Vedic Post-lexical Retroflexion: Synchronic and Diachronic Perspectives

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Introduction

- Vedic Sanskrit has a well-known n-retroflexion rule
- Lexeme-externally, this process is exceptional
- Post-lexical retroflexion (PLR) of Vedic Sanskrit 1pl clitics and other items is a variable and opaque phenomenon
- I show that a model sensitive to diachronic factors better predicts the distribution of retroflex clitics than a model which assumes phonetic naturalness in prosodic phonology
- The opacity created by diachronic change likely resulted in the under-generalization of this post-lexical rule by learners

These results bear on phonological theory and Vedic studies

(Vedic Sanskrit) n-Retroflexion: Lexeme-Internal

- Vedic Sanskrit has multiple sources of retroflex segments
- These include the following process (cf. Allen 1951, 1953, Zwicky 1965, Collinge 1965):

\[
\begin{align*}
\text{n} & \rightarrow \text{r} \quad \text{or} \quad \text{s} \\
\text{n} & \rightarrow \text{r} \quad \text{or} \quad \text{s} \\
\text{[The change n \rightarrow r is triggered by preceding r or s if no coronal obstructive intervenes and no dental segment directly follows]} \\
\text{Lexeme-externally, this process is virtually exceptional:} \\
\- \text{Morpheme-internally: rēkha- \textquoteleft health, \textquoteleft purity, \textquoteleft abundance', ayusḥ- \textquoteleft nape'} \\
\- \text{Morphophonetic: parai-māṇa- \textquoteleft circumference'}}
\end{align*}
\]

Post-Lexical n-Retroflexion (PLR)

- The aforementioned retroflexion process operates across word boundaries as well
- This behavior is variable in Vedic Sanskrit:
  - inrada no \textrightarrow \text{indra no}
  - vārī nabh \textrightarrow vārī nabh
  - [\textquoteleft keep\textquoteright] us far away from...'
- It ceases to operate in Epic and Classical Sanskrit
  - mdh 1pl pronominal clitic
  - nā negative particle
  - nā simple particle
  - nā morphic particle
  - ena- proximal pronoun
  - emas- \textquoteleft anger'
- This study seeks to address the following questions:
  - To what extent does the process operate post-lexically?
  - Is it more likely to operate in close proximity or at a distance (can we pick up effects of speech rate, pause, etc.)?

Corpus Study I: Methods

- I generated a corpus consisting of tokens of dental and retroflex allomorh of the affected items, found in the Rg and Atharva Vedas
- N = 6553; dental = 6407; retroflex = 145
- For each token, the following factors were incorporated into a mixed-effects logistic regression models (one per fixed effect):
  - Fixed effects:
    - Presence of a viable trigger of retroflexion, and whether the trigger was
    - Adjacent (r, s) or
    - Non-Adjacent (r-, s-)
  - Random intercepts:
    - Type of word
    - Preceding word
    - Following word
    - Veda \texttimes book

Corpus Study I: Results

- The presence of a viable trigger is a highly significant predictor (\(\hat{\beta}_{\text{adj}}(1) = 90.2, p < .001\))
- The presence of a viable non-adjacent trigger is a highly significant predictor (\(\hat{\beta}_{\text{adj}}(1) = 90.7, p < .001\))
- However, the presence of a viable adjacent trigger is barely significant (\(\hat{\beta}_{\text{adj}}(1) = 3.89, p = .05\))

Corpus Study I: Discussion

- The finding that adjacent triggers serves as a marginally significant factor is odd
- Cross-linguistically, post-lexical processes are common at word boundaries (e.g., \(\text{proto-in} \text{low}\))
- Vedic retroflexion can be triggered at any distance; hence, there seems to be no a priori reason that non-adjacent retroflexion should be better represented than adjacent retroflexion
- Further observation of the data shows another odd pattern
- In certain contexts where a viable trigger is present, PLR is categorically blocked
- It is easy enough to envision a post-lexical grammar where PLR is generally disfavored and blocked (respectively) by final s and r
- But these constraints are otherwise not well motivated, and certainly not phonetically so
- A round back vowel like \(o\) should perceptually enhance retroflexion, not block it (cf. Hamann 2001-90.2)
- Contexts in which visibly triggered retroflexion is either under- or unrepresented involve the operation of external sandhi rules at the word edge
- \(\text{vārī nabh} \rightarrow \text{a} \quad \text{r} \quad \text{vārī nabh} \rightarrow \text{Î} \quad \text{vārī nabh} \rightarrow \text{vārī nabh}
- Since both external sandhi and PLR are technically speaking post-lexical rules, this opacity can be modeled synchronically in a theory that allows ordered levels of post-lexical phonology (Kaise and Shaw 1985.24), as follows:

\[
\begin{align*}
\text{external sandhi rules at the word edge}& \\
\text{vārī nabh} \rightarrow \text{a} \quad \text{r} \quad \text{vārī nabh} \rightarrow \text{Î} \quad \text{vārī nabh} \rightarrow \text{vārī nabh}
\end{align*}
\]

- However, this rule ordering seems at odds with the idea that within the phonological component, more abstract phonological rules tend to feed more low-level phonetic processes (cf. Coetzee and Pater 2011.402)
- The presence of a historically viable adjacent trigger is now highly significant as well (\(\hat{\beta}_{\text{adj}}(1) = 195, p < .001\))

Phonological implications

- The above results are at considerable odds with models of LPM which see lexical rules (or \textquoteleft early phonology\textquoteright) as exception-prone and opaque, and post-lexical rules (or \textquoteleft late phonology\textquoteright) as exceptionless and low-level
- Retroflexion is unpredictable, opaque and blocked by sandhi at the phrasal level, but productive, transparent and fed by sandhi lexeme-externally
- PLR is in fact confined to 23 infected forms — well on its way to a lexically dependent phenomenon (but not all of these are liturgical collocactions)

Implications for Vedic Sanskrit

- 2 types of \(a\) in Vedic Sanskrit?
  - Farfield (2003) gives evidence for a \textquoteleft molar-type\textquoteright \(a\) alongside an alveolar one
  - The findings of this study may show that \(a\) resulting from sandhi rhotacism was \textquoteleft molar\textquoteright in final position, since it systematically failed to trigger retroflexion across word boundaries (with one exception)
  - Uvac is tends to be incompatible with rhotic retroflexion (cf. Svantesson 2000)
- This works if the rhotacitic development \(a \rightarrow r\) predates the context-free change \(a \rightarrow \text{r}\)

References


Lund University Working Pa-

UC Berkeley

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