertheless, this aspect of Dinka phonology appears to be subject to dialectal variation. In nominal data from the Luanyjang dialect of Dinka, collected by B. Remijsen (p.c.), palatal consonants are compatible with the palatal glide. Specifically, in Luanyjang Dinka, the glide *j* occurs predictably between palatal consonants and front mid vowels. Examples include *jjèɛr* ~ *jár* ("shoulder-blade.SG ~ PL"), *jjəŋ* ~ *jjəŋ* ("Dinka person.SG ~ PL"), and *cjɛɛ* ~ *cɛɛ* ("excrement.SG ~ PL"). Moreover, there are no examples of palatal stops—including /ɲ/—appearing before front mid vowels without an intervening *j*. This pattern strongly suggests that the rule of *j* excrescence proposed here for Nuer is also active in the Luanyjang Dinka²².

By "filtering out" these and other phonological processes, Flego reconstructs the following pattern of glide distribution at an earlier stage in Dinka development:

- The post-consonantal glide *w* was found after velar, alveolar, and palatal consonants but was absent after labial and dental consonants. The vowel following *w* could be any non-back vowel: *i, *ɪ, *e, *ɛ, ʌ, and *a*.
- The glide **j* could be preceded by dental and alveolar consonants but not by labial, palatal, or velar consonants. It could be followed by low vowels (**a* and **ʌ*) or back mid vowels (**ɔ* and **o*).

These findings are nearly identical to those summarized in Section 4, based on Nuer data. There are only a handful of exceptions in Nuer regarding the distribution of the glide *j* that warrant attention.

Unlike the Agar Dinka dialect analyzed in Flego's study, Nuer provides several examples where the post-consonantal (non-excrescent) glide *j* occurs after a palatal stop, as in

²² The rule also seems to be vowel length-sensitive in Luanyjang Dinka, failing to apply before short vowels, as in *cɛɛ* ("excrement.SG ~ PL"). Note, however, that the glide is absent in *cɛɛ* between the voiceless palatal stop and the following short vowel, while in Nuer the excrescent *j* is present in this environment.

jjâ:t “tree.SG.NOM”, *jjâ:c* “stomach.PL.NOM” and *jjâ:r* “shoulderblade.SG.NOM”. It is possible that in these cases, the glide also arose through excrescence, as other forms in the paradigms of these nouns show front mid vowels that are known to condition *j*-excrescence. However, this hypothesis remains uncertain.

Additionally, Nuer exhibits two cases where **j* follows a labial stop: *pjér-* “ceremonial scarification.SG”, *mjət-* “hoof.SG.NOM”. Notably, Luanyang Dinka data from Ladd and Bloom (2021) and from the database compiled by B. Remijsen also show the glide *j* co-occurring with labial consonants, as in *bjól* “rabbit.SG”, *pjól* “cloud.SG”, *pjǎaar* “scar.SG”, *pjǒow* heart.SG, *mjòor* “bull.SG”). While Luanyang Dinka aligns with Nuer on this issue, Agar Dinka consistently exhibits *w* instead of *j* in corresponding cognates. Examples include Agar Dinka words *mwòot* “hoof.SG”, *mwòor* “bull.SG”, *pwòor* “scar.PL”, *bwól* “rabbit.SG”, *pwóow* “heart.SG.” While Flego (this volume) remains agnostic about the origins of these glides, I see no compelling reason to exclude their presence in Proto-Dinka-Nuer (PDN) on either typological or comparative grounds. Therefore, I propose that in PDN, the glide *j* could occur between labial consonants and non-back, non-high vowels (**a*, **ɹ*, **ɛ*, or **e*), as evidenced by modern Nuer and Luanyang Dinka cognates.

Finally, there are three items in Nuer where the post-consonantal *j* is followed by a front mid vowel *ɛ*: *tjek-* “weigh”, *tjek-* “to be near s.t.”, *tjɛ:c-* “ask”. There is no evidence that the glide is epenthetic in these roots nor that the underlying root vowel is qualitatively different from the one observed in the surface forms. Therefore, on the face of it, these three items contradict the generalization that the inherited glides always contrast in frontness/backness with the following vowel. It is perhaps significant that all three “exceptional” words begin with the same consonant *t*, but at this point it is unclear how to interpret this fact.

In summary, the reconstruction of post-consonantal glides in Nuer and Dinka reveals patterns that are nearly identical between the two languages. This conclusion supports the hypothesis that both the present article and Flego (this volume) reconstruct the distribution of glides at a shared ancestral stage, namely Proto-Dinka-Nuer (PDN). Furthermore,

it appears that the original glide patterns were subsequently obscured by similar processes in both languages, suggesting that these processes likely originated during the common PDN stage also. One development that can be identified as specifically Nuer is the reanalysis of the *a*-mutated vowel *ɥ* as a sequence of *w* followed by the root vowel *ɔ*. The presence of Nuer-internal dialectal variation concerning the four items in question further supports the interpretation that this reanalysis is both recent and uniquely Nuer.

CONCLUSION

The internal analyses of Nuer and Agar Dinka presented in this article and in Flego (this volume) provide a unified account of the distribution of post-consonantal glides in Proto-Dinka-Nuer (PDN). The two reconstructions align on all major points, with only minor divergences between the Dinka- and Nuer-based perspectives.

It is now possible to say that the distribution of post-consonantal glides in PDN was guided by clear phonological principles: the glide and the following vowel had opposing [front/back] features, with an additional restriction against the combination of *j* with high vowels. Furthermore, the articulatory features of the glide had to be compatible with those of the preceding consonant. The labial glide *w* did not occur after labial and dental stops, while the palatal glide *j* did not occur after palatal and velar stops. These constraints collectively resulted in systematic gaps among possible CGV sequences.

In modern Dinka and Nuer, the original distributional logic has been largely obscured due to several factors. The first is the synchronically active phonological process of *ɔ*-to-*e* raising. The second is the emergence of new post-consonantal glides, some arising from reanalysis and others from the synchronically active process of glide excrescence.

The analysis proposed here leaves open the question of whether the glides reconstructed for Proto-Dinka-Nuer (PDN) were inherited from Proto-Western-Nilotic (PWN) or represent an innovation in PDN. Answering this question exhaustively requires further comparative research. However, a preliminary examination of the comparative data suggests that at least some glides must have been inherited from PWN. Many Western Nilotic

languages show post-consonantal glides in roots that are cognates with glide-containing roots in Nuer. For instance, Nuer *kwâc* “leopard.SG” has glide-containing cognates in Anywa (*kwàJ*), Pări (*kwàc*) and Lango (*kwàc*).²³

It is also evident that some of the patterns reconstructed for PDN arose through modifications of the glide distribution inherited from PWN. For example, the word for “cow” begins with a dental stop in many PWN languages (e.g., Mabaan *ḍiiéŋ*, Shilluk *ḍjan*, and Lango *djan*)²⁴ but is glide-initial in Nuer (*jâ:ŋ*). This cognate set indicates that the loss of initial stops may have contributed to the absence of certain stop + glide combinations.

Similarly, the lack of velar stops combined with the glide *j* is likely due to the palatalization of velars in such contexts. Comparative evidence supports the idea that velar palatalization took place in PDN. For example, Nuer nouns *lěc* “tooth.PL” (Dinka *leec*) and *la:c* “urine.PL” have Mayak cognates *lek* “tooth.PL” and *laak* “urine.PL” with corresponding singular nominal forms *ley-iṭ* “tooth.SG” and *laak-ŋ* “urine.SG”. The front vowel in the singular suffix of these lexical items likely created an environment for palatalization of root-final velars into palatal stops, with the palatal place of articulation subsequently being generalized to the underlying form of the root.

The diachronic process of palatalization would likewise explain why palatal stops in Nuer and Dinka sometimes correspond to velars in related Western Nilotic (WN) languages. For example, the word “dog” is velar-initial throughout WN languages (Jumjum *gʊʊng*, Mabaan *gʊʊng-à*, Mayak *gʊʊk*, Lango *gwôk*, Pări *guòk*, Anywa *gũok*, Shilluk *gwôk*) but palatal-initial in Nuer (*jjé:k*) and Dinka (*jɔ*).

These and other earlier changes likely contributed to the pattern of glide distribution reconstructed here for PDN. Nevertheless, a comprehensive investigation into the earlier stages of these languages’ histories remains a task for future research. The current study

²³ Burun languages such as Mayak, Mabaan, Jumjum and Surkum provides a notable exception to this generalization by not permitting postconsonantal glides in the root (Andersen 1999b). For example, the Mayak cognate of Nuer words *kwâc* “leopard” and *kwâl-* “steal” are *kac* and *kwâl-* correspondingly.

²⁴ Comparative data in this section comes from Andersen (1999a,b), Gilley (1992), and Noonan (1992).

of Nuer, alongside Flego's analysis of Dinka in this volume, serves as an initial step towards reconstructing the original phonological patterns involving glides. The primary aim of both studies was to leverage internal evidence from Nuer and Dinka to filter out the "noise" introduced by more recent phonological developments and to reconstruct the system shared by the two languages at a certain point in their history. The next step requires comparative work across a broader sample of Western Nilotic languages to determine which glides were inherited by PDN from its ancestor and to uncover the phonological principles that governed their distribution at that earlier stage.

ABBREVIATIONS:

AP = Antipassive	PL = Plural
NOM = Nominative	SG = Singular
NF = Non-finite	TR = Transitive
OBL = Oblique	UNINFL = Uninflected

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DISCUSSION WITH FABIAN ZUK

(CNRS, LLACAN)

Zuk, Fabian. 2025. Discussion in: Monich, Irina (auth.) “Remarks on the distribution of postconsonantal glides in Nuer”. *Radical: A Journal of Phonology* 8, 1-46.

COMMENTS

There has been a flurry of work on Nuer since 2015 and Monich here has provided an ambitious dig into the diachrony of the Nuer language family, by “leverag[ing] internal evidence from Nuer and Dinka to filter out the “noise” introduced by more recent phonological developments”. Being neither a specialist of Nuer nor Dinka, but a phonologist, a historical linguist and more recently an Africanist, several phonological and diachronic questions captured my attention in reviewing this article. There are clearly two wholly distinct phenomena at play in the distribution of glides in Nuer: the first is the phonological form of etyma inherited from the presumed Dinka-Nuer Proto-Language, the second are language internal phonological processes responsible for the creation of new CGV sequences or the elimination of old ones.

Diachronic and Comparative work is undoubtedly a processing-heavy task, and the author has provided the reader with rich material on vowel gradation and umlaut phenomena within the synchronic morpho-phonology of Nuer. I believe additional details on the consonantal system of Eastern Nuer, specifically the Jikany dialect studied here, would enrich the discussion of the post-consonantal glides. Looking deeper into Nuer Phonology, other Nuer varieties possess a velar glide /ɥ/ (Reid 2019), <ɣ> (Crazzolaro 1933) or /h/ (Faust & Grossman 2020), however this is entirely left out by the author whose paper focuses on the distribution of /j/ and /w/ exclusively. To the author’s credit, this velar glide even within the Lou dialect described by Reid (2019:52) never occurs post-consonantly. Notwithstanding, the existence of a potential third glide in Nuer and its distribution is

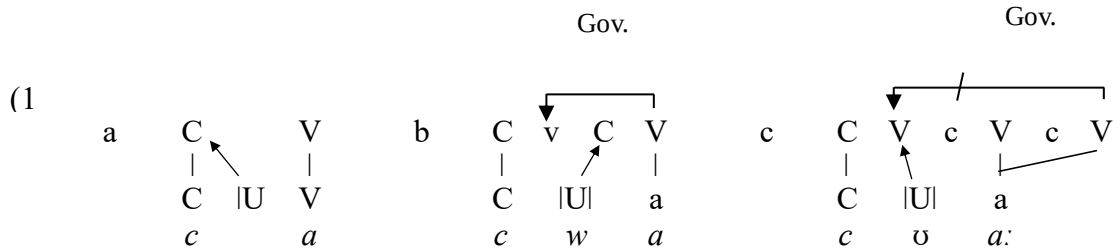
entirely relevant, perhaps even essential, to an argumentation based entirely upon language phonotactics. While the paper aims to address the distribution of glides in Proto-Dinka-Nuer, a comparison with other Nuer varieties suggests inter-dialectal variation; or a lack of precision in several of Monich’s proposals.

In section 3, the author claims that “there are [] no sequences where *j* is followed by a high vowel”; we believe this claim requires further clarification since in the neighbouring Lou dialect we do find the phonological forms /jōɔr-Ḷ/ ‘jump.trans-1SG’, which surfaces as [jḶḶr-Ḷ] or /wōɔj-Ḷ/ ‘undress.trans-1sg’ which surfaces as [wḶḶj-Ḷ] (cf. Reid 2019: 73). Likewise, she claims that “there are [] no sequences where *w* combines with back vowels *ɔ*, *u*, *ə*”, yet we find /wḶḶj/ (Reid 2019: 193) the bare stem of aforementioned ‘undress’. The verb ‘run’ /wóɔr- (Reid 2019: 95) shows the same phenomenon. Again, these may all be due to differences between the Jikany and Lou dialects, differences in analysis or the author’s claim may be limited to CGL combinations in the *output*, in which case her claim is about the synchronic grammar of Jikany Nuer rather than Proto-Nuer.

The author argues that both underlying CGV and CVV sequences surface identically: as secondary co-articulation [ʷ] or [j] in short nuclei, as glides [w] or [j] when the vowel is long, and as vowels in hiatus [u, ɔ, ə, ɔ] or [i, ɪ, e, ε] when the following vowel is overlong, though Faust & Grossman (2023), have not found evidence of the claimed three-way length distinction going back to Vandevort (2003). Here too, no mention is made of the velar [ɰ], which Reid (2019) has described as a [-high] glide in comparison to [+high] /j/ and /w/. Within Element theory (cf. Backley 2011) the /j/ realisation of the front vowels is explained through the association of their underlying |I| element with an autosegmental C-position (KLV 1990, Scheer 2004), the /w/ glide is the association of a shared |U| element with a C-position, and by extension the velar glide /ɰ/ may reflect an underlying |A| element shared with the vowels /a/ and /Ḷ/.²⁵

²⁵ Alternatively, one may wish to posit a distinction of headedness between labial-velar |U| and velar |U| (cf. Backley 2011) or define /ɰ/ through a neutral element |@|.

In (1) we propose that all glides are floating elements, which attach to a V-position when available as in (1c) where the inability of government to apply over two empty c-positions, causes the maintenance of V₁; to a free C-position when a V-position is not available, for example when V₁ is governed as in (1b), and finally graft onto an existing C-position when no free C-position is available as in (1a).



Theory aside, it would be relevant to provide phonological evidence (e.g. minimal pairs or stem alternations) that demonstrate the existence of both CGV and CV.V sequences as distinct phonological structures. Considering the distribution of CGV and CVV sequences, and considering that existence of a potential third glide /w/ (also realized [h, ɣ] or as ∅), we could predict potential underlying CwV: and CaV: sequences to both surface as CaV. However, Monich does not find any CaV structures in her data, identifying only 7 possible diphthongs /iɛ, iɛ, εa, uɔ, uɔ, ɔa, ɔa/; Reid (2019) distinguishes 8 /iɛ, iɛ, **ɛa**, εa, ɔa, ɔa, uɔ, uɔ/ (all of them falling, I have marked the additional diphthong in Lou in bold). However, going back to older descriptions of Nuer, for example that of Crazzolaro (1933) we find 21 diphthongs, among which rising /au/ in *dáu* ‘young’, /ao/ in *láao* ‘oar’ but also /ou/ (cf. Reid 2019:111).

Yet another source, Stigand (1923) provides us with 10 examples of [au], 12 examples of [ai], as well as scattered case of [ou], [ow] and [oi] (see examples in (2)). It should also be noted that in the Lou dialect, stem final [w] and [u] are in free variation when following a back vowel, e.g. [lúɔɔw] or [lúɔɔu] ‘rinse mouth’ (Reid 2019: 60), and it cannot be excluded that some instances of post-consonant [w] are in fact underlying /w/, or historically *w. In (2) <'> designates surface instances of *w.

(2) Vocabulary from Stigand's 1923 *A Nuer-English Vocabulary*

bārau 'seven'	kaich 'be false'	māi 'to spear'
chōu 'urine'	kau 'bride'	ngāiny 'skilled'
bai 'to leave'	mau, kēau 'reedbuck'	ngau 'wild cat'
bainjok 'pumpkin'	kai nywāk 'strong wind'	ngaich 'to know'
bainy 'ugly face'	kaik 'type of kingfisher'	ngwaich 'to smell'
chau 'man, husband'	kaich 'type of tree'	nyā'ū 'white'
fai 'moon'	kain 'to jump up on'	nyāu 'eat'
Gauwār 'Gaweir Nuer'	kwaich 'a hoof, foot'	rau 'hippopotamus'
gaich 'perplexed'	kwoin 'to bury'	rau 'be thirsty', cf. reo 'thirst'
gainy 'monitor'	kwainy 'to pick up'	werau 'twelve' vs róū 'two'
gau 'grass with heads like oats'	kwoich 'arm'	twaich 'pelt', skin'
gau 'good.pl'	laich 'to drop dung'	tau 'country'
'au 'the world'	lau 'sparks'	tau 'fruit of heglig'
jainy 'shallow'	lāū 'a paddle'	waiye 'alas!'
jainy 'old'	lau 'bambou'	waich 'be wet'
kaich 'to stand'	laich ti fēk 'menstruation'	waich 'paternal aunt'
jāing 'to be delayed'	liau 'disease', lia 'death', liu 'die'	yiau 'a type of fish'
jau 'voice'	lūai 'hut for cattle'	ywaish 'wallow in water'
joich 'make clear'	māi 'dry season'	
jwāj 'dry'	main tāf 'maize'	

A brief comparison of Stigand’s lexicon reveals several potential (partial) cognates with vocabulary in Monich’s Appendix (marked M.): *ɟwāj* ‘dry’ vs M. *ɟwàc-* ‘grass’, *kaich* ‘stand’ vs M. *ɟɟɛ:ɟ-* ‘stand’, *kaik* ‘type of kingfisher’ vs M. *kwěj* ‘African fishing eagle’, *kwaich* ‘a hoof’ vs M. *cjé::k* ‘foot’, *kwainy* ‘pick up’ vs M. *kwa:ɟ-* ‘find’, *kwoich* ‘arm’ vs M. *cwéc*, *ngaich* ‘know’ vs M. *kwic-* ‘not know’, *ngwaich* ‘smell’ vs M. *ɟwáj-c-* ‘smell’, *yiau* ‘a type of fish’ vs *ɟwáj:ɟ* ‘kind of fish’, also *twaich* ‘pelt’, skin’ vs Dinka *pwə̀ɟɟ* ‘skin’. I will leave it to Dinka-Nuer linguists to determine whether this variation is diachronic, diatopic, or simply the idiosyncratic transcription of a pioneer researcher. The point here is that Nuer itself presents significant internal variation that requires a concerned attention before family-external conclusions can be safely drawn. We agree with the author that “the original distributional logic has been largely obscured due to several factors” including Λ -to-e raising and the potential emergence of new post-consonantal glides”, but based on the observations above, our overall understanding of Nuer diachrony remains shaky.

Fortunately, Monich’s intuition are on the right track based on the comparative evidence which she provides in the conclusion: post-velar glides in Nuer, e.g. *kwac* “leopard.SG” are reflected as simple stops in Mayak (Burun Phylum) *kac* ‘idem’; pre-palatal dental stops are visibly lost in Nuer as seen in Nuer *ɟá:ɟ* ‘cow’ vs Lango (Lotuxo) *djan* ‘idem’; the loss of these coronal stops would explain the absence of /ɟ/ + glide sequences in Nuer. I also think the palatalization of velars before /j/ is also a convincing diachronic change, however, before broader Western Nilotic comparative work is undertaken, I would recommend that further work be pursued towards understanding Proto-Nuer. For example, the split of Proto-Western-Nilotic *o into Proto-Nuer /ɔ/ and /ø/ is still unresolved. More immediate to the question at hand, the absence of [w] in post-consonantal position in the Lou dialect requires further study, as does the relation of the velar glide to reflexes in other Nuer dialects. Clarifying the presence of /au/ and /ai/ sequences in older works, and the potential opacity of CuV should lead to a better understanding of Nuer historical phonology more generally.

Backley, Phillip. 2011. *An Introduction to Element Theory*. Edinburgh: Edinburgh University Press. **Crazzolaro**, J. P. 1933. Outlines of a Nuer grammar. (13). **Faust**, Noam & Eitan **Grossman**. 2023. Nuer. In Ronny Meyer, Bedilu Wakjira & Zelealem Leyew (eds.), *The Oxford Handbook of Ethiopian Languages*, 807–833. 1st edn. Oxford University Press. **Kaye**, Jonathan, Jean **Lowenstamm** & Jean-Roger **Vergnaud**. 1990. Constituent structure and government in phonology*. *Phonology* 7(1). 193–231. **Reid**, Tatiana. 2019. *The Phonology and Morphology of the Nuer Verb*. Surrey, UK: University of Surrey. **Scheer**, Tobias. 2004. *A Lateral Theory of Phonology: Volume 1: What is CVCV and why should it be?* Berlin: De Gruyter. **Stigand**, C.H. 1923. *A Nuer-English vocabulary, compiled by the late C.H. Stigand*. Cambridge: Cambridge University Press. **Vandevort**, Eleanor. 2003. Nuer field notes. Draft pedagogical grammar and scanned index cards.

REPLY TO FABIAN ZUK

(CNRS, LLACAN)

Monich, Irina. 2025. Discussion in: Monich, Irina (auth.) "Remarks on the distribution of postconsonantal glides in Nuer". *Radical: A Journal of Phonology* 8, 1-46.

REPLY

I am grateful to F. Zuk for the feedback and appreciate his thoughts on the subject of my article. Below, I address a couple of points that I believe need clarification.

It is important that readers bear in mind that the article specifically examines the distribution of postconsonantal glides in Nuer, rather than glides in general. Glides do not occur in postconsonantal positions exclusively: within the $C_1(G)VC_2$ schema for Nuer roots, glides can occupy the position of G –our focus here – but glides can just as well function as C_1 or C_2 , in which case they are *not* subject to the same limitations as postconsonantal glides. In his review, Zuk correctly notes the existence of verbs such as *wɥ:r-* "run" and *jɔr-* "throw", which begin with a glide followed by a high back vowel. However, the article's claims that *j* cannot be followed by a high vowel, or that (the underlying) *w* cannot be followed by back vowels, apply to *postconsonantal* glides only. Thus, while *wɥ-* is a valid root-initial sequence, *Cwɥ-* is not, since postconsonantal *w* cannot combine with *ɥ*.

This focus on postconsonantal glides also explains the omission of the consonant transcribed as *wɥ* in Reid (2019), *ɣ* in Crazzolara (1933) and *h* in Faust & Grossman (2020). Regardless of whether this sound should even be described as a glide, it clearly does not share the same distribution as glides. Most notably, it never occurs postconsonantly, meaning it cannot function as G within the $C_1(G)VC_2$ template. Additionally, it does not combine with glides *j* and *w*, making it irrelevant to the discussion of the distribution and

origin of postconsonantal glides. As a result, it was deliberately excluded from the analysis.

Interestingly, comparative evidence from Andersen (2007, fn. 12) suggests that word-initial *wu-* sequences, such as seen in *wu:r* “run”, *wǫm* “nose”, and *wù:t* “ostrich”, may have originated as *uɥ-*. While the sequence *uɥ-* is unattested in modern Nuer, its historical presence is supported by data from Western Nilotic languages outside the Dinka-Nuer group. In Pāri, Kurmuk, Mabaan, and Mayak, the glottal stop *ʔ* corresponds to Nuer *uɥ* before non-high vowels. For example, Nuer *uɥám* “thigh” has *ʔám* in Kurmuk, *ʔám* in Pāri, *ʔám* in Mabaan; Nuer *uɥǫn* “I” corresponds to Pāri *ʔáani*, Kurmuk *ʔáani*; Nuer *uɥót* “hut” corresponds to Kurmuk *ʔót*, Pāri *ʔót* “house”, etc. Crucially, when followed by *u*, *ʔ* in these more distantly related Western Nilotic languages corresponds to *w* in Nuer. For instance, Nuer *wǫm* “nose” has a cognate *ʔúm* “nose” in Pāri, *ʔómbón* in Kurmuk, *ʔum* in Mayak, *ʔúammλ* in Mabaan, while Nuer *(u)wù:t* “ostrich” corresponds to Pāri *ʔúuqò*, Kurmuk *ʔúudú*, Mayak *ʔuudú*. This pattern suggests that word-initial *wu-* (and likely *ji-*, though I am aware of only one such word) originated as *uɥ-* (and *uɥi-*) in Nuer, with *uɥ* later being replaced by *w* or *j* before high vowels *u* and *i*, respectively.

It is therefore likely that the constraint against glides combining with high vowels of the same backness—proposed in the article for Proto-Dinka-Nuer (PDN)—applied not only to postconsonantal glides but also to word-initial ones. The replacement of *uɥ* with *w* or *j* before high vowels must have occurred before the Dinka-Nuer split, as the cognates cited in Andersen (2007) indicate that Dinka was also affected by this change. As with other sound changes discussed in my article (i.e. glide epenthesis and *ɬ*-raising), this shift contributed to the obfuscation of the original constraints on glide-vowel combinations.

Circling back to the identity of the sound variably transcribed as *uɥ*, *ɣ* or *h*, I would also like to offer some observations regarding its pronunciation. In my experience, this consonant is distinctly audible only before breathy vowels, in which case it sounds like heavy breathing/aspiration. Given this, I believe the most appropriate phonetic symbol

for its transcription may be *h*. Notably, this brings my analysis closer to that of Faust and Grossman (2020), who also classify this sound as a glottal fricative, albeit voiceless.

Crucially, I detect no trace of a consonant before a *modal* vowel in words where *u* is expected. This suggests that the consonant may be better analyzed as the absence of a segment—an empty onset that is realized as a glottal fricative (*h*) before breathy vowels and as a glide (*w* or *j*) before the high vowels *u* or *i* (although the latter could have been a historical change rather than a synchronic rule). Under this analysis, the fact that this same sound corresponds to the glottal stop *ʔ* in more distantly related Western Nilotic languages such as Pāri, Mayak, and Kurmuk is unsurprising.

In the Eastern Nuer dialects I have worked with, *u* does not occur in root-final position at all. Unlike Eastern Nuer dialects, Western Nuer dialects exhibit morphologically triggered consonantal mutation and show *u* (transcribed as *y* in my work) as the mutated variant of root-final *k*. My experience with Lou dialects of Nuer is limited, but from what I know, the mutation of root-final *k* into *u* occurs in those dialects as well.

In Western Nuer, the mutated consonant *u* may either be completely lost or replaced with a glide, depending on the phonological context. Loss typically occurs after overlong low vowels, including diphthongs. For example, the genitive of the noun *câ:k* “milk” is *câ:.*, while the genitive of the noun *lě:k* “fish (sp.)” is *lěa:.*. After mid [+ATR] vowels, the mutated *k* often surfaces as a glide; for instance, the plural of *rô:k* “rope” is *rô:w*. The extent to which glides replace the mutated *k* varies by dialect, with the process being more pervasive – and occurring in more contexts than indicated here – in the speech of some speakers. In any case, both the loss of *u* and its replacement with a glide suggest that root-final *u*, which originates from the mutation of *k*, is following the same trajectory as root-initial *u* toward eventual disappearance.

All of the above suggests that *u* is *not* a glide on par with *j* and *w*. Rather, it is more likely – and even certain in root-final contexts – that *u* represents the final stage in a sequence of lenition processes that affected original plosives. In root-final positions, the plosive in question is *k*, which remains observable in non-mutated environments. The

origin of root-initial *u* is less clear, but according to Dimmendaal (1988), it should be reconstructed as the uvular plosive *q*.

I hope this discussion clarifies my reasoning for omitting *u* from the analysis of post-consonantal glides, despite its transcription as a glide by some researchers.

Lastly, I would like to briefly comment on the data from Stigand (1923) cited by Zuk in his review. Many of the examples in the cited set involve glides functioning as C₂ rather than forming true diphthongs. For instance, the noun *kǎw* (“bride”) conforms to the C₁(G)VC₂ root structure, where the root vowel *a* is followed by *w* in the C₂ position. Beyond that, I find many aspects of Stigand’s transcription questionable. While I cannot say with certainty whether some of the “quirks” in his transcriptions reflect genuine dialectal differences or stem from perceptual errors or misanalysis, I can confidently assert that certain diphthongs transcribed by Stigand (*ai*, *oi*) do not exist at the phonemic level in the Nuer dialects (both Western and Eastern) that I am familiar with. Palatal consonants, particularly the palatal nasal, exert a raising influence on the preceding vowel, which can sometimes create the impression of a *j*-like glide. However, this effect is purely phonetic and does not represent an underlying phonemic contrast.

Andersen, T. 2007. “Kurmuk phonology”. *Studies in African Linguistics*, Volume 36, Number 1, pp. 29-90. **Crazzolaro**, J. P. 1933. Outlines of a Nuer grammar. (13). **Dimmendaal**, Gerrit Jan. 1988. "The Lexical Reconstruction of Proto-Nilotic: A First Connaissance". *Afrikanistische Arbeitspapiere* 16: 5-67. **Faust**, Noam & Eitan **Grossman**. 2023. Nuer. In Ronny Meyer, Bedilu Wakjira & Zelealem Leyew (eds.), *The Oxford Handbook of Ethiopian Languages*, 807–833. 1st edn. Oxford University Press. **Reid**, Tatiana. 2019. *The Phonology and Morphology of the Nuer Verb*. Surrey, UK: University of Surrey. **Stigand**, C.H. 1923. *A Nuer-English vocabulary, compiled by the late C.H. Stigand*. Cambridge: Cambridge University Press.

APPENDIX

This appendix gives a full list of the Agar Dinka and Nuer roots used for analysis in Flego (2025) and Monich (2025, this volume). Roots from both languages are given together in the same row when suspect they are cognates. These roots all contain consonant-glide-vowel sequences. All roots with post-consonantal /j/ appear first, followed by roots with post-consonantal /w/. They are then organized by root-initial consonant, and then by root-final consonant. It is noted when a Nuer form has a-mutation and when a Dinka-Nuer form is in Grades 2 (2°) or 3 (3°), i.e. when *not* in Grade 1.

NUER		AGAR DINKA	
pjɛr-	<i>ceremonial scar</i>	(pɔwɔ̃or)	(scar.PL)
mjɔt	<i>hoof</i>	(mwɔ̃ɔt)	(hoof.SG)
tʃap-	<i>touch</i>		
		tʃɛ̃ep	<i>taste</i>
		tʃàan	<i>hide</i>
		àtʃóol	<i>net.SG</i>
tʃɛ:c-	<i>ask</i>	tʃɛ̃ec	<i>ask for</i>
		tʃɔ̃ɔɲ	<i>press</i>
tʃɛk-	<i>weigh</i>	tʃɛ̃ek	<i>be heavy</i>
tʃɛk1-	<i>be close to something</i>	tʃɔ̃ok	<i>be near</i>
		tʃàak	<i>marry</i>
tʃɛk2-	<i>make worse/aggravate</i>		
		tʃàk ~ tʃòok	<i>bury. TS ~ NF</i>

tʃâ:ŋ	<i>evening</i>		
tʃě:ŋ	<i>antelope</i>	tʃôooŋ	<i>tiang antelope.PL</i>
tʃe:ŋ-	<i>fill up</i>	tʃôoŋ	<i>fill</i>
		mətʃàaŋ	3° <i>horse.SG</i>
		dʒàp ~ dʒôop	<i>dig.TS ~ NF</i>
		dʒàm	<i>demolish</i>
		dʒèɛt	<i>give birth to</i>
		dʒèeej	<i>white ant.SG</i>
ŋjàm	<i>face</i>		
		ŋjàan	<i>testicle.SG</i>
		ŋjàar	<i>love</i>
ŋjà:l	<i>sky</i>	ŋjàal	<i>sky.SG</i>
ŋjà:l	<i>rain</i>		
		ŋjòol	<i>knee.PL</i>
ŋjɛ:c-	<i>squeeze</i>	ŋjàc	<i>squeeze</i>
		tʃòop	<i>soil.SG</i>
tʃép	<i>type of shield</i>		
		tʃàam	<i>win</i>
tʃəŋ-	<i>push aside</i>		
dʒəp-	<i>speak nonsense/be confused</i>		
dʒé:n-	<i>lotion</i>		
		dʒèer	<i>dance</i>

(μ)-djâ:r	<i>gourd</i>			
		djôoor		<i>woman</i> .COLL
		djàaŋ		<i>cradle basket</i> .SG
djók	<i>three</i>	djâak	3°	<i>three</i>
		djàŋ ~ djôoŋ		<i>stir</i> .TS ~ NF
		rjòp		<i>pay</i>
		rjòp		<i>pound</i>
rjèp	<i>nail</i>	rjòop		<i>fingernail</i> .SG
rjé:l	<i>eel</i>	rjôool		<i>eel</i> .PL
rjà:l	<i>striped</i>			
		rjèec		<i>rat</i> .SG
		àrjôoooc		<i>coward</i> .SG
rjéj	<i>boat</i>	rjàaj ~ rjêet	3° ~ 2°	<i>boat</i> .SG ~ PL
rjak-	<i>obfuscate/be evasive</i>			
rjeŋ-	<i>be full/satisfied</i>			
rjaŋ-	<i>shine</i>			
lêp	<i>tongue</i>	ljép		<i>tongue</i> .SG
lep-	<i>open</i>	ljèp		<i>open</i>
		àljâap	3°	<i>turmoil</i> .SG
		ljàm		<i>attack from behind</i>
		ljàt		<i>peer at</i>
		ljàac		<i>impregnate</i>

		ljóoj	2°	<i>divorce</i> .NTS
ljak-	<i>flatter</i>			
ljək-	<i>stir (water)</i>	ljòok		<i>stir</i>
		ljàaŋ		<i>drip</i>
(μ)-cjəm	<i>shell</i>			
cjɛ̄t̚	<i>excrement</i>	cɛ̄t̚		<i>faeces</i>
cjɛ̄k	<i>woman</i>			
cjɛ̄k-	<i>short</i>			
cjɛ̄:k	<i>leg</i>	cɔ̄ok		<i>foot</i>
cjɛ̄:ŋ-	<i>personality</i>			
cjɛ̄ŋ-	<i>live</i>			
jjɛ̄p	<i>axe</i>			
jjɔ̄m	<i>wind</i>	jɔ̄om		<i>wind</i> .SG
jjà:t̚	<i>tree</i> .SG			
jjɛ̄:n	<i>tree</i> .PL.OBL			
jjâ:r	<i>shoulderblade</i>			
jjá:c	<i>stomach</i> .PL	ɿc		<i>stomach</i> .SG
jjɛ̄:j-	<i>stand up/leave</i>			
jjɛ̄:k-	<i>meet</i>			
jjɛ̄:k-	<i>bad</i>			
jjɛ̄:k	<i>dog</i>	jɔ̄		<i>dog</i> .SG
jjɔ̄ŋ	<i>table (traditional)</i>			

			bwɔ̃ɔl	<i>rabbit.SG</i>
bwɔ̃:c	<i>coward</i>		bwɔ̃ɔc	<i>castrated bull.SG</i>
bwɔ̃j-	<i>light</i>			
(μ)-bwɔ̃jɛ̃	<i>fishing net</i>		ɔ̃bwɔ̃j	<i>net.SG</i>
			bwɔ̃k	<i>blow</i>
			bwɔ̃ok	<i>slap</i>
			mwɔ̃oŋ	<i>greet</i>
(mjɛ̃t)	<i>(hoof)</i>		mwɔ̃ot	<i>hoof.SG</i>
			mwɔ̃or	<i>bull.SG</i>
			mɔ̃r ~ mwɔ̃or	<i>lose.TS ~ NF</i>
mwɔ̃l	<i>knee</i>			
mwɔ̃l-	<i>be gentle</i>			
			mwɔ̃ɔc	<i>give to</i>
mwɔ̃:p-	<i>husk (verb)</i>			
			mwɔ̃ok	<i>churn</i>
mwɔ̃k	<i>stew</i>			
			ɬwɔ̃t	<i>suck</i>
(μ)-twɔ̃t-	a-mut. <i>goose</i>			
twɔ̃r	<i>song</i>			
twɔ̃:r	<i>bee</i>			
(μ)-twɔ̃c	<i>container for grain</i>			
twac	<i>ceremonial leopard hide</i>			
			twɔ̃jɲ	<i>pinch</i>

			twɛ̃ɲ		<i>rain</i>
			twɛ̃ɲ		<i>front.SG</i>
			twɛ̃ɲ	2° or 3°	<i>official.SG</i>
			twɛ̃aaɲ		<i>disease.CS1</i>
twɛ̃k		<i>clay</i>			
dwɔ̃:r	a-mut.	<i>thing</i>			
dwɛ̃:l		<i>house</i>			
dwal-		<i>fear</i>			
dwɛ̃c-		<i>cane</i>			
dwä:ɲ		<i>kayak door</i>			
dwɛ̃ɲ-		<i>be paralyzed</i>			
nwɛ̃ɛɛr-		<i>Nuer person.OBL</i>	nwɛ̃ɛɛr	2° or 3°	<i>Nuer people.SG</i>
rwɛ̃ɛ̃-		<i>put mud on the walls</i>			
(μ)-rwɛ̃ɛ̃		<i>tilapia</i>			
rwɛ̃ɛ̃-		<i>eat liquid food</i>			
rwâɛ̃		<i>male calf</i>			
rwet-		<i>inflate, put under pres- sure</i>			
			rwɛ̃ɛ̃t		<i>loosen</i>
			rwɛ̃ɛ̃l	2° or 3°	<i>sun.SG</i>
rwɛ̃l		<i>summer</i>	rwɛ̃l		<i>summer.SG</i>
rwac-		<i>speak</i>			
rwɛ̃j		<i>saliva</i>			

		rwàaaj ~ rwééej	3° ~ 2°	marriage.SG ~ PL
rwǎk	<i>in-law relative</i>			
		lwèet̚		lie.SG
		lwéet̚	2° or 3°	saliva.PL
lwet̚-	<i>suck</i>			
lwe:t	<i>tail of the [ɟwǎ:t̚] fish</i>			
		lwèel		tell
lwél	<i>tree (sp.)</i>			
lwàl	<i>red</i>			
(μ)-lwěk-	<i>snail</i>			
		lwák		shrine.SG
lwâ:k	<i>cow byre</i>			
lwǎ:k	<i>helper/sevant</i>	ǎlwâaak		servant.SG
lwǎk-	<i>help</i>			
lwe:ŋ-	<i>poison</i>			
lwàŋ	<i>fly</i>	lwàaŋ		fly.SG
lwa:ŋ-	<i>put</i>			
cwît	<i>string</i>			
		cwèt		eat meat
(kwǎn)	<i>(porridge)</i>	cwîin		porridge.SG
cwe:n-	<i>choke (on food)</i>			
		cwîr		period.SG
		cwîr		stare steadily at

cwɛr-	<i>straighten by pulling</i>			
cwɛ́r-	<i>be greedy</i>			
cwɛ̀r	<i>thief</i>	cwâar ~ cwɛ̀er	3° ~ 2°	<i>thief</i> .SG ~ PL
cwɛ:l-	<i>circumsize</i>			
cwɛ́c	<i>right arm/hand</i>	cwɛ̀ec		<i>right arm</i> .SG
		cwɛ̀ec		<i>mould</i>
cwɛ́ŋ	<i>liver</i>	cwáŋ		<i>liver</i> .SG
cwá:ŋ	<i>cow of liver color</i>			
		cwáŋ ~ cwôoŋ		<i>light</i> .TS ~ NF
cwíj	<i>leach</i> .PL			
cwɛ̀:ɟ	<i>soup</i>	cwâaaɟ		<i>soup</i> .PL
cwɛ̀k-	<i>twin</i>	àcwéek		<i>twin</i> .SG
ɟwǎ:ɬ	<i>limb</i>			
ɟwǎ:ɬ	<i>kind of fish</i>			
ɟwǎ:t-	<i>feather</i>			
		ɟwǎjir		<i>arrange</i>
		ɟwǎar		<i>collect</i>
ɟwá:r-	<i>scoop out</i>			
ɟwǎl	<i>tail</i>	ɟòl		<i>tail</i> .SG
ɟwǎc-	<i>grass</i>			
		ɟwáaaɟ ~ ɟwéɛɟ	3° ~ 2°	<i>fever</i> .SG ~ PL
		ɟwòoɬ		<i>graze</i>
ɟwɛ̀r-	<i>drop</i>			

ɲwɛ:j-	<i>tangle</i>		
kwɛm-	<i>put grass on the house</i>		
		kwɛ̃m	<i>break</i>
		kwàat̪	<i>drive</i>
kwit-	<i>castrate</i>		
kwɛt-	<i>kick</i>		
kwĩnkwĩn	<i>cleaner fish</i>		
kwí::n	<i>bow</i>		
kwɛ:n ₁ -	<i>marry</i>		
kwɛ:n ₂ -	<i>count</i>	kwɛ̃n	<i>count</i>
kwǎn	<i>porridge</i>	(cwî̃n)	<i>(porridge.SG)</i>
kwir-	<i>throw</i>		
		kwɛ̃r	<i>path.SG</i>
kwǎ::r	<i>chief</i>		
kwìl-	<i>hole</i>		
(μ)-kwé̃l-	<i>star</i>	kwè̃l	<i>star.SG</i>
kwal-	<i>steal</i>	kwà̃l	<i>steal</i>
kwic-	<i>not know</i>		
kwĩc	<i>side/size</i>		
kwâc	<i>leopard</i>	kwâc	<i>leopard.SG</i>
kwâc-	<i>fish scale</i>		
kwa:ɲ-	<i>find</i>	kwà̃ɲ	<i>pick up</i>
kwĩj-	<i>be little</i>		

kwěj		<i>African fishing eagle</i>	kwèej	<i>fishing eagle</i> .SG
kwāk		<i>dishes</i>		
gwáŋ		<i>place/time</i>		
gwɛ:t-		<i>comb</i>		
gwɛt		<i>ornament woven out of</i> gwɛt		<i>bead</i> .SG
		<i>beads</i>		
gwì:r		<i>grey</i>		
			gwàr	<i>clear a field</i>
gwár-		<i>grind</i>	gwàr ~ gwôor	<i>grind</i> .TS ~ NF
gwó:r	a-mut.	<i>elephant</i>		
gwíl		<i>collarbone</i>		
			gùgwál	<i>zebra</i> .SG
gwic-		<i>watch</i>		
gwéc		<i>giraffe</i>		
gwɛ:j		<i>pebble</i>		
gwɛ:ɲ-		<i>open a path through</i>		
(μ)-gwí:k-		<i>spoon (traditional)</i>		
(μ)-gwěk		<i>frog</i>	àgwèk	<i>frog</i> .SG
			gwàŋ	<i>cut with an</i> <i>adze</i> .TS
			àŋwèm	<i>buttock</i> .SG
ŋwèt		<i>young</i>		
			ŋwéɛɛt	2° or 3° <i>scratch</i> .M.NF

ɲwǎ:n	<i>four</i>	ɲwâan		<i>four</i>
ɲwǎc-	<i>smell</i>	ɲwâac	3°	<i>smell (intr.).NF</i>
ɲwɛ::ɲ-	<i>scoop out with fingers</i>			
ɲwǎk	<i>neck</i>			