CHAPTER 33

NILO-SAHARAN

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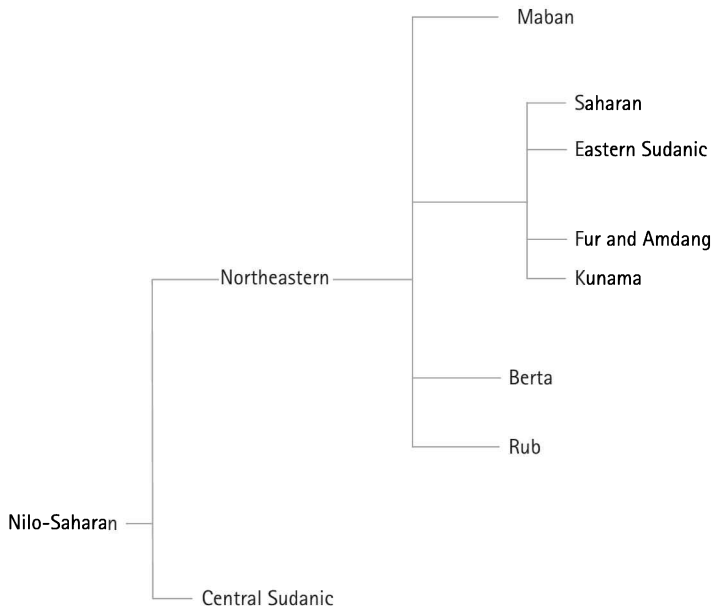
33.1 INTRODUCTION

THE core of the language phylum referred to as Nilo-Saharan today was established more than fifty years ago by the linguist and anthropologist Joseph H. Greenberg. In his earliest genetic classification of African languages, Greenberg (1955) proposed a Macro-Sudanic family (renamed Chari-Nile after a suggestion by the linguist William E. Welmers), consisting of a Central Sudanic and an Eastern Sudanic branch plus two isolated members, Berta and Kunama. This family formed the core of the Nilo-Saharan phylum as hypothesized by Greenberg (1963c). Based on a judicious evaluation in particular of morphological evidence, Greenberg added a number of groups which had been treated as isolates in his 1955 classification, namely Songhay, Saharan, Maban and Mimi, Nyangian, Temainian, Koman, and Gumuz. The present author, however, prefers to treat the Songhay cluster (spoken mainly along the Niger River in West Africa) or Gumuz and the Koman languages (in the border area between Ethiopia and Sudan) as independent families until more extensive grammatical evidence becomes available (Dimmendaal 2011). This also applies to the Kadu languages spoken along the southern range of the Nuba Mountains, Sudan, which had been classified as Kordofanian, that is, as members of the Niger-Congo phylum by Greenberg (1963c), but which have been argued by Bender (1996) to constitute a branch of the Nilo-Saharan phylum too; Ehret (2001: 68) assumes that Kadu as well as the Shabo language in southwestern Ethiopia (usually treated as a linguistic isolate). "may possibly be related at some deeper remove to Nilo-Saharan as a whole." Scholars thus disagree on the subgrouping or the inclusion or exclusion of specific language families. For further details, the interested reader is referred to the original sources.

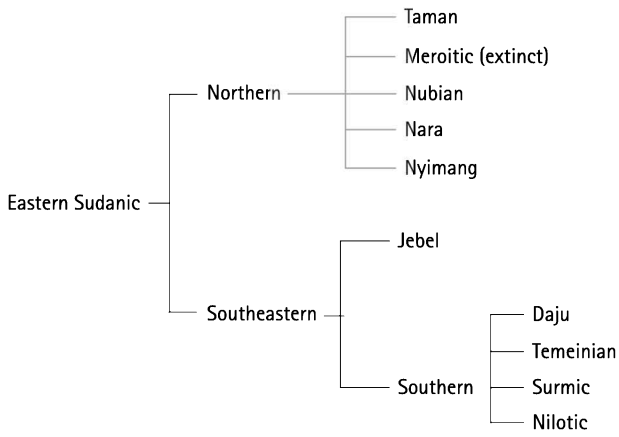
The approximately 120 languages treated as members of the Nilo-Saharan phylum in the present contribution cover an area stretching from Eritrea and Ethiopia in the

East across Northeastern Africa towards Niger with a southward extension into Eastern and Central Africa. Major Nilo-Saharan languages in terms of number of speakers are Dinka (a language in South Sudan which belongs to the Nilotic branch within Eastern Sudanic), Kanuri (a Saharan language spoken in Nigeria and Niger), and Luo (a Nilotic language spoken in Kenya, Tanzania, and Uganda), all of which have millions of speakers.

Dimmendaal (2010) divides the Nilo-Saharan phylum into a Central Sudanic branch and Northeastern Nilo-Saharan, the latter consisting of several well-defined sub-branches:



This primary division within Nilo-Saharan also corresponds to a typological split both syntactically and morphologically. For example, in terms of constituent order Central Sudanic languages have either SVO or SAUXOV constituent order. Within Northeastern Nilo-Saharan, a verb-final syntax is common, with the exception of a group of languages belonging to the Eastern Sudanic subgroup and Berta, which is spoken in the same area. Whereas Central Sudanic languages are predominantly prefixing in their derivational morphology, Northeastern Nilo-Saharan languages tend to use suffixation as a strategy. The largest sub-group, both in terms of number of languages and geographical spreading, is formed by the Eastern Sudanic branch. Within the latter, there is an interesting syntactic and morphological dichotomy between the Northern group and the Southeastern group.



Whereas Eastern Sudanic languages belonging to the Northern branch are strongly dependent-marking at the clausal level (with extensive case marking), Southern members are strongly head-marking (with either a reduced case-marking system or no case marking at all). This typological divergence has had interesting consequences for the lexical, and thereby for the derivational, structure of these languages, as argued in Section 33.5.

33.2 Formal Strategies

One of the striking properties of the Nilo-Saharan phylum as a genetic grouping is its typological diversity, a feature related presumably to its geographical spreading and the presence of typologically highly varying neighboring language families such as Cushitic and Chadic, or Ubangian as well as the time depth involved for this genetic unit. With respect to lexical strategies, one may find derivation being expressed by way of tonal changes on words consisting of one consonant or a cluster of consonants only, as in the Central Sudanic language Lendu (spoken in eastern Congo; data with the author):

(1) bɪ̀ 'jump' bɪ̌ 'jump continuously (pluractional form)'

On the other hand, one finds languages with opulent morphologies, for example within the Nilotic branch of Eastern Sudanic, bordering on Bantu (Niger-Congo) languages, which are also characterized by rich morphologies. In the Nilotic language Kipsikiis (in Kenya), for example, a verb root may be followed by a range of derivational suffixes, themselves followed by inflectional suffixes and clitics. The verb root *-twaal* 'jump' may be turned into a causative form by way of the (widespread

Nilo-Saharan) causative prefix *i-*, rendering *-i-twaal.* This latter stem, causing fusion with the infinitive prefix *kee-* (*kee-i-* > *kii-*) if the latter occurs, may be followed by combinations of valency-changing suffixes (example adapted from Toweett 1979: 138):

(2) kìítwààl-sì:-chìn-èè-chí làákwéét
INF.CAUS.jump-DETR-DAT-MED-DAT child:ABS
'to cause the child to jump for him/her on behalf of somebody else'

Derivation as a lexical strategy is also less prominent in Central Sudanic than in Northeastern Nilo-Saharan; instead, compounding is more common in this primary branch of Nilo-Saharan. Verbal derivation in Central Sudanic languages involves prefixation (next to internal morphology), whereas in languages belonging to the Northeastern branch suffixation constitutes the dominant pattern, as pointed out in the previous section. There is one noticeable exception to this pattern: the prefixation of the above-mentioned causative marker consisting of a high front vowel. This archaic marker is reconstructable for the earliest stages of Nilo-Saharan (Dimmendaal 1982). In Central Sudanic languages, this prefix is part of a set of valency-changing prefixes, as first described in Tucker (1967: 204–19). Blackings and Fabb (2003: 76) give the following examples for Madi (spoken in South Sudan and Northern Uganda):

(3) tū 'to climb up' ī-tú 'to make climb up; promote'

Prototypically, the prefixation of the causative marker results in the addition of an Agent role to an intransitive verb; alternatively, a noun or adjective may form the lexical basis for a derived verb. The causative prefix has been retained as such in different sub-groups of the other primary branch of Nilo-Saharan, Northeastern Nilo-Saharan, for example in Nilotic and Surmic (which belong to the Eastern Sudanic branch), as shown by the following example from the Nilotic language Kipsikiis (Toweett 1979: 117):

(4) -nér 'be fat' -ì-néêr 'fatten'

Unseth (1998: 116) presents a survey of this archaic feature in Surmic languages; an example from Majang:

(5) -paak- 'be hot' -ɪ-paak 'heat (transitive)'

Central Sudanic languages have a set of verbal prefixes often affecting the valency of verbs, although in several of them this phenomenon is strongly lexicalized. Again in Madi, one finds a ventive (directional) marker *e-*, or an iterative prefix *u-* or *a-*. In Central Sudanic languages such as Ngiti, such derivational prefixes express direction, causation, but also single action and diminutive (i.e. an action which is carried out for a brief period of time, "a little bit" or is just beginning; Kutsch Lojenga 1994: 299). As

the following examples show, these processes also tend to be accompanied by tonal modifications:

(6)	u̶-drùta	'to uproot, pull out (single action)'
	ɔ-druta	'to uproot, pull out (basic form)'
	u̶-druta	'to uproot, pull out (pluractional)'
	i̶-drútá	'to uproot, pull out (diminutive)'

In addition to these vocalic prefixes, there are also CV prefixes in Central Sudanic, for example the widespread pluractional marker tV-, as in Sara Mbay (Keegan 1997: 40):

(7)	ndà	'hit'	tí-ndá	'hit many times'

Pluractionality marking on the verb as such is widespread in at least three African phyla, Nilo-Saharan, Niger-Congo, and Afroasiatic. Prototypically, it expresses an event performed several times by a singular subject in the case of intransitive predications, whereas with transitive predications the event affects multiple objects or the object multiple times.

One prominent prosodic feature of Nilo-Saharan as well as Niger-Congo plus neighboring Chadic, Omotic, and Cushitic (i.e. Afroasiatic) languages, apart from tone, is vowel harmony based on the manipulation of the tongue root, hence "Advanced Tongue Root" or ATR harmony. In a classical system, as in the Nilotic language Kipsikiis referred to above, this system involves a set of five [-ATR] vowels, ɪ, ɛ, a, ɔ, ʊ, and five [+ATR] vowels i, e, ə, o, u, co-occurring in one word, although there may be irregularities because of specific affixes or clitical elements that do not participate in the harmony process. [+ATR] morphemes tend to be dominant in most cases, as shown in the following nominalizations from Kipsikiis (Toweett 1979: 422):[1]

(8)	-kɛ́r	'shut'	kèèr-íìn	'expert shutter'
	-kéér	'see'	kèèr-íìn	'expert seer'

The degree of segmental reduction and internal morphology is relatively high in the Central Sudanic branch, but a certain degree of "vertical morphology" can be observed in Northeastern Nilo-Saharan languages too. In the Nilotic language Päri, for example, consonant alternation is a prominent exponent of derivational (as well as inflectional) morphology, as shown in (9) by the alternations between verbal roots and corresponding pluractional forms (data derived from Andersen 1988):

[1] See Casali (2008) for a detailed survey of this areal feature.

(9)	jap-	jaamm-	'open'
	lɔt-	lɔɔnn-	'roast'
	ɲʊɔp-	ɲɔɔpp-	'make beer'
	tiet-	teett-	'carry on head'

In another Nilotic language belonging to the same (Western Nilotic) sub-group, Dinka, internal morphology has been taken to an extreme, affecting consonants, tone, as well as vocalic qualities in stems, as shown by Andersen (1992–4). Derived stems in Dinka are essentially monosyllabic, but still manifest different layers of derivational and inflectional morphology formally expressed through modifications in vowel length, voice quality (creaky versus breathy voice).[2] Andersen (1992–4: 61) shows that the morphological layers are simultaneous but "vertically" ordered, with the root as the "deepest" layer, optionally followed by a derivational layer, and followed by an inflectional layer. For example, the verbal suffix *-u* (expressing ventive or movement towards the deictic centre) in Nilotic languages like Kipsikiis is expressed as a prosodic feature "breathiness" on the root vowel, changing creaky vowels to corresponding breathy vowels in Dinka:

(10)	ä̰-wɛ̰ec	'(s)he is kicking it'
	D-kick:3SG	
	ä̰-wɛ̤ec	'(s)he is kicking it hither'
	D-kick:VEN:3SG	

Similarly, the itive suffix *-ta* (marking movement away from the deictic centre) in Nilotic languages like Kipsikiis is realized by way of tonal changes on the root in Dinka.

(11)	ä̰-wɛ́ec	'(s)he is kicking it thither'
	D-kick:IT:3SG	

The common Nilotic Dative marker **-ki* (Dimmendaal 2009) again is realized by way of tonal changes and a change of creaky root vowels into breathy vowels in Dinka verb stems:

(12)	ä̰-wɛ́ec	mɔ̰c	'(s)he is kicking it for the man'
	D-kick:B:3SG	man	
(13)	ä̰-wɛ̂ec	mɔ̰c	'(s)he is kicking for him'
	D-kick:B:AP:3SG	man	

Internal morphology involving tonal modification occurs, not only in Nilo-Saharan languages with strongly reduced segmental structures, but also in languages with opulent

[2] The seven creaky vowels of Dinka probably go back to five [–ATR] vowels, whereas the corresponding breathy vowels go back to [+ATR] vowels (Andersen 1990).

segmental morphology, as in the Saharan language Kanuri, where abstract nouns may be derived from basic nouns by way of a fixed tone pattern low…high (Hutchison 1981: 64–5).

(14)	férò	'girl'	fèró	'girlish'
	kámú	'woman'	kàmú	'typical of women'
	kànúrì	'Kanuri people'	kànùrí	'the Kanuri language'
	fàránsà	'French people'	fàránsá	'French'

Partial or complete reduplication in Nilo-Saharan expresses inflectional properties like plurality (with nouns and adjectives), but also derivational relations as with adjectives or adverbs derived from nouns. This strategy is particularly common in Central Sudanic, as in Avokaya (data with the author):

(15)	àcí	'fire'	àcíàcí	'hot'

Alternatively, partial or complete reduplication may express intensity or repetition, as in the Saharan language Kanuri (data from Hutchison 1981):

(16)	kám-	'cut'	kàkám-	'keep on cutting, cutting many'

Such widespread patterns of reduplication are not necessarily indicative of a common origin, but instead appear to have emerged independently again and again in individual languages due to the high degree of diagrammatic iconicity involved.

Metrical structures probably constitute a somewhat neglected formal property of African tone languages. Their nature and impact on morphology also needs much further research. Mora counting plays a role, for example, in the Teso-Turkana cluster within Nilotic both with derivational and inflectional processes. The kind of derivational suffix a derived abstract noun takes is determined by the canonical shape of the adjectival or stative verb root (Dimmendaal 1983: 50–1, 223–58, 270–4). Partially reduplicated roots take a nominal suffix *-(u)*, whereas non-reduplicated -CVCVC roots copy the last vowel and consonant from the root; *a-* is a gender marker used for feminine nouns in the singular.[3]

(17)	-jɔ́k	'good'	á-jɔ́k-ìs(í)	'kindness'
	-rɛ́ŋ	'red'	a-rɛŋ-ɪs(ɪ)	'redness'
	-nɔ́nɔ́k	'soft'	á-nónók-(ù)	'flexibility, softness'
	-lílím	'cold'	á-lílím-(ù)	'coldness'
	-pálór	'bald'	á-pálór-ór	'baldness'
	-cúkúl	'deep'	á-cúkúl-úl	'depth'

[3] The parentheses indicate that these vowels in Turkana are de-voiced before a pause.

Similar rules involving mora counting apply to inflectional processes, for example to number marking with nouns in Turkana. Monomoraic nominal roots (i.e. roots containing one vowel), almost always take the number suffix *-ɪn/-in* (the alternation being determined by vowel harmony rules in the language); bimoraic roots on the other hand tend to take the number suffix *-ɪ/-i* (depending on vowel harmony rules), whereas with bimoraic nominal roots ending in a consonant, the number-marking suffix tends to be *-a/-ɔ/-o* (whereby the alternation itself again is determined by vowel harmony rules in the language).

(18)	Singular	Plural	
	é-cóm	ŋí-cóm-ín	'baboon'
	é-pém	ŋí-pém-ín	'bed'
	á-pɔ̀ɔ́	ŋá-pɔ́ɔ́-í	'hare'
	á-wùnó	ŋá-wúnó-í	'rope'
	á-kíɲáŋ	ŋá-kìɲàŋ-á	'crocodile'
	á-ŋátùɲ	ŋí-ŋàtùɲ-ɔ́	'lion'
	á-tápén	ŋá-tàpèn-ó	'guineafowl'

The formal realization of pluractionality marking in Nilotic languages like Anywa is conditioned by the presence of a long vowel (or diphthong) as against a short vowel in the root preceding the frequentative marker. The segmental reduction process in Pre-Anywa and the emerging syllable structure was bounded and restricted by higher prosodic structures in the language, the metrical foot (see Dimmendaal 2012 for further details).

Verb root		Pluractional marker		Resulting verb stem
C_1VC_2-	+	*-CVN	→	$C_1VVN_2N_2$-
C_1VVC_2-	+	*-CVN	→	$C_1VVC_2C_2$

Examples showing this synchronic alternation with short root vowels in Anywa:

(19)	root	pluractional stem	
	cac-	caaŋŋ-	'look for'
	cak-	caaŋŋ-	'name'

With roots consisting of a long vowel or diphthong on the other hand, the resulting pluractional stem consists of a long vowel plus geminate obstruent, rather than a geminate nasal.

(20)	tiet-	teett-	'speak'
	waac-	waacc-	'speak'

33.3 Derivation without Category Shift

Derivation without category shift is common across the entire phylum mainly with respect to verbs. One other type not involving category shift, noun-to-noun derivation, is essentially restricted to the Saharan branch, and probably relates to the lexical structure of languages belonging to this Nilo-Saharan branch, as argued in Section 33.5. Other lexically complex forms not resulting from category shift tend to involve compounding in Nilo-Saharan. This latter process is common with all major categories such as nouns, adjectives, or verbs.

Apart from the causative, pluractionality is commonly expressed on the verb in Nilo-Saharan languages. Although the formal strategies for pluractionality marking do not necessarily involve cognate morphemes across this phylum, the actual lexical strategy itself is rather stable. In Central Sudanic languages, it is common to find a prefixal strategy, as in Balese (data translated from Vorbichler 1965: 102):

(21) à-há 'cut (one)' ɔ̀-há 'cut (many)'

There is a common tendency towards internal morphology for pluractional marking as a derivational strategy, but also for the development of suppletive basic vs. pluractional verb stems, as in the Central Sudanic language Ngiti (Kutsch Lojenga 1994: 283).[4]

(22)	Singular	Pluractional	
	ubìta	ubita	'to trap (animals)'
	aràta	owuta	'go'

In languages belonging to the Maban group, we find pluractional as well as singulative marking on the verb. Moreover, this derivational system interacts with a complex and rich system of number marking on nouns (involving singulatives, plurals, replacement, distributives, and transnumeral forms) functioning as subjects or objects of clauses; see Weiss (2009) for further details.[5]

(23)	à-wá:n-á	à-wà:k-ír-ì
	'I poured a bit'	'I poured a lot'

[4] Nilo-Saharan languages of course are not unique in this respect. Aikhenvald (2012: 154–5) describes similar phenomena in Amazonian languages.

[5] Replacement refers to an inflectional pattern whereby both singular and plural are marked for number, whereas transnumeral forms are neutral with respect to number, i.e. a transnumeral noun can refer to a singular noun or to a set of more than one entity, i.e. a plural noun.

Apart from causative and pluractional marking, directionality marking on the verb, in particular movement towards the deictic centre (the speaker), is very common across the phylum. This marker is usually referred to as the ventive in the study of Nilo-Saharan languages, where it sometimes is in paradigmatic contrast with an itive marker, expressing movement away from the deictic centre. Directionality marking again is expressed by way of prefixes in Central Sudanic and by way of suffixes in Northeastern Nilo-Saharan languages. Blackings and Fabb (2003: 73–82) describe a ventive prefix ɛ-/e-, for Ma'di:

(24)	ɔ̄-ɲā	kî	lí̱ɲá	rá
	3-eat	pl	food	AFF
	'they did eat food'			
(25)	ɛ̄-ɲá	kî	lí̱ɲá	rá
	(3)-VEN-eat	PL	food	AFF
	'they did eat food (away from here)'			

As pointed out by Blackings and Fabb (2003: 73), the inferred meaning or conversational implicature in example (25) as against example (24) is that the persons referred to are present with the speaker at the moment of speaking, but the eating took place elsewhere. The ventive consequently expresses the fact that the speaker observed the event with his own eyes.The same verbal strategy is found not only in various other Nilo-Saharan languages, but also in neighboring Niger-Congo and Afroasiatic languages. In Dimmendaal (2014), it is argued that ventive marking is part of evidentiality marking strategies in languages in the area.

Parallel to pluractional marking, directionality may also be expressed by way of suppletive lexical roots, as in Fur (Waag 2010: 196–210):

(26)	ɲăŋa	'go to (place of speaker)'	wǎyŋa	'come back to (place of speaker)'
	ʔéla	'come to (place of speaker)'	píŋí	'go back to (place of speaker)'

As shown by the following example from the Nilotic language Maasai (based on Tucker and Mpaayei 1955), two distinct events ("seeing" and "coming") involving two distinct actors (a third-person singular moving and an unidentified actor observing the movement) may be expressed in one and the same verb, a phenomenon called "alloying" in Alamin et al. (2012). This "lexical fusion" strategy, which is widespread in languages with ventive marking in the area, is presumably an instantiation of economy principles in languages (expressing a macro event involving two separate events in one word).

(27) ɛ-dɔl-ʊn-ɪ
3-see-VEN-PASS
'(s)he is seen coming this way'

The example from Maasai shows a further common strategy associated with the passive formation in Nilo-Saharan. Passives in this phylum tend to be expressed as impersonal active constructions, i.e. as constructions without a syntactic subject (agent) and without (syntactic) "object-to-subject" raising, but with a formal marker on the verb.

Apart from causatives or passives as valency-changing derivational operations, middle voice marking is usually marked on the verb in Nilo-Saharan. The modification in valency again tends to be expressed by way of suffixes in Northeastern Nilo-Saharan and prefixes in Central Sudanic. An example from Lese (Tucker and Bryan 1966: 35):

(28)	legbwi	'to change'	lagbwi	'to be changed'
	change		change:MI	

Example (29) is from the Northeastern Nilo-Saharan language Fur (Waag 2010: 187), showing the suffixing strategy of this primary branch:

(29)	biris	lʊp-ɔ	'(s) laid out the mat'
	mat	lay-COMPL	
	biris	lʊ́p-ʊ́ŋ-ɔ	'the mat is laid out (by itself or by someone)'
	mat	lay-MI-COMPL	

33.4 Derivation with Category Shift

The categorical distinction between nouns and verbs as major categories in Nilo-Saharan languages is fairly clear from a descriptive point of view, and usually does not pose an analytical problem. Other major categories, such as adjectives or adverbs, may or may not exist as basic or derived categories; it is not always easy to distinguish between stative verbs and adjectives. Derivational processes involving shifts between these various categories are particularly common in Northeastern Nilo-Saharan. Reh (1996: 144–59) describes a proto-typical system of nominalizations for the Nilotic language Anywa. These involve semantic roles such as agentives, instruments, action nouns, abstract nouns, and other types. From a formal point of view, suffixation and internal change are involved, sometimes combined with prefixation:

(30)	Detransitivized verb		Noun	
	kúró	'watch over'	kùrì (sg) / kùyyè (pl)	'field guard'
	rʌ̀ŋò	'look'	rʌ̀ɲí (sg) / rʌ́ŋŋé (pl)	'mirror, spectacles'
(31)	cʌ̀mɔ̀	'eat'	dì-cʌ̀mì (sg) / dì-cʌ̀mmè (pl)	'glutton'
	rʌ̀ʌ	'stick into'	dì-rĀG (sg) / dì-rʌ́ʌ́í (pl)	'twirling stick'

Whereas in Anywa derived nouns appear to be based on detransitivized verb roots, Nilotic languages like Turkana allow different derivational suffixes on the verb to be "inherited" in corresponding nominalized forms (Dimmendaal 1983: 269–92). Stacking of derivational morphemes on the verb (and corresponding nominalized forms) within Nilo-Saharan is most extensive in languages belonging to the Southern branch of Nilotic (e.g. in Kipsikiis, illustrated in example (2)). In Western Nilotic languages (like Anywa as shown already), there has been a drift or slant towards internal morphology (also as illustrated for Western Nilotic languages like Päri in examples (8) and (9), and Dinka in (10, (11), (12), and (13)). Eastern Nilotic languages occupy a position in between these extremes. In Turkana, for example, a verbal root may be preceded by a causative prefix, it may be reduplicated to express iterativity, or it may be expanded with a habitual suffix; these stems in term may be followed by either a ventive, itive, or dative suffix. Such stems may be followed by voice markers such as the passive. But unlike the former affixes, the passive cannot occur in a corresponding nominalized verb stem (whereby ak- is a feminine gender marker):

(32) Verb stem
-ɪtɪ-dɪtɛ-ʊn 'decrease'
CAUS-be.small.VEN
instrumental noun
ak-ìtɪdɪtɛʊn-ɛt
F-decrease-INST
'decrease (lit. thing that causes something to decrease)'

Derivational suffixes expressing nominalization appear to be absent from most Central Sudanic languages, where compounding tends to be used as a lexical strategy instead, as in the following Avokaya example:

(33) lɔ̄rí ɓá 'smith'
hammer person

Our current state of knowledge does not allow us to determine whether suffixation was lost in Central Sudanic, or whether the suffixes in Northeastern Nilo-Saharan are due to reinterpretations of former lexical roots in a compound as affixes. Such reinterpretations of course are common cross-linguistically. In fact, they are attested synchronically in at least one language belonging to the Nilotic family within Nilo-Saharan, Luo, which is in the process of developing noun classes parallel to neighboring Bantu (Niger-Congo) languages. The Luo community has absorbed many speakers from these neighboring speech communities over the past century or more. Apart from heavy (unadapted) lexical borrowing, shift-induced interference from Bantu accompanying language shift probably resulted in the emergence of derivational prefixes (Dimmendaal 2011: 193–6).

(34) dhó-lúô 'the Luo language' (< * dhok 'mouth')
jà-lúô 'Luo person' (< *jal 'guest')
jò-lúô 'Luo people' (< *jol 'guests')

Less well known in the literature, but probably quite common in Nilo-Saharan as well as other language families, is the derivation of verbs from ideophonic adverbs. Many African languages, including many Nilo-Saharan languages, are rich in ideophonic adverbs (or adjectives).[6] One common strategy in Kanuri (and other Saharan languages) is to combine these with the light verb "say" (*-n*) to form verbal predications. Example (35) is from Hutchison (1981: 107):

(35) kól 'sound of beating with stick, pounding with hammer; describes small head'
kólkól- n-'tap sharply on a hard surface: prod, provoke, urge to irrational act'

This process may be widespread across the family, but only a few case studies are available so far.

It is also common across the family to derive adpositions from nouns, in particular from terms referring to body parts. Such derived adpositions (or adpositional nouns) may be realized as prepositions or as postpositions, depending on the language. Non-derived adpositions also play a role in derivational processes in Nilo-Saharan. There is a widespread tendency to use attributive phrases introduced by a preposition, in particular the widespread and archaic preposition *kɪ* (plus variants) to derive nouns; this preposition introduces a range of semantic roles, in particular instruments. Creider and Creider (2001: 128–39) give numerous examples for the Nilotic language Nandi, and also show that such phrases frequently lexicalize due to the loss of the corresponding basic form; the prefix *-p-* in the examples below is an archaic genitive marker expressing inalienable possession in Nilotic.

(36)	root		derived form	
	keny	'long ago'	ki-p-keny	'old-timer'
	kaliang	'flies'	ki-p-kaliang'it	'fly whisk'
	(absent)		ki-p-chuseit	'puff-adder'

This tendency to lexicalize headless attributive phrases introduced by prepositions (or relative clause markers) as nouns appears to be a permanent trait of Nilo-Saharan languages. One consequence of this "univerbation" process is the frequent occurrence of "empty morphs" in nouns, reflecting former affixes or clitics which have become incorporated into the noun. Dimmendaal (1983: 252–3) lists five such elements for the Nilotic language Turkana.

[6] Storch and Vossen (2007) describe such rich inventories related to, for example, odors and colors in Nilotic languages.

A corresponding phrasal strategy deriving verbal predicates consisting of nouns, adjectives or adverbs plus the light verb "say" (or sometimes "do"), frequently involving a cognate verb *n(i)*, can be observed in a range of Northeastern Nilo-Saharan branches, for example Saharan, Northern Eastern Sudanic languages as well as Kunama and Berta. Tucker and Bryan (1966: 330) give an example of such a "coverb" plus "light verb" construction in Berta:

(37) kere 'light (noun)' kere-n 'dawn (verb)'

Cognate forms for the marker *-n* in Berta can be found across the phylum, for example in Nilotic languages like Achooli, where the marker for "say," *ni* or *li* (depending on the speaker), is used to introduce secondary predicates or adverbial phrases with ideophonic complements (example from Crazzolara 1938: 141):

(38) wàŋɛ̀ wóʈó lí riìk-riìk
eyes.3SG:POSS move say IDEO
'his eyes move restlessly'

In Northern Eastern Sudanic languages like Tama, coverb plus light verb allocations are extremely common, and may constitute around 50% of the predications expressing events. Hutchison (1981: 104) points out for the Saharan language Kanuri that only 5% of the verbal lexicon involves basic verbs, the remaining 95% of the predications being expressed by way of this alternative strategy.[7] Kanuri has a few hundred ideophonic adverbs, several of which can also be used as verbal predications when combined with the light verb "say, think," as with the ideophonic adverb *bàdák* describing a loud heartbeat:

(39) kàrəgənzə (bàdàk) bádák-cìn
heart IDEO IDEO-3SG:say
'his heart is beating (distinctly)'

Hutchison (1981: 102) also points out that such predications "are created every day and their sources are easily identifiable. For other... roots however, it is not as easy to discover the original source." In other words, for several coverb plus light verb constructions in Kanuri the corresponding ideophonic adverb (or adjective) no longer exists synchronically in the language.

Interestingly, the coverb plus light verb frame is also used to incorporate verbs borrowed from Arabic into Nilo-Saharan languages with such constructions in languages with such constructional frames, for example in Fur (Waag 2010: 88), where the (Chadic) Arabic stem *yɪjarrɪb* 'try' is incorporated this way:

[7] Dixon (2002) shows on the basis of data from Australian languages that languages may go through cycles, moving between coverb plus light verb constructions as dominant patterns or basic forms instead.

(40) járríbɛŋ pɪá
try do
'try'

One important reason for this presumably is the fact that verbal morphology in Fur and other Nilo-Saharan languages in the area is characterized by complex morphophonological alternations many of which probably need to be memorized by speakers, because of their irregular nature.

If Gumuz and Koman can indeed be shown to be members of the Nilo-Saharan phylum on the basis of more extensive grammatical evidence (pending more detailed analyses of these languages), one would have a group of languages with a probably unique derivational system within this phylum: nouns (referring to body parts) which can be incorporated into verbs, as shown by Ahland (2010).

(41) ʃó-kʼʷ
die-head
'kill!'
fúŋ-ɨc buna
smell-eye coffee
'smell the (liquid) coffee'

33.5 Morphosyntactic Typology and Lexical Strategies

Whereas, in general, derivational systems do not seem to bear a direct relation to the morphosyntactic typology of individual Nilo-Saharan languages, there are nevertheless phenomena in two genetic sub-groups showing such a (historical) correlation. This is illustrated in this section, first, for Saharan and, next, for Eastern Sudanic.

An initial example of a correlation between syntactic and lexical strategies comes from the Saharan branch within Nilo-Saharan. Languages belonging to this branch often have relatively few basic verbs, and instead derive lexemes from a combination of the light verb "say" plus coverb, as pointed out for Kanuri in the previous section. Corresponding verb to noun or light verb plus coverb nominalizations are extremely rare in this language, although a few exist:

(42) dé- 'cook, boil' dè-nó 'cloth boiled after dying'
kúr- 'draw, mark' kùr-nó 'design, drawing'

Noun to noun derivations on the other hand are common in Kanuri and other Saharan languages. Prefixation of *n-*, *nəm-* occurs in order to derive abstract nouns from adjectives or other nouns in Kanuri (Hutchison 1981: 55, 81 ad passim):

(43)	sótó	'receive a guest'	kù-sótò	'guest, stranger, foreigner'
	k-âm	'person'	n-âm	'being a person'

Suffixation patterns are more common, as is true for other Northeastern Nilo-Saharan languages. This also applies to nouns derived from other nouns in Kanuri:

(44)	ngə́bdò	'garbage'	ngə̀bdò-lá	'garbage heap'
	dóndì	'sick'	dòndì-lá	'often sick person'
	àlîn	'indigo'	àlìn-rám	'dyer's work site'
	cíntə́	'wiping'	cìntə̀-rám	'duster'
	àdîn	'religion'	àdìn-má	'devout person'
	cî	'mouth'	cì-má	'ambassador'
	jírè	'truth'	jìrè-má	'honest person'
	mə́lì	'dung'	mə́lí-mà	'stableboy'

Jakobi and Crass (2004: 112–20) show that similar derivational strategies involving noun-noun relations are attested in the Saharan language Beria:

(45)	kòū	'song'	kòù-ṛá	'singer'
	béṛí	'Beri person'	bír-dā	'Beri woman'
	síndó	'date'	sìndó-rā	'date palm'
	kírá	'mother'	kírá-ní	'parents on mother's side'
	tàmí	'lamb'	tàmì-nī	'young lamb'
	kàrí	'Maba people'	kàrì-kí	'the Maba language'

Verbal derivation in Nilo-Saharan languages commonly involves valency-changing operations such as causative, middle voice, antipassive, or pluractional and ventive marking (as illustrated in Section 33.3), and less commonly the thematic incorporation of peripheral semantic roles like instrument or accompaniment. Datives usually occupy an "in between" position in this semantic hierarchy. In other words, if semantic roles like instrument, accompaniment, or manner are expressed on the verb, the dative (covering semantic roles like benefactive, malefactive, or experiencer) is marked on the verb too. This also applies to the Saharan languages discussed earlier in this chapter. With respect to the Saharan language Kanuri, for example, Hutchison (1981: 133–55) makes reference to an "applied" *-kə-* affix expressing semantic roles such as recipient, beneficiary, but also direction, localization, and extending into accompaniment, imitation, effort, intensity, and causative action (Lukas 1937a: 80–3, Hutchison 1981: 141). Such semantic networks or mappings for derivational affixes of course are more common, but cannot be discussed here for reasons of space.

Dative marking is also found in Northern members of Eastern Sudanic, such as the Nubian languages. Comfort and Jakobi (2011) show that in Uncunwee, for example, this verbal extension derives from the verb "give." A much more extensive marking of derivational relations on the verb, involving core as well as peripheral semantic roles, is common in the Southern members of the Eastern Sudanic branch within Nilo-Saharan, in particular in Surmic and Nilotic. And here is a second domain where it can be shown that morphosyntactic typology and lexical-derivational strategies are related, at least historically. In the Northern representatives of Eastern Sudanic (in particular in Taman, Nubian, and Nyimang), a verb-final constituent order, extensive case-marking systems for core and peripheral arguments, the frequent use of coverb plus light verb constructions, and valency-changing operations essentially affecting core functions (subject and object) are common. Southern representatives of Eastern Sudanic, such as Nilotic and Surmic, are verb-initial or verb second, with a restricted case-marking system (or no case marking at all), whereby a range of range of semantic roles expressed through case on dependent categories (i.e. syntactic arguments) in Northern Eastern Sudanic are expressed on the verb instead (Dimmendaal 2005). The following examples from the verb-initial Nilotic language Maasai, which only distinguishes between Nominative and Absolutive case, illustrates this (data from Tucker and Mpaayei 1955):

(46)	a-dót-ú	nkʊ́jít	
	1SG-pull-VEN	grass:ABS	
	'I pull out grass'		
(47)	á-írrág-áá	Nárʊ̀k	
	1sg-sleep-IT	Narok:ABS	
	'I sleep at Narok'		
(48)	á-ból-ókì	papá	ɔ́lbɛ́né
	1SG-open-DAT	father:ABS	basket:ABS
	'I open the basket for father'		
(49)	á-dúŋ-íé	ɛnkálém	
	1SG-cut-INST	knife:ABS	
	'I cut it with a knife'		

The head-marked clause pattern favors verb-initial constituent order, as shown in Nichols (1986). Verb-initial Nilotic languages confirm this tendency. Several of the derivational suffixes probably go back to prepositions which became bound morphemes on the verb, for example the preposition *kɪ* (plus allomorphs), which is well-attested in Central Sudanic as well as Northeastern Nilo-Saharan; Dimmendaal 2009, 2014) and which shows up as a dative marker in Nilotic. Synchronically, however, this head marking on the verb is to be treated as a lexical phenomenon, rather than as a case of "syntactic incorporation." First, the question of whether a verb can take a particular verbal suffix marking dative, instrument, etc., is lexically determined. Second, Maasai and other Nilotic or Surmic languages with extensive head marking on the verb usually have

lexicalized forms with a dative or other derivational suffix for which the corresponding non-derived root no longer exists.The thematic and formal incorporation of these former prepositions is, accordingly, to be treated as a historical, rather than a synchronic, process.

Once such a marker occurs on the verb, it starts interacting with the inherent meaning of the verb and may develop additional shades of meaning. For example in Turkana, a language which is closely related to Maasai, the dative covers semantic roles such as benefactive, malefactive, location, but also experiencer or shades of meaning expressed by way of the suffix *-ish* in English, as part of the semantic mapping.

(50)	Root		Dative stem	
	-ɪnɔk	'light'	-ɪnɔk-akɪn	'light for somebody'
	-iboy	'stay'	-iboy-ikin	'stay somewhere'
	(root absent)		-iw-akɪn	'put somewhere'
	-rɛŋ	'be red'	-rɛŋ-ɪkɪn	'be reddish'

Within the Eastern Sudanic branch of Nilo-Saharan, we thus observe a dramatic divergence between Northern representatives (such as Nubian or Taman) and Southern representatives (such as Nilotic or Surmic) in constituent order and the way the interface between morphosyntax and semantics is structured, a divergence which also had radical consequences for the lexical-derivational structure of these languages. Northern members probably represent the more archaic stage (Dimmendaal 2005), since typologically similar systems (with less extensive head marking on the verb and extensive case marking instead) are common elsewhere in Northeastern Nilo-Saharan, and since remnants of this latter system (e.g. relics of peripheral case marking) can still be found in Nilotic and Surmic.

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