

Root and Pattern Morphology in Coptic: Evidence for the Root

The consonantal root plays a crucial role in traditional analyses of root and pattern morphology, but its existence has recently been challenged. Several researchers have developed a word-based account of root and pattern morphology, claiming that the base for the morphology is an output form and that consonantal roots need not be involved (McCarthy 1993, Bat-El 1994, Ussishkin 2000, Benmamoun 2003, et al.). However, few non-Semitic languages have been analyzed using this approach. The goal of this paper is to investigate whether roots or words are the base for the root and pattern morphology of Coptic, the last stage of Egyptian (a non-Semitic, Afroasiatic language). I argue that a root-based account is necessary, and develop an Optimality Theory (Prince and Smolensky 2004) account that uses consonantal roots as inputs.

Two verb forms in Coptic display root and pattern morphology: the stative and the infinitive (see (1)). Adopting a word-based perspective to start, the infinitive is likely to be the base for the formation of the stative. The infinitive is the base for the non-root and pattern morphology in Coptic, so it would be natural for it also to be the base for the root and pattern morphology. Moreover, the stative seems subject to Output-Output Faithfulness (Benua 2000), since there is a TETU ((The) Emergence of the Unmarked; McCarthy and Prince 1994) effect that degenerate feet are not allowed in the stative, but licit in the infinitive (see (2)). This suggests that the constraint FTBIN(μ) (“Feet must minimally have two moras”) should be ranked below Input-Output Faithfulness, which the infinitive would be subject to, but above Output-Output Faithfulness, which the stative would be subject to (FAITH-IO \gg FTBIN(μ) \gg FAITH-OO). However, although the word-based account is initially promising, there is substantial morphophonological evidence that the stative must be based on a consonantal root.

Specifically, the stative is insensitive to the phonological properties of the infinitive, which is highly unexpected if Output-Output Faithfulness constraints hold between the two forms. For example, there are several biconsonantal verbs that have an extra segment in the infinitive, either a final spread consonant or a final vowel (see (3)). In these cases, the extra consonant or vowel does not transfer to the stative, resulting in a stative that looks exactly like any other biconsonantal stative (see (3) again). Also, consonant clusters present in infinitives are not transferred to statives (see (4)), and the vowel of the stative affix is always the same regardless of the vowel of the infinitive (see (5)). Instead, vowel quality in the stative affix best correlates with the number of root consonants: [eu] for monoconsonantals, [e] for biconsonantals, etc. For any given verb, in fact, the form of the stative is completely predictable given the number of root consonants in that verb, no matter what the infinitive looks like. There is a basic biconsonantal stative template (1b), a basic triconsonantal stative template (1a), and so forth for each kind of root. It seems clear, then, that the stative must be based on the consonantal root.

As for the apparent TETU effect described above, it can still be explained. The infinitive can remain lexically listed, so that the ranking of FAITH-IO above FTBIN(μ) still results in infinitives with degenerate feet (see (6)). With respect to the statives, it initially seems that they should also allow degenerate feet, as in Candidate (b) in (7). However, this candidate can be eliminated by ranking one faithfulness constraint, namely O-CONTIGUITY (“No intrusion”), and NOCODA below FTBIN(μ), as in (7). The winning candidate (a) thus has the stative affix infix (“intruding”), violating O-CONTIG (and NOCODA) for the sake of being a binary moraic foot. Under this analysis, it is the fact that the stative is derived and that the alignment constraint for the stative affix must be ranked fairly low that keeps it from having degenerate feet. For any form that is not derived and therefore lacking affixal material in the input (like the infinitive), any intruding segments will be epenthetic and thus violate DEP, which is among the highly-ranked bloc of FAITH-IO constraints. Ranking the alignment constraint for the stative affix below FTBIN(μ) allows the affix to be placed anywhere within the output for the sake of foot structure.

Besides accounting for the TETU effect, I provide an analysis for the statives for each kind of root and derive their “templates” by ranking a variety of markedness constraints between O-CONTIG and the other, high-ranked FAITH-IO constraints, along the lines of Generalized Template Theory (McCarthy and Prince 1994). I conclude that there is evidence for the centrality of the consonantal root in Coptic, and that an Optimality Theory analysis using the consonantal root as input is the most feasible approach.

Examples (M = [m] is a consonantal peak)

- (1)

<u>Root</u>	<u>Infinitive</u>	<u>Stative</u>	<u>Gloss</u>
stm	sotM	sotM	‘hear’
kt	kot	ket	‘build’
wstn	wostN	wSton	‘broaden’
- (2)

<u>Infinitive (degenerate)</u>	<u>Stative</u>	<u>Gloss</u>
kβɔ	keβ	‘make cool’
si	seu	‘sate’
- (3)

<u>Root</u>	<u>Infinitive</u>	<u>Stative</u>	<u>Gloss</u>
βt	βotə	βet (no final vowel)	‘pollute’
km	kmom	kem (no second [m])	‘be black’

- (4)

<u>Infinitive</u>	<u>Stative</u>	<u>Gloss</u>
shai	seh	‘write’
knos	kɔnS	‘be stinky’

- (5)

<u>Infinitive</u>	<u>Stative</u>	<u>Gloss</u>
pot	pet	‘run’
kβɔ	keβ	‘make cool’
shai	seh	‘write’

- (6)

/kβɔ/ ‘to make cool’	FAITH-IO	FTBIN(μ)
a. (kβɔ)		*
b. (kɔβ)	*!	

- (7)

/kβ + e/ ‘make cool’ + STAT	FTBIN(μ)	NOCODA	O-CONTIGUITY
a. (kéβ)		*	*
b. (kβé)	*!		

References

- Bat-El, Outi. 1994. Stem modification and cluster transfer in Modern Hebrew. *Natural Language and Linguistic Theory* 12. 571-596.
- Benmamoun, Elabbas. 2003. The role of the imperfective template in Arabic morphology. In Shimron, Joseph, ed. *Language Processing and Acquisition in Languages of Semitic, Root-Based Morphology*. Philadelphia: John Benjamins. 99-114.
- Benua, Laura. 2000. *Phonological Relations Between Words*. New York: Garland.
- McCarthy, John. 1993. Template form in prosodic morphology. In Laurel Smith Stvan et al., eds. *Papers from the Third Annual Formal Linguistics Society of Midamerica Conference*. 187–218.
- McCarthy, John and Alan Prince. 1994. The emergence of the unmarked: optimality in prosodic morphology. *Proceedings of NELS* 24. 333-379.
- Prince, Alan and Paul Smolensky. 2004. *Optimality Theory: Constraint Interaction in Generative Grammar*. Malden, MA: Blackwell.
- Ussishkin, Adam. 2000. The emergence of fixed prosody. PhD dissertation, UC Santa Cruz.