CHAPTER 12

Temporal Coordination of Glottalic Gestures in Karitiana

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1 Introduction

Karitiana, an endangered language from the Arikém branch (Tupi family) spoken in the state of Rondonia in Brazil, shows interesting phenomena concerning glottalic consonants. Indeed, as several other languages of this linguistic family, Karitiana has no clear glottal stop in its phonological inventory, even though glottal stops do exist phonetically. Glottal stops in Karitiana are predictable in the onset of stressed syllables (Storto 1999). In addition, the language presents a number of interesting phenomena related to the phonetic realization of glottal stops and to the temporal realization of glottalic gestures, as do other Tupi languages.

A frequent, but not systematic, phenomenon is the occurrence of vowels with a final burst in CVC words ending with a final unreleased voiceless stop (Figures 12.1a & 12.1b). The phenomenon also appears word internally (Figure 12.5). In such instances, it is often the case that vowels which are ending with bursts precede most of the allophones of the Karitiana nasals, all of which are voiced. In order to understand the phenomenon, there are three main questions to be addressed: (1) Why is there a burst at the end of vowels before stops and nasals? (2) How can we describe this phenomenon precisely? (3) Does it reflect anything particular about the phonological system of the language?

To help answer these questions, three speakers participated in experiments in which acoustic and EGG data were recorded simultaneously. This was motivated by some observations made in the field (Storto & Demolin 2002) that led us to hypothesize that voiceless stops might involve a closure of the glottis simultaneous with the oral closure necessary to produce these consonants. One important thing to note from the start is that data of this paper come

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from a small set and are limited in amount. However, the occurrence of bursts at the end of vowels observed for every subject who participated in the study makes the description of this phenomenon potentially important for future investigation. The paper has therefore to be considered as a purely descriptive contribution to a phenomenon that should receive a more detailed and quantitative treatment in the future. This is particularly true because recent observations made by the authors in Dâw and Pirahã suggest that the phenomenon presented here might not be specific to Karitiana. This could influence the phonological pattern of these languages in various ways as we will discuss in the final part of the paper.

**FIGURE 12.1A** Audio waveform, wide band spectrogram and EGG signal of the word [mbap] ‘lame’. Arrows shows the burst at the end of the vowel on the audio waveform and the interruption of the EGG signal.

**FIGURE 12.1B** Audio waveform, wide band spectrogram and EGG signal of the word [hobmã] ‘drowned’. The arrow shows the burst at the end of the vowel on the audio waveform.