

# A modulational analysis of consonant releases in Tashlhiyt Berber

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In Tashlhiyt Berber consonants are often followed by releases or transitional vocoids, particularly before other consonants. Dell & Elmedlaoui (1985, 1996, 2002) claim that the distribution of these effects are largely predictable, phonetic and play no role in the phonology, especially in syllabification. On the basis of their analysis, Tashlhiyt Berber is widely cited by other phonologists as a key example of a language in which any segment, including a voiceless stop, may serve as a syllabic nucleus (e.g., Prince & Smolensky 1993, Kenstowicz 1994). Against this view, Coleman (1996, 2001) has argued that the voiced transitional vocoids are full epenthetic vowels that are inserted by the phonology in order to provide syllabic nuclei, thus making the language much less syllabically marked. Under Coleman's analysis, many of the epenthetic vowels must later be removed by the phonetic implementation. Hall (2006) has analysed similar cases of inserted vowels within the framework of articulatory phonology, drawing a distinction between epenthetic vowels, which play a role in syllabification, and intrusive vowels, which do not. She contends that the transitional vocoids are intrusive vowels that arise naturally from the interaction of articulatory gestures.

In this talk I show how the consonant releases can be analysed in terms of the temporal relations among information-bearing modulations of the carrier signal in speech. The specific claim is that the releases—both voiced and unvoiced—provide an acoustic environment in which place information is made available to listeners. Perceptual cues to place such as F2 and F3 formant transitions and the spectrum of noise bursts occur most saliently at consonant release (cf. Wright et al. 1997). Using stylised spectrograms, I examine a number of representative consonant sequences, including some in which releases always occur, some in which no releases occur, and some in which releases are optional. In each case I describe the modulational information made available to listeners by the cues in the speech signal. The analysis shows that the releases occur at just those points in the speech signal where the place cues are informative to listeners.