Synchronic phonetic variation drives diachronic sound change: Further evidence from pre-nasal raising in Young Avestan

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(Late) Young Avestan, an ancient East-Iranian language, has been claimed by de Vaan (2003, 620) to exhibit the typologically unattested vowel inventory [i], [iː], [e], [əː], [a],[aː],[ã], [ɑ], [o], [u], [uː]. His reconstruction of the (late) Young Avestan vowel inventory hinges on the identification of <å> as the low back unrounded tense vowel [ɑ]. This is, however, suspect from a typological perspective since [a] and [aː] are found alongside [ɑ] in 3/3420 languoids whose inventories are accessible (Anderson et al. 2023) when controlled for spatial and phylogenetic structure.

I re-evaluate the claims of de Vaan (2003) and Beguš (2025, 383) for the development of the Proto-Iranian (PIr.) */ā/ > /ɑ/ __ h]$_{\omega}$ by studying the language-wide distribution of <å> and argue that Proto-Indo-European (PIE) *ā was raised before nasal(ized) consonants to a mid front vowel [æː/ɛː].

In the Young Avestan corpus, the vowel <å> is found in the following contexts:

(1) a. PIr. *-ā- > Av. -<å>- / __ <n̥c>, <n̥k>, <n̥t>, <ŋh>, <ńh>, <ŋ^{u}h>

b. PIr. *ā > Av. <å> / __<h>]$_{\omega}$

<n̥>, traditionally thought to represent the uvular nasal [N], instead represents a nasal homorganic with the following obstruent (Ferrer Losilla 2016) making the backing hypothesis of de Vaan (2003) and Beguš (2025) unlikely. Moreover, Clayton (2020) has persuasively shown that <ŋ> in the Young Avestan sequences <ŋh>, <ńh>, <ŋ^{u}h> represents a suprasegmental diacritic to mark the nasalization that arose in Old Avestan *-ăh$^{(w/j)}$ă sequences by the typologically robust process of rhinoglottophilia (Matisoff 1975; Ohala and Amador 1981; de Vaan 2013; Chirkova and Chen 2013). Similarly, in word-final position, I argue that OAv. /h/ developed secondary nasalization by rhinoglottophilia and was realized in a diachronic stage before the attested late young Avestan as [ħ̃].

This allows us to formulate the sound change OAv. *ā > <å> / __ C$_{[+nasal]}$]$_{\sigma}$(C$_{[-continuant]}$) which could have followed or been contemporary with the change of PIr. *anF > ãF. The phonetic value of <å> can then be explained through pre-nasal raising, a tendency for vowels to exhibit lower F1 values when followed by nasal(ized) consonants (Zellou and Brotherton 2021; Mielke, Carignan, and Thomas 2017; De Decker and Nycz 2012; Krakow et al. 1988). By relying on such synchronic phonetic variation in F1 values of low vowels, we can readily formulate a raised quality for the Young Avestan reflex of the Old Avestan vowel *ā* before nasal(ized) consonants in tautosyllabic codas. Such a development would indicate that <å> most likely represented [æː] or [ɛː], which is also consistent with (i) the development of PIr *as]$_{\omega}$ > <ə>, (ii) the dissimilatory blocking of PIr. *ā > YAv. <å> when a [+high] vowel follows in the next syllable, and (iii) the evidence from other East-Iranian languages (e.g., PIr. *āh]$_{\omega}$ > Khotanese <e> [ɛː]).

The Young Avestan development finds robust parallels in ancient Indo-European languages that have not been hitherto examined together as diachronic examples of pre-nasal raising: the raising of *o > u / __ m in certain ancient Greek dialects (García Ramón 2018), the raising of *e > i / __ m and *a > u /__ m in Northwest Germanic (Ringe and Taylor 2014), and the raising of *o > u / __ N in Armenian (Schmitt 2007). Such developments in the Indo-European languages and Young Avestan run contrary to the claim of Beddor, Krakow, and Goldstein (1986) that only phonetically and phonologically inappropriate nasalization leads to diachronic change in pre-nasal vowel height, but are entirely consistent with the claim of Ohala (1993) that "diachronic variation emerges for the most part from synchronic variation."