

## Blackfoot Final Vowels: What Variation and its Absence Can Say about Communicative Goals

Heather Bliss and Bryan Gick

What conditions the limits of variation? Where is there an absence of variation, and what can this tell us about the goal(s) of speech production? This paper addresses these questions as they pertain to word-final vowels in Blackfoot (Algonquian), and considers their implications for language revitalization and the expression of communicative goals.

According to the Minimal Intervention Principle (MIP, 11), variation is a necessary ingredient of motor behavior; for optimal control over a primary task, variation must be allowed in redundant dimensions. Under this model, the absence of variation in some region of action space can be seen as a diagnostic for identifying the primary task(s) or goal(s) of that system.

In the context of speech production, it is often claimed that articulatory goals are themselves important independent of goals in other dimensions (7, 12). Part of the evidence for this claim comes from variation along acoustic versus articulatory dimensions; in some cases where variation in the acoustic signal is attested, articulation is less variable (9).

Final vowels in Blackfoot have provided further support for the view that articulatory goals are among the primary tasks of speech production (6). Blackfoot has distinct articulator positions for final vowels, despite the vowels being completely inaudible. Termed “soundless,” these vowels provide strong evidence that natural languages can systematically encode articulatory targets without acoustic consequences.

Regarding variation in the production of Blackfoot final vowels, there are conflicting accounts. Final vowels are reported as emblematic of language loss, assumed to be absent in the grammars of younger speakers and/or disappearing from certain dialects (3, 5, 8). However, numerous speakers stress the importance of producing the final vowels (e.g., “it’s always there, but you don’t sound it”).

We investigated the phonetic properties of final vowels of five additional speakers, using ultrasound, video, and audio recordings. Preliminary results indicate that, while some speakers produce soundless vowels, others produce “ghost” vowels (10), which are neither articulatorily nor acoustically realized, but nevertheless phonologically active, as evidenced by their capacity to trigger regular phonological processes. Notably missing from our sample is a speaker for whom the final vowels are altogether absent.

In short, there is variation, but of a limited nature. Moreover, the presence of ghosts shows that the primary task is not to reach an articulatory target, but rather to express the vowel, even if only indirectly. We propose that the reason for this is that the final vowels encode important morphosyntactic information, namely obviation, a major organizational component of the grammar (2). In the context of the MIP, we suggest that a primary task can be conceived of more broadly, in terms of the communicative goal of expressing meaningful grammatical distinctions.

Regarding language revitalization, obviation can be challenging for learners, as its phonetic realization is audibly “weak” (soundless or ghosts). Moreover, neither the standard orthography (4) nor provincial curricula (1) distinguish between voiced versus soundless vowels. Shedding light on variation in the pronunciation of final vowels can inform teaching about obviation in Blackfoot.

**[495 words]**

## References

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