

Coronal classes and features in Indo-Aryan languages

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Phonological inventories can distinguish up to four coronal places of articulation: dental, alveolar, retroflex, and palato-alveolar (or alveolo-palatal). The features required to capture the natural classes within this region have been a subject of debate in the literature. In this paper I argue that coronal consonants pattern according to the laminal and apical classes predicted by the feature [\pm distributed] and according to the fronted and retracted classes predicted by [\pm back], but not according to the anterior and posterior classes predicted by [\pm anterior]. This is a departure from the popular view that the combination of [\pm anterior] and [\pm distributed] is the most appropriate combination of features to represent coronal classes and contrasts.

Indo-Aryan languages are well suited to the study of coronal classes and features because they typically have near-maximal coronal inventories consisting of lamino-dental, apico-retroflex and lamino-palato-alveolar articulations. The natural classes in these systems can be demonstrated with evidence from three studies. First, in patterns of loanword adaptation, the apico-alveolar stops of English are consistently adapted as retroflex, never as dental. This suggests that Indo-Aryan coronals are sensitive to apicality ([$-$ distributed]) but disregard the anterior/posterior distinction predicted by [\pm anterior].

Secondly, phonetic studies of Nepali and Hindi reveal that retroflexes in these languages are consistently apical (or sub-apical) but range from denti-alveolar to post-alveolar. The variation is conditioned by vocalic context so that retroflexes are maximally retroflexed in the context of [$+$ back] vowels, and minimally retroflexed (or possibly non-retroflex) in the context of [$-$ back] vowels. This suggests that retroflexes are distinctively [$-$ distributed] and possibly [$+$ back], but not sensitive at all to the categories defined by [\pm anterior].

Finally, Dhivehi exhibits a pattern of phonological alternation in which dentals become geminate palato-alveolars through coalescence with the front vowel /i/, while retroflexes systematically block palatalization and gemination (1).

- (1) rodi + ek → roddʒ-ek ‘a thread’
 baɖi + ek → baɖi-j-ek ‘a gun’

These alternations suggest that dentals and palato-alveolars form a natural laminal class ([$+$ distributed]) while palato-alveolars and /i/ form a fronted class ([$-$ back]). The incompatibility of retroflexion with palatalization suggests that retroflexes do not form a natural class with palato-alveolars, as predicted by the feature [$-$ anterior]. However, the behavior of the retroflex consonants is expected if they are [$-$ distributed] and/or [$+$ back].

In conclusion, Indo-Aryan languages show evidence of the apical and laminal classes predicted by [\pm distributed] and of the fronted and retracted classes predicted by [\pm back]. They do not show evidence of the classes predicted by [\pm anterior]. These observations suggest that [\pm anterior] is superfluous and that palato-alveolar and retroflex articulations are best understood as coronals with inherent secondary articulations represented by [\pm back].