Constraining morphosyntactic templates:
A case study of Bantu verbal suffixes

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1 Introduction

[1] Bantu languages are well-known for making use of verbal suffixes which alter the basic valence and semantics of verb roots.

[2] The causative suffix in Chichewa (Baker 1988:10)

[a] *Mtsuko   u-na-gw-a.*
3.waterpot 3-PST-fall-FV
"The waterpot fell."

[b] *Mtsikana a-na-gw-**ets**-a   mtsuko.*
1.girl   3s-PST-fall-**CAUS**-FV 3.waterpot
"The girl made the waterpot fall."

[3] The applicative suffix in Chichewa (Alsina and Mchombo 1993:18)

[a] *Chitsîru chi-na-gúl-á   mphátso.*
7.fools   7-PST-buy-FV 9.gift
"The fool bought a gift."

[b] *Chitsîru chi-na-gúl-**ír**-á   atsíkána mphátso.*
7.fool   7-PST-buy-**APP**-FV 2.girl   9.gift
"The fool bought a gift for the girls."

[4] In most Bantu languages, more than one suffix can appear on a single root, as in this example from Chichewa.

*Ti-na-mang-**its**-**ir**-a   atsikana alenje   mbuzi.*
1p-PST-tie-**CAUS**-**APP**-FV 2.girl   2.hunter 10.goat
"We made the hunters tie the goats for the girls."

[5] Hyman (2003) presents extensive evidence that a template plays an important role in determining possible orders in which these suffixes can appear.

[6] For the purposes of this talk, the relevant part of the template can be schematized as follows (CAT):

CAUSATIVE (*-ic-) > APPLICATIVE (*-id-) > TRANSITIVE (*-i̧-)

[7] The label "transitive" is my own. In other literature, it is often referred to as the "causative" and not clearly differentiated with the *-ic- causative.

[8] The labels for the suffixes are idealizations—and their precise syntax and semantics will differ from language to language.

[9] Surface verb forms also end in an inflectional "final vowel" (with form -*a* in all the examples in this handout).

[10] The -V- reconstruction of the transitive is somewhat misleading from a synchronic perspective since it usually appears either as a -*y*- glide before the final vowel or as a mutation of the historically preceding consonant.

[11] When surveying Bantu languages, one can easily find cases in which a single verb is marked as causativized and applicativized using:

[a] CAT: *-ic-id-i̧- (e.g., Runyambo, seen below)

[b] CA: *-ic-id- (e.g., Chichewa, seen above)

[c] AT: *-id-i̧- (e.g., Runyambo, seen below)

[d] Generalization: CAT or a subset of CAT is well-attested

[12] Some other logical possibilities are unattested or rare (see Good (2005)):

[a] AC (one good case, Xhosa (Satyo 1985)—the language also allows CA)

[b] TA (unattested outside of cases involving lexicalized suffixes)

[c] . . .

[d] Generalization: Orders not consisting of a subset of CAT are poorly attested

[13] There are indications that the pattern where causativization is marked by both the causative and the transitive may reflect a Proto-Bantu situation, attested in some of the daughter languages, where the causative *-ic- obligatorily appeared with the transitive *-i̧- (see Good (2005:14–15) for some discussion).

[14] In other words, the morphological exponence of causativization in Proto-Bantu was probably the complex form *-ic-i̧-.

[15] CAT order is well-attested as being ambiguous for syntactic/semantic scope. So, restrictions on non-CAT order do not appear to be syntactic or semantic (at least not in any obvious way).

[16] CA ambiguity in Chichewa (Hyman 2001)

STEM	GLOSS	TRANSLATION
-mang-its-	'tie-CAUS'	[X cause Y to tie]
-mang-ir-	'tie-APP'	[Y tie for Z]
-mang-its-ir-	'tie-CAUS'	[X cause [Y to tie for Z]] *or*
		[X [cause Y tie] for Z]
*-mang-ir-its-	'tie-APP-CAUS'	—

[17] AT and CAT ambiguity in Runyambo (Rugemalira 1993:189) (the applicative in non-causativized contexts has form *-er-/-ir-*)

[a] *a-ka-mu-kor-**ez**-á*   *egáari*
3s.SUBJ-PST-3s.OBJ-repair-**APP.TRANS**-FV bicycle
"She had the bicycle repaired for him."

[b] *a-ka-tu-son-**es**-**ez**-á*   *emyênda*
3s.SUBJ-PST-1p.OBJ-sew-**CAUS**-**APP.TRANS**-FV dresses
"She had dresses made for us."

[18] "The glosses in [the sentences cited above] contain two scope interpretations: 'cause to V-for' (causative of applicative) and 'on behalf of, cause to V' (applicative of causative) (Rugemalira 1993:189)."

[19] The ambiguity is easiest to see in cases where an applicativized object is an instrument (Hyman 2001).

[a] *Abúsa   a-ku-thámáng-**its**-**ir**-a   ndodo   mbúzi.*
2.shepherd 3s-PRS-run-**CAUS**-**APP**-FV 10.stick 10.goat
"The shepherds are chasing the goats with sticks."
(Applicativization has scope over causativization.)

[b] *Alenjé   a-ku-tákás-**its**-**ir**-a   akázi   mthiko.*
2.hunters 3s-PRS-stir-**CAUS**-**APP**-FV 2.women 9.spoon
"The hunters are making the women stir with a spoon."
(Causativization has scope over applicativization.)

[20] Issues focused on here:

[a] The current state of the evidence clearly argues for a "templatic" approach to suffix ordering in Bantu—that is, an approach where the order of suffixes needs to be morphotactically stipulated independent from semantic/syntactic considerations.

[b] Narrow question: Can these stipulations be connected to larger grammatical generalizations within Bantu?

[c] Broader question: Can we ultimately arrive at a useful typology of templatic stipulations which lends insight into constraints on their possible form?

[21] Relevant theoretical analogy: The Prosodic Morphology Hypothesis (McCarthy and Prince 1995), which proposes constraints on the possible form of morphophonological templates

[22] "For [morpho]phonological templates, McCarthy and Prince's (1990) suggestion that templates are prosodic in character, i.e. they manipulate potential foot shapes in [a] narrow class of possibilities, renders the template approach more plausible. A similar constraint or set of principles would considerably fortify the [morphosyntactic] template approach, but this awaits investigation (Noyer 1991:199)."

[23] **Aspect of the template focused on here:** Here, I am particularly interested in the shape of the template as one acting over three suffixes, two of which have shape -VC- and another with shape -V-.

[24] A separate (not unrelated, interesting) problem deals with understanding the relationship between the syntax/semantics of the suffixes and the templatic order.

[25] For discussion of this issue, see Mchombo (2004:124–130) and Good (2005:46–51).

[26] Why the Bantu verb stem?

[a] It's a fairly simple case: a relative-order template, not a position class one; involves only a handful of morphemes in a relatively isolatable part of the grammar.

[b] It's very well-described and has been analyzed from a number of theoretical perspectives, making it possible to get a very clear grasp of just what is and what isn't "templatic" about it.

[27] Ultimately, one would want to also understand truly difficult cases of morphosyntactic templates like those described for Athabaskan (see Kari (1989) for a templatic approach and Rice (2000) for counterarguments)—but that won't be attempted here.

2   Describing the template

[28] A prerequisite to understanding whether or not the Bantu CAT template can be connected to other aspects of the Bantu grammar is devising a precise description of the template.

[29] A common way of understanding morphosyntactic templates: "morphological systems in which morphemes or morpheme classes are organized into a total linear ordering that has no apparent connection to syntactic, semantic, or even phonological organization Inkelas (1993:560)."

[30] This approach is implied in Hyman's (2003) treatment of the Bantu suffixes using a general TEMPLATE constraint (though such an assumption is not crucial to his approach).

[31] An alternative view of such templates would be to treat them not as monolithic statements but convenient shorthand for a series of more "atomic" ordering statements. (Hyman (2003:fn. 8), in fact, discusses this possibility.)

[32] In the Bantu CAT case, I suggest

[a]   The causative cannot directly follow the applicative (*AC)

[b]   The transitive cannot be followed by any -VC- suffix

[33] Breaking down the templatic restrictions this way will allow us to connect them to wider generalizations about the Bantu verb stem.

[34] This is not to say this is only way to describe the template—rather, the claim is that such a description is ultimately more "insightful" than other possibilities.

[35] Evidence for a local interpretation of the *AC restriction from Chichewa (Hyman and Mchombo 1992:354): The grammaticality of ARC in some languages

STEM	GLOSS	TRANSLATION
-mang-ir-an-	'tie-APP-REC'	"tie for each other"
-mang-ir-an-its-	'tie-APP-REC-CAUS''	"cause to tie for each other"
-mang-ir-its-	'tie-APP-CAUS'	

[36] Chichewa independently allows reciprocal-causative order (Alsina 1999:7).

*Alēnje   a-na-mény-**án-its**-á   mbûzi.*
2.hunter 3p-PST-hit-REC-CAUS-FV 10.goat
"The hunters made the goats hit each other."

3   The morphophonology Bantu verb stem

[37] The Bantu verb stem can be understood both as a morphosyntactic and a morphophonological constituent.

[38] With respect to the morphosyntactic dimension: It is the primary domain in which verbal argument structure is determined.

[39] With respect to the morphophonological dimension (see Hyman (1993:25)):

[a]   Vowel height harmony is observed in some Bantu languages within (but not outside of) the verb stem.

[b]   All vowels between the initial vowel of the verb stem and the obligatory final vowel are underlyingly toneless.

[c]   In most Bantu languages only the verb stem is available for reduplication.

[d]   . . .

[40] Schematic representations of verb stems from a morphophonological perspective (examples from Kinande adapted from Hyman (1993))

[a]   Prototypical shape:

-CVC-	-V
ROOT	FV

[b]   Extended shape:

-CVC-	-VC-	-V
ROOT	CAUS/APP	FV

[c]   Further extended shape:

-CVC-	-VC-	-Y-	-V
ROOT	CAUS/APP	TRANS	FV

4   Understanding the structure of the template

[41] The prototypical verb stem is:

[a]   **Morphophonologically bounded:** Prototypically, it has disyllabic shape CVCV. Deviations typically involve productive or lexicalized suffixation.

[b]   **Has shape CV*:** Even though the root itself will have a shape like CVC, the nature of Bantu morphophonology means the surfacing stem will have a shape like CVCV.

[42] The templatic restrictions can be characterized as:

[a] **Morphological restrictions on the size of the stem:** By imposing a restriction that the causative cannot follow the applicative, the morphological possibilities for stem expansion become more limited than they would be otherwise.

[b] **Maintaining the CV* pattern:** The -VC- shape of the causative and applicative suffixes maintains the CV* pattern of the verb. The fact that the transitive suffix, with shape -V- (typically surfacing as -Y- or a consonant mutation), must follow the suffixes with shape -VC- also ensures that that the verb will (more or less) have a CV* form.

[43] **Suggestion:** The similarities of Bantu verb stem morphophonology and the templatic restrictions are not coincidental.

[44] This is not to say that the morphophonological generalizations "explain" the templatic restrictions (or vice versa).

[45] Rather, the grammatical factors responsible for the morphophonological restrictions may also be responsible for the templatic restrictions.

5 Towards a diachronic account

5.1 Proto-Bantu and Proto–Niger-Congo background

[46] Our understanding of Proto-Bantu and pre–Proto-Bantu verb structure is too limited to attempt any full diachronic account of the development of the template at present.

[47] My goal here, therefore, is relatively modest: To outline a scenario through which the development of synchronic morphophonology and templatic aspects of the Bantu verb stem can be understood as diachronically connected.

[48] A full story would need to carefully address the following questions (among others, or course):

[a] Was the characteristic CVCV pattern of verb stems limited to Proto-Bantu or was it also found in pre–Proto-Bantu (and ultimately Proto–Niger-Congo)?

[b] Were these verbal suffixes present in Proto–Niger-Congo or were they a later innovation?

[c] What is the ultimate historical source of the suffixes?

[49] Answers to these questions which can be found in the literature:

[a] In proto–Niger-Congo, "Typically roots originated as CVCV structures... (Williamson 1989:20)"

[b] Causative and applicative verb suffixes are reconstructible to Proto–Niger-Congo (Voeltz 1978:59–62) (though no specific reconstruction is given). (See also Güldemann (2003:185) for discussion of data indicating that these suffixes appear to be fairly old.)

[c] The causative and applicative arose via a grammaticalization process involving reduction of auxiliary verbs following the main verb (Givón 1971).

[50] These answers are probably better viewed as interesting hypotheses awaiting verification than definitive conclusions.

[51] Even if they're not completely correct, they would seem to be the best possible starting point for understanding where the templatic restrictions may have come from.

5.2 The development of the -VC- suffixes

[52] Idealized scenario for development of -VC- causative (*-ic-) and applicative (*-id-) suffixes:

STAGE I:	[CVC-V]$_V$ [CVC-V]$_{AUX}$	(full main verb, full auxiliary)
STAGE II:	[CVC-V]$_V$ [VC-V]$_{AUX}$	(loss of initial consonant of auxiliary)
STAGE III:	[CVC-VC-V]$_V$	(elision and morphologization of auxiliary)

[53] Under this scenario, the fact that these suffixes maintain the CV pattern found in verb stems falls out as an integral part of their morphologization process—**the phonological reduction allowing them to be incorporated into the stem as suffixes also gave them their CV-maintaining -VC- shape**.

[54] This scenario is exactly parallel to a seemingly more recent process within Bantu: Development of the perfective suffix (which typically has a form like *-ịr-*).

[55] There is a plausible source for this suffix within Guthrie's Proto-Bantu reconstructions: *-cịd- 'become finished' (Guthrie 1970:103).

[56] As discussed in Hyman (1993:17–22), there are indications in the synchronic phonology of Bantu languages making use of this suffix that it is a more recent addition to the verb stem than the causative and applicative.

[57] If the development of *-ịr-* perfective does offer an appropriate model, it suggests that the integration of suffixes into verbs stems in a Bantu-like language can be quite protracted (a point I will come back to below).

[58] Note about this scenario: It makes word order assumptions that are hard to support (or refute)—the trickiest being that a causative auxiliary followed the main verb.

5.3 On the development of the fixed order of the causative and applicative

[59] The diachronic scenario outlined above can straightforwardly account for the fact that the order of appearance of the two -VC- suffixes is fixed.

[60] One simply has to suggest that the causative morphologized before the applicative— and the present-day restriction is a simple reflex of differential timing of the relevant grammaticalization.

[61] Support for such an analysis

[a] Within present-day Bantu, as well as reconstructed for Proto-Bantu, there is a cline of "fossilization" of the verbal suffixes (see, e.g., the apparently post–Proto-Bantu development of the perfective discussed above and Meeussen's (1967:92) suggestion that some reconstructible suffixes were not "highly productive").

[b] As discussed by Good (2005:46–48), independent, cross-linguistic evidence indicates that a causative is likely to grammaticalize before an applicative, consistent with the Bantu CA pattern.

[c] A diachronic explanation, as opposed to a universalist one (like Baker (1988:395–400)) predicts that, under the right circumstances, ordering restrictions should be able to be "undone", which appears to be attested (Good 2005:42–46).

[62] Under this account, **the fact that the template limits possibilities for morphological expansion is connected to the fact that the verb root itself was originally small** and only became expanded as the result of a limited number of grammaticalization processes.

5.4 The placement of the transitive *-ị- suffix

[63] There is a general problem in pre-Proto–Bantu reconstruction: The source and development of a number of vowel suffixes which appear at or near the end of the verb.

[64] These include the transitive *-i-, the passive *-u-, and the two inflectional "final vowels" *-a* and *-e* (the latter of which may be identical to an *-e* appearing with the *-ịr-* perfective just discussed—see, Voeltz (1980) for some discussion of this suffix).

[65] The so-called final vowels, inflectional elements with unclear semantics, are crucial to the existence of the CVCV prototypical verb stem shape in Bantu.

[66] With respect to the transitive and the passive, Hyman (2003:262) suggests that they, "were, most likely, part of a historical voice-marking system consisting of final-vowel morphemes."

[67] In any event, the transitive would seem to have a quite distinct origin from the causative and applicative, which likely at least partially accounts for both its different shape and positioning.

[68] Given this, a possible reason why its positional restrictions "fit" with the verb stem's morphophonology is that it became "sandwiched" into the verb complex as a by-product of the process through which the CVC-V (root-FV) pattern developed.

[69] Therefore, in this scenario the placement of the transitive after the causative and applicative would have been the result of:

[a] Independent generalizations about the ordering of these "voice" morphemes near the end of a verbal complex

[b] **Their "entrapment" into the CVCV verb stem structure through the prosodification process which created that structure in the first place**

[70] A caveat on this scenario: It requires an assumption that both the putative voice-marking morphemes and the final vowels originated as morphemes at least partially independent from the verb, later to grammaticalize as suffixes.

6 Conclusion

[71] If characterized in a particular way, the Bantu verb suffix template bears strong similarities to morphophonological restrictions on the verb stem.

[72] It was suggested that these similarities were not coincidental and could be at least partially accounted for diachronically.

[73] This analysis suggests some general methodological principles (which are not necessarily dependent on one another):

[a] A full analysis of a morphosyntactic template requires a characterization of it which is sufficiently detailed to connect it to other facets of a language's grammar.

[b] A fruitful avenue of exploration in examining other morphosyntactic templates would be to examine similarities between morphophonological restrictions and templatic restrictions in the relevant domain.

[c] The appropriate place to seek an "explanation" for the structure of morphosyntactic templates is understanding the diachronic pathways through which such restrictions can evolve.

[74] Finally, it is worth mentioning that ordering restrictions of Bantu verbal suffixes have played an important role in the theoretical literature on morpheme ordering (see, e.g., Baker (1988), Alsina (1999))—in particular, they have been viewed as supporting Mirror-Principle approaches.

[75] However, the analysis and data seen here suggest that the order of Bantu suffixes is more closely linked to Bantu phonology than to Bantu syntax.

[76] This suggests another methodological principle, in accounting for morpheme ordering in general: Don't blame the syntax without first checking to see what the phonology might have been up to.

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