

**Title:** The Nature of Optional Sibilant Harmony in Navajo  
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Sibilant harmony in Navajo is a phonological phenomenon requiring sibilants within a word to have identical specifications for the feature of anteriority, such that a word can contain alveolar sibilants or palatal sibilants but may not contain both. This has been referred to as a distance-dependent process, occurring mandatorily when stem sibilants are adjacent to the prefix and optionally when they are non-adjacent (Sapir & Hoijer 1967). Neither the factors contributing to optionality nor the statistical nature of the variation in optional settings is fully understood, however. In developing data based on Navajo for a gradual learning algorithm, Albright and Hayes (2006) used a 50/50 split, with optional harmony applying a neat 50% of the time. In surveying an online Navajo dictionary, however, Martin (2005) found that harmony applied nearly 100% of the time in inflected words, even when sibilants were nonadjacent. This shows scant evidence of optionality; when harmony could apply, it did.

This paper investigates the behavior of the 1<sup>st</sup> person singular possessive marker, /ʃi-/, which sometimes surfaces as [si-] when attaching to roots that contain alveolar sibilants. Internet research revealed some clues about the statistical nature of optional assimilation; results indicate that—at least for the 1<sup>st</sup> person possessive marker, and at least in the online domain—harmony is no longer mandatory, even when the prefix attaches to a sibilant-initial stem. These findings prompted the development of an online survey that elicited grammaticality judgments from fluent speakers of Navajo for nouns affixed with the 1<sup>st</sup> person possessive morpheme. Survey results confirmed that the mandatory harmony environment no longer exists; in fact, harmony was strongly dispreferred by most speakers. The results also suggested that the syllable position (i.e., onset vs. coda) and manner of articulation (i.e. continuant vs. noncontinuant) of the stem sibilant contribute to the optionality previously attributed solely to distance. Finally, acoustic analysis of a speaker who seemingly never performs sibilant harmony—in speech or in writing—was performed to investigate whether the presence of alveolar sibilants in the noun stem trigger measurable differences in duration, spectral mean, or onset of frication energy for the fricative in the 1<sup>st</sup> person possessive /ʃi-/. Findings indicate that alveolar stem sibilants trigger a significant difference in the spectral mean of the prefixal sibilant.

In sum, then, mandatory sibilant harmony in Navajo is disappearing. Optionality is more prevalent than was previously thought, and the factors that contribute to the variation still in evidence include syllable position and manner of articulation in addition to distance.

### References

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