

Evidence for a Network Model of Sound Change

This paper intends to provide evidence for a Network Model of sound change (Bybee, 1995, 2001, 2010). According to this model the categorized units of usage form a network where recurrent patterns emerge (Bybee & Hopper, 2001: 8). Linguistic patterns, which may consist of syllables, words or constructions, are thus involved in a complex web-like series of connections with each other. Abstractions emerge at various levels of the network connections. The network is dynamic, since language use adjusts the web connections to new forms that are experienced. In this paper we will explore the notion of productivity, which consists of the likelihood of a new pattern to apply to novel items. This is primarily of concern to sound change since productivity should indicate the major routes a sound change would take. Two factors are central in determining productivity: type frequency and schema strength. Type frequency refers to the number of different lexical items to which a particular pattern or construction is applicable. A pattern with a large number of types will more readily apply to novel items than a less frequent pattern. Schema strength is also related to type frequency and refers to generalizations of similar patterns. In order to explore the role of productivity in sound changes we will examine the emergence of affricates in Brazilian Portuguese (BP). Affricates were formerly introduced in some varieties of BP when followed by a high front vowel: *tia* [tia]>[tʃia] ‘aunt’ and *dia* [dia]>[dʒia] ‘day’ (Câmara Jr., 1970). Varieties which present affricates are said to be palatalizing ones and they present affricates followed by a high front vowel: *tia* [tʃia] ‘aunt’ and *dia* [dʒia] ‘day’. On the other hand, non-palatalizing varieties are said to present alveolar stops followed by a high front vowel: *tia* [tia] ‘aunt’ and *dia* [dia] ‘day’. Palatalizing varieties are expanding throughout Brazil (Abaurre & Pagotto, 2002). Thus, non-palatalizing varieties face pressure from palatalizing ones which are seen more prestigious and are predominant in Brazil (Carvalho, 2004). We claim that non-palatalizing varieties are moving towards palatalizing ones by presenting affricates which emerge through productive patterns. We will show that in non-palatalizing varieties an affricate may occur in posttonic position where a former alveolar stop followed a glide: *pátio* [patju]>[pat^hju] >[patʃju] ‘patio’. We suggest that affricates occur in posttonic position as a consequence of retiming of articulatory routines where a stop followed by a glide leads to the emergence of an affricate. The (stop+glide) sequence consists of a type which strongly favors an affricate to occur. Frequency type involving this segmental sequence plays an important role in the expansion of affricates in the lexicon. There is also another instance where affricates emerge in non-palatalizing varieties of BP: when the suffix *-ik* occurs preceded by a sibilant. For example, in a word such as *plástico* [plastiku] >[plastʃiku] ‘plastic’. In this case there is also retiming of articulatory routines involving [ʃtʃ], but this only applies to cases involving the *-ik* suffix, indicating the relevance of a morphological schemas. Although affricates are said not to occur in non-palatalizing varieties of BP we observe that they do occur in specific environments. We argue that affricates occur in non-palatalizing dialects as retiming of articulatory routines which are related to productive phonological and morphological patterns. These patterns operate in a network fashion where morphological and phonological generalizations operate under frequency effects at various levels of organization. This paper provides evidence that linguistic knowledge operates in a network fashion and it also provides us with evidence for the interaction between morphology and phonology through connections that are somewhat mapped probabilistically (Pierrehumbert (2001, 2003)).