

Gikuyu (a.k.a. Kikuyu) is a Southern Bantoid language of the Niger-Congo family, spoken in Kenya. The infinitive form of verbs is marked by a prefix that can be pronounced as either [ko] or [yo], depending on the verb it is attached to (assume that verb stems are faithful between UR and SR).

koina	'to dance'	yoita	'to strangle'	
kohe	'to give'	yofu:ka	'to slander'	
koye:ra	'to fetch'	yoko:ra	'to root out'	
koruya	'to cook'	yotha:ka	'to play'	
kohota	'to be able'	yotejera	'to run'	
koyu:ta	'to comb'	yofina	'to burn'	
komɛɲa	'to know'	yokuɲa	'to pinch'	
kohetoka	'to pass'	yotheka	'to laugh'	
koyaja	'to divide out'	yokaja	'to cut into strips'	(Halle and Clements 1983)

Data description. Carefully describe the environments in which each of the two pronunciations of the infinitive prefix appear, making sure to discuss any regularities, repeated patterns, and natural classes. Cite relevant examples from the data to sufficiently demonstrate the environments.

Analysis. Decide what the best UR is for the infinitive prefix, and defend your decision by comparing it to the obvious logical alternative, appealing to simplicity and/or naturalness as appropriate.

Then describe in explicit prose what rule(s) you need to derive the unfaithful surface prefix, and then formalize your rule(s) in autosegmental tree form. (You may also formalize your rule(s) in linear form for expositional clarity and/or for comparison, but it's not necessary.)

You will likely need a redundancy rule to have a complete analysis! Describe in explicit prose what redundancy rule you need, and then formalize it in autosegmental tree form, either as a separate rule that applies at the end of the derivation, or as additional effects encoded directly into your other rule(s). If you do the latter, clearly discuss which parts of the rules are "real" and which parts are simply the "clean-up" effects of the redundancy rule.

Finally, give full derivations for a representative set of words, showing how both pronunciations of the prefix are derived in your analysis, with all rules accounted for.

Discussion. Many important issues about our formal theory are raised by the Gikuyu data. Answer the following two questions as thoroughly as you can, based on your analysis. Be sure to use correct, precise technical terminology (natural classes, phonemes, etc.) and to refer to specific portions of your formal analysis where appropriate.

Does your analysis of Gikuyu help us make any progress on settling the controversy over the feature specifications for laryngeals? How?

Some phonologists have proposed that [voice] should be a privative feature, i.e., with voiced sounds specified as [voice] and voiceless sounds having no [voice] feature at all. Does your analysis of Gikuyu support or contradict this proposal? How?