

Geminate glides in Eastern Nilotic: Evidence from Lopit

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Crosslinguistic surveys of consonant gemination have found that there is enormous diversity in the number and nature of quantity contrasts in the world's languages (Blevins 2008). However, certain patterns have been observed by various authors; for example, that less sonorous segments such as stops are among the most preferred consonants for contrasts based on duration differences (e.g. Thurgood 1993, Dmitrieva 2012, Kawahara 2007). Glides such as /w/ and /j/ are among the least likely segments to be found geminated, but, though typologically unusual, contrasts between singleton and geminate glides can be found in a wide range of language families (Maddieson 2008). Such contrasts are likely to be more common than is currently apparent, but the crosslinguistic understanding is limited by available typological data. For example, surveys of consonant gemination feature few African languages outside the Afro-Asiatic phylum, but there is descriptive evidence that a number of Niger-Congo and Nilo-Saharan languages feature geminate consonants of various kinds, including geminate glides. However, very little is known about the acoustic and durational properties of geminate glides in these languages, and indeed crosslinguistically. In this presentation, I provide a brief overview of consonant gemination in the Eastern Nilotic branch of Nilo-Saharan, with a particular focus on geminate glides. I then turn to the phonetic evidence for such a contrast in Lopit, an under-described language of South Sudan, and present preliminary results of a pilot investigation into glides and gemination in this language.

In Lopit, work undertaken as part of a documentation project indicates that the phoneme inventory includes geminate consonants /t:, d:, n:, l:, r, w:, j:/. The glide /w:/ is among the more frequently-occurring geminates, and /j:/ to a lesser extent. Contrasts between singleton glides /w, j/ and geminate /w:, j:/ can occur intervocalically, for example in /xàwàʔ/ 'sweet potatoes' compared to /xàw:àʔ/ 'arrows' (see Figs 1 & 2) and /xíjàʔ/ 'porcupine' compared to /íxáj:á/ 'pumpkin leaves'. Geminate glides may also occur word-initially, though less often. Similar contrasts can be found in closely-related Lotuko, and other Eastern Nilotic languages such as Maa, and have been variously described as involving gemination, fortition, or strength. Though the language-specific implementation appears to vary, there is evidence that these contrasts have a common historical provenance related to sequences of stops and glides. For Lopit, impressions are that constriction duration is a major cue to the difference. To test the nature of the contrast between proposed singleton glides /w/ and /j/ and geminate glides /w:/ and /j:/, a pilot study was carried out with three adult male speakers of Lopit. Words containing intervocalic singleton glides and their geminate counterparts in comparable segmental and tonal environments were recorded using a Zoom H4N audio recorder, MixPre-D pre-amp, and AudioTechnica AT892c headset microphone. Audio data were segmented and labelled based on visual inspection in Praat. Glides are notoriously difficult to segment given their dynamic and vowel-like formant structures; in this study, segmentation of glides was based on the period characterised by a marked change in the upper formants coinciding with a drop in amplitude. Few studies of geminate glides explicitly state segmentation criteria, but this approach is likely to be more conservative than some others using, for example, the period between the steady states of flanking vowels (e.g. Aoyama & Reid 2006). Acoustic data were extracted in the Emu Speech Database System and then queried and plotted using R.

Results support impressions of constriction duration as a major correlate distinguishing singleton and geminate glides in Lopit. The geminate glides /w:/ and /j:/ have significantly higher duration values than their singleton counterparts /w/ and /j/. However, other differences can also be observed. Measurements for the first, second and third formants indicate that there may be greater constriction for the geminate glides compared to the singletons, and potentially more lip rounding in the case of /w:/ compared to /w/. There is no evidence of frication occurring for the geminate glides. In addition, the geminate glides tend to have lower amplitude values than the singletons, as do vowels preceding geminates compared to vowels preceding singletons. Interestingly, vowels preceding geminate glides do not appear to be shortened, as they often are in other languages; in fact, the trend is in the opposite direction. These results from Lopit shed new light on a poorly understood class of geminates, and suggest that there are intriguing characteristics among Eastern Nilotic geminates which warrant further investigation.

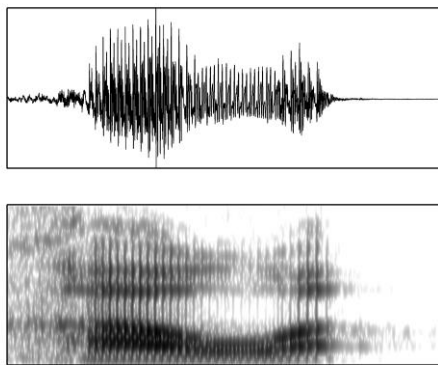


Fig. 1. Spectrogram showing /w/ in /xàwàʔ/ 'sweet potatoes' (500ms)

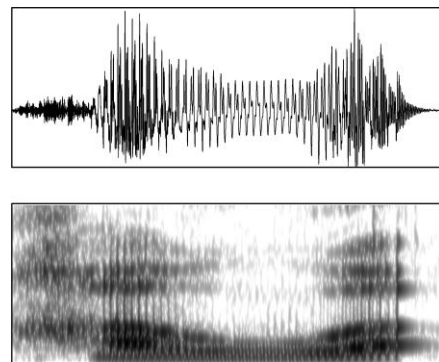


Fig. 2. Spectrogram showing /w:/ in /xàw:àʔ/ 'arrows' (500ms)

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