In several Vedic reflexes of PIE zero-grade *pḱu-, original *p surfaces as k: e.g., kṣumánt- ‘nourishing’, purukṣú- ‘rich in food’, kṣoṇī́- ‘heaven and earth’; cf. YAv. fśūmaṇt-, fśaoni-. Vedic forms retaining *p are virapśá- ‘abundant’, virapśín- ‘copious’. The Vedic change *p > k has been previously addressed. Bloomfield (1909:186-7) calls the presumed change *pśu > kṣu “regressive assimilation,” while Kuiper (1967 [1997]), Hoffmann (1976), Thieme (1979) and Mayrhofer (1989) refer to the development *p > k as dissimilation, putatively conditioned by a nearby labial. Hoffmann unites reflexes of *pḱu- with dissimilated forms like AV klomán- ‘right lung’: πλεύμων, AV takmán- ‘fever’ < *tampmán-, RV adbhiḥ ‘water’ (pl. inst.) < *abbhiḥ. The dissimilation analysis of *pḱu- is problematic: it seems to lack typological support, and more importantly, conditioners of dissimilation are not readily found in all affected forms. I argue for an alternative analysis based on the intrinsic phonetic qualities of the reflex of *pḱ, where the weak amplitude burst of *p made it unstable and confusable with acoustically similar k when its formant transitions were obscured by a sibilant like [ʂ]. A phonetic analysis explains also why p was retained before other sibilants, e.g. psaras- ‘delight’; the higher acoustic frequency of [s] allows labial formant transitions to be salient. I assume a PIIR sound change *pč > *pś (Burrow 1969:116, Hock 1975:97) before vowels (but not glides, cf. virapśá- ‘abundant’ < PIIR *virapčuá-), a development affirmed by the entirety of Indo-Iranian.

In terms of typology, p > k is virtually unattested (apart from the above sources) as a dissimilatory change; rather, dissimilating labials become coronal, as in Tashlihyt Berber (Alderete 1997) and Zulu (Beckman 1993). For IE, Pre-Tocharian possibly shows the same behavior (Adams 1999:116). Even within Vedic, other developments identified as labial dissimilation show labial > coronal change, e.g., the intensive stem *namnam- > nannam- ‘bend’ (Schaefer 1994:143); the dissimilated forms given by Hoffman are split between the type adbhiḥ (*b > d) and klomán- (*p > k). Non-RV forms like klomán- show that we must account for a tiny fraction of labial dissimilation to k, but other considerations give evidence against *pḱ > RV kṣ as dissimilation.

Conditions under which labial dissimilation might occur are not systematic, and some explanations are tenuous. As mentioned above, forms like kṣumánt- and purukṣú- show a labial consonant capable of conditioning dissimilation. But this is not the case for etymologically related kṣoṇī́-; also, since kṣoṇī́- does not connote cattle, there is less chance that it underwent change via
analogical association with other reflexes of *pḱu-. If we attribute dissimilation to the presence of a round vowel after *p, we risk predicting non-forms like †klúṣi- < plúṣi- ‘flea’. Thieme (1979:49) suggests paradigmatic leveling from dissimilated pl. gen. *kṣūṇām < *pśūnam. This form is unattested; other case-forms containing a labial (pl. inst. kṣoṇī́bhiḥ, du. inst. kṣoṇī́bhāyām, sg. acc. kṣoṇī́) are sparse. Given this paucity, it is appropriate to suggest an alternative explanation based on the intrinsic phonetics of the cluster that underwent change.

It is possible to make inferences about Vedic phonetics via cross-linguistic acoustic data. It is well documented that [p] is subject to change due to the absence of an amplitude burst, whereas the bursts of [t] and [k] contain cues to their place of articulation (Ohala 1996:1720, Blevins 2004:124). Experimental research shows that while its perceptibility may be compromised before a vowel, cues for [p] are particularly strong before and after the sibilant [s] (Malécot and Chermak 1966), given that labial cues are found in the lower cutoff frequency (< 3400 Hz) and the characteristic frequency of [s] is high (> 3600 Hz). On the other hand, [t] and [k] require a burst in order to be perceptible before a sibilant. Cross-linguistically, the center of gravity of a retroflex sibilant’s frequency is below 3500 Hz (e.g., Padgett and Zygis 2003), the same window where labial cues appear. In a cluster of the type [pʂ], the labial cues of [p], crucial to its perceptibility, would be obscured, where coronals and velars could still rely on their burst. This explains why *p changed in kṣumánt- but was retained before higher-frequency sibilants in psarás- and virapśá-. In its vulnerable position before [s], regardless of whether *p became coronal or velar, Vedic kṣ (< *ṭṣ, Lubotsky 2008:359) would be the ultimate outcome. It is likely that *p simply changed to k, since labials and velars are often classed together as [+grave], meaning that they have spectral peaks at low frequencies (Jakobson, Fant and Halle 1952). Halle, Hughes and Radley (1957) report that in a (round) back vowel context, [k] has a spectrum very similar to [p]; kṣu- ‘sneeze’ would be perceptually very similar to *pṣu-. The perceptual weakness of [p] and its acoustic confusability with [k] sufficiently explains the change *p > k (probably allophonic [kʷ], a proprietary phonetic step between p and k, Kümmel 2007) before s without the influence of an external labial trigger.

This paper removes Vedic reflexes of *pḱu- from the scope of labial dissimilation, proposing an alternative perceptual basis for the change from *p. This study provides support to reinterpretations of phenomena previously analyzed as dissimilation in which the purported conditioner of dissimilation is not robust and the changing segment is already perceptually weak.
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