

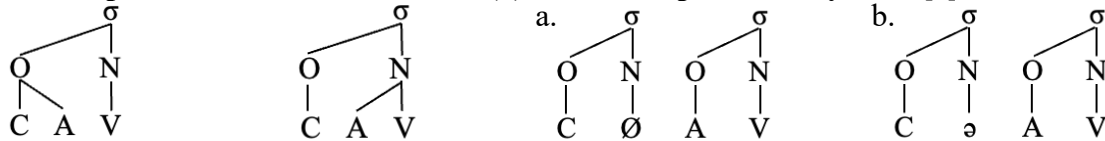
In Defence of Structure: Phonotactics in Hindi

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Over the past two decades, a body of research has strived to diminish the formal distinction between phonology and phonetics by reducing the role of articulated representations. For example, syllables, which are inherently hierarchical, have been abandoned by some scholars ([1], [2]; see also [3]) in favour of an approach where segments are ordered to maximize their perceptibility ([4]). In this paper, we defend an articulated view of the syllable, drawing on data from Hindi. We show that: (a) phonetically similar strings respect different phonotactic constraints which, in turn, warrant different syllabifications; (b) the same surface string can be subject to alternative syllabifications, one of which motivates the positing of phonetically empty nuclei.

In articulated theories of the syllable, phonotactic constraints regulate the shapes of syllable constituents (e.g., [5], [6]). For example, in languages that permit consonant+approximant+vowel (CAV) strings, two analyses have been proposed, determined by the sonority and place constraints that hold between C and A or between A and V: A may be part of a complex onset followed by a singleton nucleus as in (1a); or A can form a diphthong with the following V (1b) (e.g., [7]-[9]).

(1) a. **A in comp onset:** b. **A in nucleus:** (2) **A in onset preceded by Ø or [ə]:**



In this paper, we argue that sonority and place constraints on initial and medial CAV motivate both representations in (1) for Hindi: CA forms a complex onset (1a) when A is [l], one type of [r], or [w]; AV forms a diphthong (1b) when A is [j] or another type of [r] (from Sanskrit) that can only be followed by [i] (henceforth [r_i]). We propose, as well, a third representation for medial CAV: C and A are separated by an empty nucleus (Ø), shown in (2a). (We discuss (2b) shortly.)

The forms in (3) exemplify sonority constraints on initial CAV. When A = [l, r, w], (3a), the onset head (C) must be an obstruent, as holds in many languages ([10]); if C is higher in sonority, the cluster is ill-formed. This supports (1a). When A = [r_i, j], (3b), this constraint does not hold. C can be a nasal, motivating a boundary between C and A; i.e., [r_i, j] are in the nucleus, as in (1b).

- (3) a. [pli:ha:] ‘spleen’ *[mlV] b. [krija:] ‘act’ [mrig] ‘deer’
 [krod^h] ‘anger’ *[mrV] [kja:] ‘what’ [mja:n] ‘sheath’
 [twəʃa:] ‘skin’ *[nwV]

Concerning (2b), /ə/ in /CəAV/ optionally deletes, yielding CAV, e.g. [nakəli:]~[nakli:] ‘fake’. [11] proposes that the resulting CA is coda+onset (i.e., C.AV, period=syllable break). This analysis though is problematic, as other CAV strings, with the same type of A, are syllabified as part of a complex onset (1a), e.g. [ʃu.kla:] ‘a Hindu caste’. We propose, contrary to [11], that the outputs for /CəAV/, both with and without schwa, contain a nucleus between C and A, as in (2b) and (2a), respectively. We provide evidence for the presence of the empty nucleus in (2a) from stress.

Stress in Hindi falls on the rightmost heaviest syllable in a word, excluding the final syllable (unless it is CVXC). In words like (4a) produced without [ə], stress should fall on the penult (4b) if CA is analysed as coda+onset, as proposed in [11], as this is the rightmost visible heaviest syllable. By contrast, stress should fall on the preantepenultimate (4c) if CA is analysed with an empty nucleus between C and A (2a), as this is the rightmost visible heaviest syllable. In a pilot study, 4 Hindi speakers produced 8 novel words like (4a) presented in writing (schwa was written, as in Devanagari script). Words were produced both with and without [ə]. Productions without [ə] had stress on the preantepenult 92% of the time, consistent with the syllabification we assume.

In sum, we have shown that the structures in (1a), (1b) and (2a) are all required for Hindi CAV, motivating an articulated view of the syllable where representation is sensitive to phonotactics.

- (4) a. [kondet(ə)li:] b. [kon.'det.li:] c. ['kon.de.tØ.li:]

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