The Phonology and Phonetics of Ambiguity: A Case Study of /v/

The behaviour of /v/ which, in languages as diverse as Hebrew, Hungarian and Russian, patterns with both sonorants and obstruents, is a puzzle for phonological theory (Jakobson, 1978; Barkai and Horvath, 1978; Hayes, 1984; Kiparsky, 1985; Padgett, 2002; Kiss and Bárkányi, 2006). In this paper I situate such cases in the broader typology of /v/’s patterning and distribution. A database of over 500 segment inventories was analysed (Mielke, 2007) in order to determine how inventory structure correlates with the patterning and distribution of /v/.

Of the 200 languages that have /v/ (36.49%), 167 also contain /f/; only 44 of these lack /w/, the subset that we focus on here. A frequent, if tacit, assumption is that when an inventory contains both /v/ and /f/, they form a voiced-voiceless obstruent pair. This is indeed the case for Greek, in which /v/ distributes as the voiced counterpart of voiceless /f/: both occur in fricative-fricative clusters (1), or as the first member of a fricative-sonorant cluster (2). Moreover, both /v/ and /f/ are subject to the general requirement on obstruents to agree in voicing (3). In Serbian, however, /v/ has the distribution of a sonorant, in that it can follow both voiced and voiceless obstruents (4). While obstruents trigger regressive voicing assimilation, (5-a), (5-b), sonorants do not (5-c), and nor does /v/ (5-d). Moreover, [ovca] ‘sheep’ illustrates that /v/ does not devoice before a voiceless obstruent. By contrast, /f/ participates fully in obstruent voicing processes. The most striking case is Russian, in which /v/ shares the distribution of sonorants as in Serbian (6) but patterns ambiguously with respect to voicing processes. While the rightmost obstruent of a cluster determines its voicing, (7-a), (7-b), sonorants are inert with respect to this process (7-c), as is /v/ (7-d). However, /v/ undergoes devoicing before a voiceless obstruent (8), and word-finally (9). Again, this contrasts with /f/, which participates in obstruent voicing processes as both a target and trigger. Because none of these inventories contain /w/, differences in patterning cannot be attributed to a contrast with another labial sonorant.

To summarize, the three cases we have encountered give us three types of patterning of /v/. In Greek /v/ is an obstruent, both in terms of its distribution and phonological patterning, and in Serbian, it is a sonorant on both counts. In Russian, /v/ has the distribution of a sonorant and patterns in some processes as a sonorant and in others as an obstruent. A fourth possible case that we have not encountered would be of /v/ having the distribution of an obstruent but ambiguous patterning, and it is still to be determined whether this is an accidental or systematic gap.

A crucial question is whether there are any phonetic differences in the various realizations of [v] across languages. This is what we address in a study that looks at Greek, Serbian and Russian, seeking a correlation between the phonological patterning on the one hand, and the phonetic realization on the other. Previous studies have only examined the acoustics of [v] in a single language (Lulich (2004) for Russian, Kiss and Bárkányi (2006) for Hungarian). Preliminary results measuring relative amplitude (Parker, 2002) and spectral moments (Jongman et al., 2000) show no significant difference in the acoustics of [v] in the three languages. Nevertheless, [v] in each language exhibits intermediate values in relative amplitude and spectral moments when compared to canonical sonorants and obstruents, with a potential for some phonetic ambiguity with respect to the sonorant-obstruent divide. These results suggest that such phonetic ambiguity could be interpreted differently in different languages.
(1) a. [fxaristo] ‘thank you’  
    b. [vyazko] ‘I remove’
(2) a. [floya] ‘flute’  
    b. [vlakas] ‘idiot’
(3) a. [evylotos] ‘eloquent’  
    b. [efstaθia] ‘steadiness’
(4) a. [tvoj] ‘your’  
    b. [dva] ‘two’
(5) a. /s-paziti/ [spaziti] ‘observe’
    b. /s-gaziti/ [zgaziti] ‘trample’
    c. /s-loziti/ [sloziti] ‘put together’
    d. /s-variti/ [svariti] ‘digest’
(6) a. [tverj] ‘Tver’
    b. [dverj] ‘door’
(7) a. /ot-pustitj/ [otpustitj] ‘release’
    b. /ot-brositj/ [odbrositj] ‘throw aside’
    c. /ot-nesti/ [otnesti] ‘carry away’
    d. /ot-vesti/ [otvesti] ‘lead away’
(8) a. /v ruke/ [v ruke] ‘in one’s hand’
    b. /v gorode/ [v gorode] ‘in the city’
    c. /v supe/ [i supe] ‘in the soup’
(9) a. [sled-a] [slet] ‘track (gen./nom.sg)’
    b. [mil] *[mil] ‘dear’
    c. [prav-a] [praf] ‘right (fem./masc.)’

References


