A Grammar of Nomlaki

by

Anna Björklund

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Professor Andrew Garrett
Associate Professor Gašper Beguš

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Abstract

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This thesis is a grammar of Nomlaki, a Wintuan language of northern California preserved exclusively through archival documents. Many early documenters did not consider Nomlaki sufficiently differentiated from its sister language Wintu to justify separate investigation. As a consequence, Nomlaki is the only Wintuan language without a grammatical description. This grammar is a preliminary answer to this gap in the Californianist literature.

This work is divided into eight chapters. The introduction includes an orientation of Nomlaki in its genetic context, a finding guide for its documentation, and a discussion of the limitations and methods involved in obtaining a grammatical description from archival records. The second chapter concerns Nomlaki phonetics, including studies on the vowel space, stress, voice onset time, locus equations for stops, and moment spectra for fricatives and affricates. The third chapter discusses Nomlaki phonology, including phonotactics, syllable structure, basic phonological processes, the behavior of loan words, lexical stress, and intonation. Chapters 4-7 discuss Nomlaki verbs, word classes, nouns, and syntax. Here I highlight several Nomlaki innovations, including an ablative case marker which is not present in either sister language or reconstructed for Penutian, its unique typology of the hortatives, the innovative use of the negative suffix *-mena* as a possibility marker, and semantic variations in the use of 'particular' and 'generic' noun marking. The final chapter presents a summary of conclusions and directions for future work.

This thesis is the first work to provide a detailed description of Nomlaki. While by no means complete, this work greatly expands not only our descriptive knowledge of Nomlaki itself, but of Wintuan and California language typology. The results not only confirm the close relation between Wintu and Nomlaki, but indicate key areas in which they differ. This in turn highlights Nomlaki as a unique language area, meriting independent study and consideration. Most importantly, this work enables higher quality learning for ongoing Nomlaki revitalization work.

For the members of the Nomlaki language revitalization group, and the once and future speakers of the Nomlaki language.

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Glossing Abbreviations

1 first-person

2 second-person

3 third-person

ABL ablative

ASP aspect

BEN benefactive

CAUS causative

COMPL completive

COMP complementizer

COM comitative

COP copula

DEM demonstrative

DIR directional

DUB dubitative

DU dual

EMPH emphatic

GENER generic

HORT hortative

IMP imperative

INAN inanimate

INDIC indicative

KIN kinship

LOC locative

MULT multiplicative

NEG negative/negation

NOM nominal

NONVIS.SENSORY.EVID nonvisual sensory evidential

OBJ objective

PARTIC particular

PERS.LOC personal locative

POSB possibility

POSS possessive

PROX proximal

REAL realis

REFL reflexive

REF referential

RPT reportative

SG singular

STAT stativizer

SUBJ subjective

SUB subjunctive

TRANS transitivizer

Manuscript Abbreviations

4.1 N1	Walter Goldschmidt (1951a). *(4.1) N1: Goldschmidt, Walter. Nomlaki Ethnography. [Typewritten manuscript]. Box: 9. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society.* Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-C.
4.2 N2	Morris Swadesh (1953a). *(4.2) N2: Swadesh, Morris. Wintunian Word Lists. [Typewritten manuscript]. Box: 9. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society.* The American Philosphical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-C.
4.4 N4	Harvey Pitkin (1958). *Pitkin, Harvey. Nomlaki field notes, Paskenta dialect. [Typewritten manuscript]. Box: 8. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society.* The American Philosophical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-C.
4B	Harvey Pitkin (1956). *4-B: Source texts (originals and drafts). [Typewritten/handwritten manuscripts]. Box: 8. Harvey Pitkin Papers, Mss. Ms. Coll. 78. American Philosophical Society.* The American Philosophical Society, Harvey Pitkin Papers: Mss.Ms.Coll.78. Box Series IA-1. Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-B: Source texts.
5.6 P6	Morris Swadesh (1953b). "(5.6) P6: Swadesh, Morris. Wintunian Word Lists. [Typewritten manuscript]. Box: 9. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society".
BW Ch. 1	Bernice Blankinship and Pat Wenger (1978a). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 1.

BW Ch. 2	Bernice Blankinship and Pat Wenger (1978b). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 2.
BW Ch. 3	Bernice Blankinship and Pat Wenger (1978c). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 3.
BW Ch. 4	Bernice Blankinship and Pat Wenger (1978d). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 4.
BW Ch. 5	Bernice Blankinship and Pat Wenger (1978e). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 5.
BW Ch. 6	Bernice Blankinship and Pat Wenger (1978f). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 6.
BW Ch. 7	Bernice Blankinship and Pat Wenger (1978g). "Learning to Talk Nomlaki". In: The Covelo Indian Community Council. Chap. 7.
Freeman	Morris Swadesh and Robert Melton (1953). *California, Gerber, Nomlaki. [Audio recording]. Indiana University Archives of Traditional Music: 85-555-F, OT 7422.* Indiana University Archives of Traditional Music: 85-555-F, OT 7422.
N3	Morris Swadesh (1953c). *(4.3) N3: Swadesh, Morris. Wintun languages field notes, Nomlaki vocabulary. [Typewritten manuscript]. Box: 9. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society.* The American Philosophical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-C.
N3 Phrases	Morris Swadesh (1953d). *Phrases and sentences from N3. Box: 32. Harvey Pitkin Papers, Mss. Ms. Coll. 78. American Philosophical Society.* The American Philosophical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 4: Wintu Texts: 4-C.
Pitkin Comparative Wintun	Harvey Pitkin (ND[a]). *California-Oregon comparative word lists. Box: 10. Harvey Pitkin Papers, Mss. Ms. Coll. 78. American Philosophical Society.* The American Philosophical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 5: General research.
Pitkin Papers	Harvey Pitkin (1884-1968). *Harvey Pitkin Papers, American Philosophical Society.* American Philosophical Society.
Pitkin Proto-Wintun	Harvey Pitkin (ND[b]). *Proto-Wintun. Box: 11. Harvey Pitkin Papers, Mss.Ms.Coll.78. American Philosophical Society.* The

American Philosophical Society, Harvey Pitkin Papers: Subcollection II: Series 2: Research materials: Subseries 5: General research.

Simmons — Sylvester Simmons and Jesse O. Sawyer (1975). *Elicitation of miscellaneous words and phrases. [Audio recording]. The Jesse O. Sawyer collection of Nomlaki sound recordings, LA 102, California Language Archive, Survey of California and Other Indian Languages, University of California, Berkeley.* The Jesse O. Sawyer collection of Nomlaki sound recordings, LA 102, California Language Archive, Survey of California and Other Indian Languages, University of California, Berkeley.

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Chapter 1

Introduction

1.1 The purpose of this work

This thesis is a grammar of Nomlaki (ISO: nol), a language of northern California which is preserved exclusively through archival documentation. Compared to its sister languages Wintu and Patwin, Nomlaki documentation has been fragmentary. This general scholarly neglect has resulted in a much smaller body of literature. As a consequence, Nomlaki is the only Wintuan language yet to have a grammatical description.

This grammar firstly fills an essentially blank space in the California literature. While Wintu and Patwin have previously published grammatical descriptions, Nomlaki does not (Pitkin 1984; Lawyer 2015). Many early documenters did not distinguish Nomlaki from Wintu, regarding both as simply 'Wintu' (in contrast to the southerly 'Patwin'). Golla (2011:143) is more generous, but still sums up the current (non-)consensus: 'Nomlaki, or 'Wintun,' is a distinct dialect area –or emergent language– within [the Wintuan subgrouping of] Northern Wintuan'. It is indeed true that the Wintu and Nomlaki language varieties are mutually intelligible, and likely a dialect continuum. However, they also vary across phonetics (Chapter 2), phonology (Chapter 3), and morphosyntax (Chapters 4, 5, 6, and 7). These differences, as fleshed out in this grammar, indicate that Nomlaki is a distinct language variety whose specific study is necessary to our understanding of the Wintuan languages and California language typology.

Chapter 2 provides the first acoustic phonetic analysis for a Northern Wintuan language. In addition to analyzing spectrograms for each Nomlaki phoneme, this chapter examines vowels and their interaction with lexical stress, the laryngeal typology of stops and stop VOT, oral and nasal places of articulation with locus equations (Sussman and Shore 1996), and the spectral moments of fricatives and affricates (Forrest et al. 1988). Chapter 3 examines various aspects of phonology, including phoneme distribution and phonotactics, syllable structure, basic phonological processes, the treatment of loanwords, intonational patterns of lexical stress, patterns of phrasal intonation, and ablaut. Chapters 4-7 discuss verb morphology (Chapter 4), word classes (Chapter 5), noun morphology (Chapter 6), and basic syntax

(Chapter 7). Almost none of these areas have been described before. Despite a relatively small corpus, this grammar demonstrates that much can still be gleaned from a language, preserved in archives for alternate purposes and without contemporary speakers.

Lastly, the heart of this grammar is the revitalization of the Nomlaki language, spearheaded by members of the Paskenta Band of Nomlaki Indians as well as the Round Valley Indian Tribes of the Round Valley Reservation. I have now worked with this revitalization group for five years. Before writing this grammar, the most detailed description of the Nomlaki language was Blankinship and Wenger (1978a), a textbook produced tribe-internally for teaching the language. While we are in debt to tho who gave their time and knowledge to its creation, this text is nonetheless incomplete. Crucially, it lacks a description of most of the morphology described in later chapters. Besides the general knowledge gleaned from this grammar, the work of assembling, storing, and interpreting sources has united

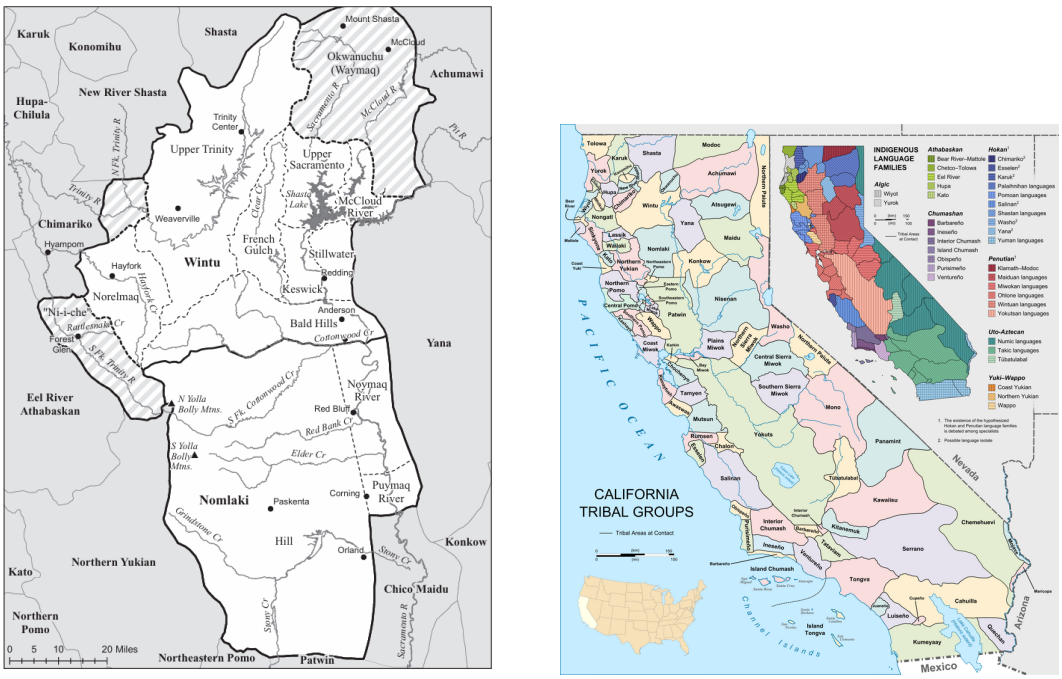
provided a valuable reference for revitalization. This grammar's findings have created a fuller and more nuanced understanding of Nomlaki and its range of expression– findings that are now taught to the language's new learners and speakers.

A note on shorthand

Because many of the sources frequently cited here involve the same authors and sometimes also the same year of publication, I use shorthand citations throughout the grammar to disambiguate them. The majority are referred to by some portion of their APS manuscript number. These include Goldschmidt (1951a) (henceforth cited as 4.1 N1) (henceforth cited as N1), Swadesh (1953b) (henceforth cited as N3), Swadesh (1953d) (henceforth cited as N3 Phrases), Pitkin (1956) (henceforth cited as 4B) (henceforth cited as 4B), Swadesh (1953a) (henceforth cited as 4.2 N2) (henceforth cited as 4.2 N2), Pitkin (1958) (henceforth cited as 4.4 N4), and Swadesh (1953c) (henceforth cited as 5.6 P6). The shorthand citations for audio recordings refer to the Nomlaki speaker who contributed to the project: Swadesh and Melton (1953) (henceforth cited as Freeman), Simmons and Sawyer (1975) (henceforth cited as Simmons). Others simply refer to their title: Pitkin (ND[a]) (henceforth cited as Pitkin Comparative Wintun), and Pitkin (ND[b]) (henceforth cited as Pitkin Proto-Wintun).

1.2 Nomlaki in Wintuan context

Nomlaki is one of three languages in the Wintuan family. The family lies in the upper Sacramento Valley of northern California, extending from Mount Shasta in the north to Suisun Bay (which feeds into an extension of the San Francisco Bay) in the south. The northernmost language is called Wintu (ISO: wnw), while the southernmost is called Patwin (ISO: pwi). Nomlaki (ISO: nol) lies between these two languages; for this reason, it is often referred to in the literature as 'Central Wintun.'



(a) (b)

Figure 1.1: Left: a map of the traditional lands of Wintu and Nomlaki, reproduced from Golla (2011:155). Right: A map of California native languages, originally by the Survey of California and Other Indian Languages, colored by Wikipedia user Concerto (Concerto 2025).

All Wintuan languages are sleeping, meaning that no known first-language speakers are known to exist.[1] Because no Wintuan language has first-language speakers, all research relies on archival sources. The archival record is richest for Wintu, the output of which includes a grammar (Pitkin 1984) and two dictionaries (Schlichter 1981; Pitkin 1985). It is poorest for Nomlaki, for which no grammar or dictionary has yet been published. Nomlaki has historically been grouped as a dialect of Wintu, leading to a lack of specialized attention. This has resulted in a small archival corpus, which in turn has led to very little research conducted for the language. For these reasons, this grammar is the first in-depth grammatical treatment of the Nomlaki language.

Wintuan consists of two genetic branches, named Northern and Southern Wintuan. The Northern Wintuan branch comprises Wintu and Nomlaki, while the Southern Wintuan branch comprises Patwin and (possibly) Southern Patwin. The Wintuan family is hypothesized to belong to the Penutian phylum, which in California also includes the Ohlone, Miwok, Yokuts, and Maidu language families. Penutian was originally theorized to have begun in

[1]Lawyer (2021) states that one speaker of Patwin is still known to him. However, this does not negate the functional reality that all research, even for Patwin, relies entirely or almost solely the archival record.

California, with the Wintuan languages assumed to have formed roughly near their present boundaries (Dixon and Kroeber 1913; Dixon and Kroeber 1919). However, this assumption is a historical accident: because Dixon and Kroeber began investigating the Penutian family with California data, it was assumed that the phylum was confined to California. Though the exact membership of the Penutian phylum is still not settled, most Penutian scholars now believe that it includes languages in California, Oregon, British Columbia, and possibly (according to Sapir 1929) Mexico.

The Wintuan languages are closely related, with an estimated time depth of 1,500-2,500 years (Whistler 1980; Shepherd 2005). They exhibit approximately the same degree of divergence as the Romance languages, at around the same time depth. Whistler (1977) hypothesizes that the Wintuan family originated in the southern Oregon plateau, where other Penutian languages are also located. This claim is based on two strands of evidence: firstly, that reconstructed Proto-Wintun flora and fauna do not contain words for plants endemic to California, but rather for those further north, and secondly, that flora and fauna endemic to Patwin's current location are loaned from Miwok, implying that Patwin originated somewhere where those organisms were not present. According to this analysis, Southern Wintuan broke off first from the Proto-Wintun homeland. This is evidenced by Patwin's high degree of divergence from Northern Wintuan. The northern branch followed later into California.

The total population of Wintuan speakers before Euro-American contact is estimated at around 12,000 (Kroeber 1925:356). Nomlaki villages consisted of an extended family, totaling around fifty to two hundred people (Goldschmidt 1951:319). This village unit, called the *olkapna* 'village, clan, family', was the core of historical Nomlaki society and political identity. Kroeber observes that native California groups tended to historically identify with and organize themselves by units much smaller than the linguistic group. Rather, the core social and political unit was the *olkapna*, which Kroeber calls a 'tribelet' (Kroeber 1925). Many Wintuan people still identify foremost with their ancestors' particular region within the larger Wintuan speaking area, rather than simply a blanket linguistic grouping like 'Nomlaki'.

From north to south, the Wintu language is typically divided into Upper Sacramento, McCloud, Stillwater, Keswick, French Gulch, Upper Trinity, Hayfork and Bald Hills regions (DuBois 1931:6–8). Nomlaki and Patwin are divided into River and Hill. For both Nomlaki and Patwin, 'River' refers to the Sacramento River, while 'Hill' refers to the drainages of the Sacramento located further west. River Nomlaki is composed of the *Noymaq* 'south people' (near Red Bluff) and *Puymaq* 'east people', while Hill Nomlaki is split into Red Bank Creek, Elder Creek, Thomes Creek, and Grindstone Creek (Goldschmidt 1951; Kroeber 1932). River Patwin has Colusa and Grimes, while Hill Patwin has Lodoga, Tebti, Cortina, Rumsey, and Napa (Lawyer 2021:4).

Within the Patwin linguistic area is a grouping called 'Southern Patwin'. The most well attested variety of Southern Patwin is called Suisun (/sə-su:n/), after which Suisun Bay (the northernmost extension of the San Francisco Bay, and southernmost extension of the Wintuan language area) was named. Documentation for Southern Patwin amounts to a few

hundred vocabulary items, collected by people such as Arroyo de la Cuesta (1861), Curtin (1898), Merriam (1909), and Platón Vallejo, whose father is the namesake of the Bay Area city of Vallejo (Vallejo's word lists are republished in Kroeber 1932). Because of the scant data for Southern Patwin, it is unclear whether it should be considered a distinct language from Patwin. Kroeber (1925), for instance, does not group Southern Patwin independently, while Whistler (1980) does. The Southern Patwin themselves regarded Suisun and Knight's Landing as distinct areas within Southern Patwin (Golla 2011:145).

Wintu and Nomlaki are mutually intelligible, while Patwin is not. The degree of mutual intelligibility between Wintu and Nomlaki is so high that the two have been historically conflated as 'Wintun', in contrast with the southern division of 'Patwin' (Powers 1877:232). Both names are derived from their respective languages' word for 'person' or 'man.' 'Wintun' been used in the documentation to refer to both the Northern Wintuan language family and the Nomlaki language. Kroeber refers to the entire language family as 'Wintun'; Wintu, Nomlaki, and Patwin are 'northern', 'central', and 'southern' Wintun, respectively (Kroeber 1925:353–355). In this grammar, I will use 'Wintuan' to refer to the language family and its branches, and 'Wintun' to refer to the proto-language (on the model of Shepherd 2005). 'Wintun' never refers to Nomlaki, unless in relation to documentation where this term is used for this purpose.

Whether 'dialects' exist in Wintu is a matter of debate. Merriam (1919) notes dialect boundaries, while Kroeber (1925:353) appears surprised at how uniform the language is given the size of its territory. DuBois (1931) reports a Wintu speaker from the McCloud River who states that Hayfork Wintu (to the south of the river), as well as Nomlaki (to the south of Hayfork), are not comprehensible; a speaker from Bald Hills (just north of Nomlaki) reports that Nomlaki is easy to understand 'after a while.' Decades later, Schlichter (1979) asserts that there exist only small differences within Northern Wintuan. Perceived dialectal differences, in this analysis, are idiolectal and cultural: the closer an affinity one group feels to another, the more 'comprehensible' their language varieties become. However, DuBois (1931)'s results in particular suggest a dialect continuum.

Patwin is separated from Northern Wintuan by several isoglosses, most notably a fronting chain which has resulted in a total lack of Patwin uvulars. Patwin also differs from Northern Wintuan in several aspects of verbal and noun morphology. Within Northern Wintuan, a key isogloss separating Nomlaki from Wintu is Nomlaki's lack of /r/, which is reconstructed in Proto-Wintun (Shepherd 2005:6) and present in Wintu and Patwin. Nomlaki and Wintu are also differentiated by vocabulary, including common lexical items such as Wintu *pʰu:r* 'heart' (from Proto-Wintun 'breath') versus Nomlaki *cidi:k* 'heart' (from Proto-Wintun 'center' or 'core') (Shepherd 2005). While both are cognate to Proto-Wintu, these differences reflect shifts in daily vocabulary usage. The drastic difference between the Northern Wintuan languages and Patwin, combined with the close similarities between Wintu and Nomlaki, has led to Nomlaki being under-documented in comparison with its sister language. One of my key goals for this grammar is to assess whether, and how, Nomlaki is distinguishable as a unique language area.

1.3 The Penutian phylum

The Penutian language phylum was first posited by Dixon and Kroeber (1913) and further refined by Dixon and Kroeber (1919). The phylum originally included five language families: the 'Pen' languages of Wintuan, Yokuts, and Maidu, and the 'Uti' languages of Miwok and Ohlone (referred to by the now-deprecated term 'Costanoan', from the Spanish term *costeño* 'coast-dwellers'). Both 'Pen' and 'Uti' derive from their respective language groups' word for 'two' (in Nomlaki, *palel*). Dixon and Kroeber (1913) assume that the Penutian family originates from, and is entirely located within, California. This came to be called the 'California kernel' hypothesis. The California kernel would later be challenged by Sapir (1921), who to Penutian added languages of Oregon (Takelma, Coosan, Siuslawan, Alsea, and Kalapuyan), the high California/Oregon plateau (Sahaptian, Molala, Cayuse, and Klamath-Modoc), Chinookan, and Tsimshianic. This grouping is currently the most widely accepted. Mixe-Zoque and the Huave languages of Mexico, proposed by Sapir (1929), are sometimes also included. DeLancey and Golla (1997:184) suggest that the Penutian homeland is located in the lake country straddling southern Oregon and northwestern Nevada, dovetailing with Whistler (1977)'s proposal that Proto-Wintun originates in southern Oregon. It was in fact Whistler (1977) that played a key role in discrediting the 'California kernel' hypothesis.

The status of the Penutian phylum is contested. Although Dixon and Kroeber (1919:55–69) present a series of putative sound correspondences between the Penutian languages, some of which are indeed suggestive, no consistent sound laws have been discovered that would allow for conclusive subgroupings. Callaghan (1997) posits a Yok-Utian (Yokuts, Miwok, and Ohlone) subgrouping partially based on an analysis of Dixon and Kroeber (1913); however, the results are still not definitive. Most evidence for Penutian is grammatical and lexical, which is considered less ideal than the 'gold standard' of shared sound innovation.

The Penutian languages share several common typological features. Unusually for California languages, they participate in stem ablaut, and have limited prefixation, true case marking, overt expression of formal verb categories (such as tense, aspect, mood, and voice), and a true passive (Dixon and Kroeber 1919). These features struck Dixon and Kroeber (1913:650–652) as unusually Germanic, particularly in contrast with neighboring languages: 'The general evolution of Penutian seems to have been from complex to simple, as in Indo-Germanic, to which great family...it is, in the outlines of its plan of structure, remarkably analogous'. Sapir (1921:140) echoes these observations, stating that the Penutian languages 'present many analogies to the Indo-European languages' in their marking of formal grammatical category, stem ablaut, and nominal case. However, not all of the Penutian characteristics described above are thought by others to be evidence of a genetic relationship. DeLancey and Golla (1997) hypothesize that CV stem alternation and ablaut represent the only true features of Proto-Penutian.

Under the original criteria proposed by Dixon and Kroeber (1913) and Dixon and Kroeber (1919), documentation for Nomlaki shows evidence of limited prefixation, true case marking, and formal categories of verb marking. Quantitative ablaut and the existence of a passive suffix is not documented, though in DeLancey and Golla (1997) reports stem ablaut in Wintu,

and Pitkin (1984) reports a passive suffix . Nomlaki does not show extensive evidence for vowel quality or 'quantitative' ablaut (where stem-final vowels alternate in length); however, it is observed for Wintu (Pitkin 1984:72) and Patwin (Lawyer 2021:231).

1.4 History of documentation and nomenclature

The first Wintuan language to be documented was Patwin. In 1835 a small vocabulary was recorded by Spanish missionary Felipe Arroyo de la Cuesta at the Solano Mission, the northernmost of the Spanish missions in California. In 1841, Nomlaki was first documented by James Dwight Dana during the Wilkes Expedition, funded by United States Congress in order to survey the Pacific. Dana's vocabulary consisted of a short list of words with no language name given, collected 'at about two hundred and fifty miles above [the Sacramento River's] mouth'. The vocabulary was later reprinted in Hale (1846:630). Powers (1877:518) collected and reprinted a number of vocabularies collected in the following decades, including Johnston (1854), Bartlett (1849-1863) (likely the 1850s), and original documentation collected by Powers in Tehama in 1872. Possible other 19th-century Nomlaki sources are Curtin (1898) and Curtin (ND). These sources do not specify a particular language or elicitation location, making it difficult to distinguish whether the language in question is Wintu or Nomlaki. However, they are labelled as Nomlaki by the American Philosophical Society, where they are held.

The Nomlaki naming conventions in Powers (1877:518) are scattered, with Johnston (1854) and Bartlett (1849-1863) simply listing the location of elicitation. Powers (1877:518) records the language spoken at Tehama [County] as 'Wintun', while a vocabulary collected from 'Mrs. Van Tassel's scrap-book' lists a language called 'Nome-Lackee'. These presumably both refer to Nomlaki, which is centered in Tehama County. Powers (1877) is the first to formally distinguish the Northern Wintuan languages as 'Wintun' in contrast with southern 'Patwin.' Within 'Wintun', a distinction between Nomlaki and Wintu is not made. Powell (1891) uses the term 'Copehan' for the Wintuan family, after Latham, who based the name on an early Patwin vocabulary collected in the village of Copeh by George Gibbs in 1853 (reprinted in Powers 1877). Within the 'Copehan' family, Powell (1891:70) cites 'Nomlaki' as a Wintu tribe.

The bulk of Nomlaki documentation is from the 20th century. In *The Ethnography of the Pomo and Neighboring Indians*, Barrett (1908) refers to Nomlaki as 'Northerly dialect', presumably in relation to Patwin. Merriam (1919) records 'Nom'-lik-kah' or 'Nom'-lak-ke' in Upper Thomes Creek (near Paskenta) and Grindstone Creek. Gifford (1922) and Curtis (1924b) refer to the language as 'Central Wintun' in contrast to 'Northern Wintun' [Wintu] and Patwin. In the landmark *Handbook of Indians of California*, Kroeber (1925:353) identifies three Wintuan language areas, consisting of 'a central block in Tehama and Glenn Counties, and a northern and southern [language area] in the modern counties respectively on those sides.' The 'central block' is Nomlaki. Later, Kroeber (1932:355) refers to Nomlaki as 'Central or Proper Wintun', and the family as 'Wintun (or Copehan)'. The use of 'Wintun'

to denote either the language family or Nomlaki alone is a point of confusion throughout much of the Wintuan literature. Following Kroeber (1932), Kroeber and his students began referring to the family as 'Wintuan' (rather than 'Wintun'), with its the northern, central, and southern languages as 'Wintu', 'Nomlaki', and 'Patwin', respectively (Golla 2011:147). This terminology is generally (though not always) followed by later research.

19th century documentation tends to refer Wintu and Nomlaki collectively as 'Wintun' or 'Wintu,' with little (if any) distinction between them. 20th century documenters are more likely to observe a tripartite split between Wintu, Nomlaki, and Patwin, a distinction codified by Kroeber (1925). Most Nomlaki research in the mid-20th century follows the terminology established by Kroeber. Goldschmidt (1951b) refers to the language as 'Nomlaki' in the appropriately titled *Nomlaki Ethnography*. In 5.6 P6 (1953c), Swadesh refers to Nomlaki as 'Central Wintunian', while in 4.2 N2 (1953a) and N3 (1953b) he refers to the language as 'Nomlaki'. Pitkin (4.4 N4 1958; 4B 1956) consistently refers to the language as 'Nomlaki', as does Whistler (Whistler 1976; Whistler 1980) and Blankinship and Wenger (1978a). Later documentation, from the 1950s onward, tends to refer to the language as 'Nomlaki.' Additional information on the evolution of Wintuan nomenclature can be found in Golla (2011:147) and Whistler (1980:35).

In sum, the Nomlaki language has been referred to by a variety of names throughout its history of non-native documentation. This profusion is partially because Wintuan speaking groups' identities were based more closely on smaller, regional relationships. A secondary effect of this is that Wintuan speakers tended to refer to the peoples and languages around them by their direction relative to themselves: north-speakers, south-speakers, west-speakers ('Nomlaki'), east-speakers, and so on. This practice means that many different languages and dialects can be referred to by the same Nomlaki term, depending on where the speaker is relative to them.

1.5 Nomlaki dialects

The Nomlaki language is traditionally spoken in California's Tehama and Glenn Counties. It is divided into two geographic regions, called River and Hill Nomlaki. The River Nomlaki region is located directly along the Sacramento River, while Hill Nomlaki is located to the west, along several tributaries of the Sacramento. The subdivisions of River Nomlaki possibly constitute separate dialects, while Hill Nomlaki likely did not (Golla 2011:143).

Golla (2011) cites two subdialects of River Nomlaki: *Noymaq* (in the north, near Red Bluff) and *Puymaq* (in the south, including the village of Tehama). Hill Nomlaki subdivisions include the drainage areas of Red Bank Creek (west of Red Bluff), Elder Creek (west of Gerber), Thomes Creek (near Paskenta), and Grindstone Creek (west of Orland) Golla 2011:143. Synonymies for River and Hill Nomlaki and their subdialects are shown in Tables 1.1 and 1.2, respectively. These tables are reproduced from Whistler (1980:37).

All of the documentation in this grammar comes from Hill Nomlaki speakers. The only clear exceptions are Bartlett (1849-1863) (collected from 'Noema' a River Nomlaki location),

Whistler	Kroeber	Gold-schmidt	Merriam	Powers	Powell vocab-ularies
Nomlaki	Wintun	Nomlaki	Central Wintoon, Nomlakke	—	—
'River Wailaki', Noema	—	Mêmwailaka	Mem'-wi'-lakkah	—	'Sacramento R.', 'Noema, Wylacker'
Red Bluff	Dāmak	—	Dah'-muk (=No-e'-muk?)	—	—
Tehama	Tehêmet	Puimôk	Poo'-e-muk; Te-ha'-mah	Pu'-i-mok	'Tehama'

Table 1.1: River Nomlaki dialect synonymies, from Whistler (1980:37). Whistler's 'Powell vocabularies' appear to be Powers (1877), published by the U.S. Department of the Interior while Powell was in charge.

Whistler	Kroeber	Gold-schmidt	Merriam	Powers	Powell	Powell vocab-ularies
Hill Nom-laki	Hill Win-tun	Nomlaki	—	Noam'-lak-ki	Nom-laki	—
South Fork Cotton-wood Cr.	Chuidau	—	—	Num'-mok(?)	Num-mok	—
Redbank/ Elder Cr.	Wai-keweL	waikêwêl	Wi-e'-kir-ril	—	—	—
—	Walti-keweL	Wal-toikêwêl	—	—	—	—
Paskenta	Nom-keweL	Nomlaka, Nomleak'	Nom'-lak-ke; Nóm-lik-kah	—	—	Nome Lac-kee
Grindstone	Pom-tididi	Noi-kêwêɬ	Dah'-chin'-chin'-ne (Ñoi-'muk)	—	—	—
Elk Creek	Tolokai	Noikêwêɬ	Dah'-chin'-chin'-ne (Ñoi-'muk)	—	—	—
Stony Creek	Dahchím chini	Noikêwêl	Dah'-chin'-chin'-ne (Ñoi-'muk)	—	—	—

Table 1.2: Hill Nomlaki dialect synonymies, from Whistler (1980:38). Whistler's 'Powell vocabularies' appear to be Powers (1877), published by U.S. Department of the Interior while Powell was in charge.

and Curtin (ND), which is identified as River Nomlaki by heritage Nomlaki speaker Cody Pata due to the place names discussed. These sources are referenced here for the sake of completeness, but are not referenced in grammatical analysis.

1.6 Source orthographies

Several orthographic systems are used in the Nomlaki corpus, as expected from the century and a half the documentation spans. Tables 1.4 and 1.3 show rough equivalences between IPA and the orthographies of five sources: Hale, Powers, Merriam, Goldschmidt, Pitkin, and Swadesh. These are arranged chronologically from earliest to latest; in most cases they represent typical practice for the time. All sources but Pitkin and Swadesh include transcription keys in the original document. Even so, these keys are not arranged according to the standards of a modern phonetic alphabet. Most orthographic values are set based on comparisons to vowels in a reference word, usually from English. This presents some problems for establishing phonetic values, as the authors presuppose their own dialect (often unspecified) as a standard reference. Moreover, English phonetics is not unchanged from the times of these documents' writing. This can render remarks that *what* and *not* contain the same vowel (Hale 1846), or that the vowel in *home* is 'pronounced as it is in the northern States' (Gibbs 1863) uncertain or opaque. My own English dialect (from central Florida) includes the *cot-caught* and *father-bother* mergers: for me, *part* and *hall* (Hale 1846), as well as *moss* (Goldschmidt 1951), all contain the low back unrounded [ɑ]. In reconstructing the phonetic values of the symbols in these documents, I assume an unmerged variant when possible, but it is not always perfectly clear what the intended vowel is.

The earliest Nomlaki documentation, recorded by James Dwight Dana in 1841, was reprinted in Hale (1846) using an orthography based on Pickering (1820). This system was intended to create a one-to-one correspondence between symbol and sound, readable by most speakers of European languages. Phonetic values are set by analogy to English words (or some other Western European language assumed to be familiar to the educated reader). 'Vowel length' is distinguished using a macron or circumflex, indicating 'long' or 'short' vowels respectively. However, based on the example words for these 'long' and 'short' vowels, these are foremost distinctions of quality. True length distinctions, unassociated with changes in vowel quality, do not appear to be marked (Hale 1846:ix, Pickering 1820:11). The vocabularies in Powers (1877:518) (including Johnston 1854 and Bartlett 1849-1863) are written using the Smithsonian alphabet, which is based on Gibbs (1863). This system agrees in most points with Hale (1846), including separating vowels into 'long' (generally tense) and 'short' (generally lax) vowels. In the Smithsonian alphabet, vowel 'length', i.e. quality, can also be marked by syllable structure; closed CVC syllables contain a 'short' vowel, while CV syllables contain 'long' vowels (Gibbs 1863:17). In both systems, aspirated and ejective consonants, as well as glottal stops, are not marked.

Merriam (1919:4) uses an idiosyncratic transcription system based on 'simple phonetic English'. In several cases, single graphemes represent what are phonetically diphthongs, such

as <ā> for /eɪ/ in 'acorn', <ī> for /aɪ/ in 'ice', and <ō> for /oʊ/ in 'note.' In the case of <ā> for /eɪ/ and <ō> for /oʊ/, this may be an attempt to represent the first vowel segment of each respective diphthong, which is not present monophthongally in American English. Aspiration is not marked systematically. <k> is presented as the first sound in *king*, which is phonetically aspirated; it is likely that <p> and <t> follow the same pattern.

Like Hale, Powers, and Merriam, Goldschmidt (1951b) distinguishes vowels primarily as tense/lax. Lax vowels are marked with a circumflex. '[Slight] aspiration' and ejective status ('exploded sound[s]') are also marked. Pitkin and Swadesh follow a generally Americanist program, with some differences. Long vowels, aspiration, and ejectives are systematically marked, as well as lateral fricatives and affricates. Their differences in transcription style are minor, and mostly a matter of form rather than content. Though not discussed in detail here, Whistler and Swayer also follow an Americanist style generally in line with Pitkin and Swadesh.

Transcription quality varies between sources. Pitkin, Swadesh, Sawyer, and Whistler are of the best phonetic quality, though Swadesh consistently transcribes voiced stops /b/ and /d/ as voiceless stops /p/ and /t/. Blankinship and Wenger (1978a) is also generally reliable, though vowel quality/length (conflated in their orthography) is not always consistent. The very earliest sources (Hale 1846; Powers 1877) are less reliable, particularly when transcribing non-English sounds. Merriam's documentation is noted for generally poor phonetic quality: he often conflates separate phones into a single symbol, represents a single phone as multiple symbols, or simply miscategorizes the nature of the phone in question. The poor phonetic quality of Merriam's notes is perhaps unsurprising, as Merriam believed that all languages could be represented using English spelling, a decision which appears to be coupled with less phonetic sensitivity than trained linguists (Anderton 1988).

These attempts to map the transcription systems of past documenters to the phonetic values represented in the IPA, as seen in Tables 1.4 and 1.3, are not intended to completely replace the original orthographies. Rather, they are intended as a reference orient the reader to general phonetic forms. As Goddard (1973) notes, it is often typical practice for Americanists to 'update' older orthographies into a more familiar, standardized system like the IPA without any deeper engagement with the original transcription. Under this line of thinking, phonetically inadequate transcriptions are regarded as useless. This is an oversight, because mapping one orthography to another is not simply a mathematical operation. Especially for older orthographies based on a sound's similarity to a referent word rather than articulatory phonetic principles, the letter chosen to represent a given sound represents a kind of perceptual prototype. Similarities between this prototype and the Nomlaki sound in question are themselves phonetically informative. Moreover, some ambiguity and uncertainty is inherent to a transcription's limitations. These cannot be solved by mapping one orthography to another. For these reasons, this grammar presents examples in their original orthographies, and presents this section as a guide map for interpreting them. Audio data is the primary source of information for phonetic analysis, where examples are transcribed in standard IPA.

IPA	Hale	Powers	Merriam	Goldschmidt	Pitkin
/i/	ī ‘machine’	ī ‘marine’	ē, e ‘eject’	i ‘meat’	
/ɪ/	ĭ ‘pin’	ĭ ‘pin’	ĭ ‘pin’	ĭ ‘mit’	i
/i:/					ii (S), i: (P)
/e/	ē ‘mate’	ē‘they’		e French ‘tête‘	
/ɛ/	ĕ ‘met’	ĕ ‘met’	ĕ ‘end’	ĕ ‘met’	e
/ɜ/	ŭ‘murmur’				
/e:/					ee (S), e: (P)
/eɪ/			ā ‘acorn’		
/ɑ/	ā ‘part’	ā ‘father’	ah ‘father’		a
/ɒ/	ă ‘what’, ‘not’				
/a/		ā German ‘hat’		a German ‘mann’	
/æ/	ă ‘pat’	ă ‘fat’	ă ‘fat’		
/ə/		ă	û[2] ‘neutral vowel’		ə(P)
/a:/					aa (S), a: (P)
/ai/	ai ‘pine’	ai ‘aisle’	ī, i ‘ice’		ay
/au/	au ‘loud’	au ‘loud’	ow ‘plow’		aw
/o/	ō ‘note’	ō ‘go’	ō, o ‘note’	o ‘moat’	o
/o?/		ŏ ‘home’[3]			
/ɔ/	ŏ Fr. ‘note’, ā ‘hall’?		ŏ ‘frog’	o ‘moss’	ɔ(P)
/o:/					oo (S), o: (P)
/oi/			oi ‘boil’		oy
/u/	ū ‘pool’	ū ‘rule’	oo ‘ooze’	u ‘moot’	u (S)
/ʊ/	ŭ ‘pull’	ŭ ‘full’			
/ʌ/	ŏ ‘mutter’	u ‘but’	ŭ ‘tub’		ʌ(P)
/u:/					uu (S), u: (P)

Table 1.3: Orthography used for vowels by Hale, Powers, Merriam, Goldschmidt, Pitkin, and Swadesh. Symbols marked (S) or (P) represent particular usages of Swadesh and Pitkin, respectively.

IPA	Hale	Powers	Merriam	Goldschmidt	Pitkin
/p/	p ‘usual sound’		p ‘pin’	p	p
/p^h/		p ‘pipe’		’[4]	ph (S), p^h (P)
/p’/			p’[5]	p’[6]	p’
/b/	b ‘usual sound’	b ‘blab’		b	b
Continued on next page					

[2]‘[A] somewhat uncertain or obscure vowel sound, as in *but* and *sun*, known as the ‘neutral vowel’. I would transcribe the vowel in *but* and *sun* as /ʌ/, as the schwa cannot be in unstressed position. However, Merriam’s use of the term ‘neutral vowel’ seems to imply a schwa-like sound.

[3]‘[A]s generally pronounced in the Northern States’. This reference is not clear to me.

[4]’ indicates slight aspiration.

[5]‘ in apostrophe at either end of the syllable indicates an exploded sound.’

[6]‘[I]ndicates glottal stop’.

Table 1.4 – continued from previous page

IPA	Hale	Powers	Merriam	Goldschmidt	Pitkin
/t/	t 'usual sound'			t	t
/t^h/		t 'tight'			th (S), t^h (P)
/t'/			t'	t'	t'
/d/	d 'usual sound'	d 'did'		d	d
/k/	k 'usual sound'			k	k
/k^h/		k 'kick'	k 'king'		kh (S), k^h (P)
/k'/			k'	k'	k'
/q/	q 'very harsh gutteral'			q	q
/q^h/					qh (S), q^h (P)
/q'/			q'	q'	q'
/ʔ/				'	'
/tʃ/	Tç 'church'	ch 'church'	ch, tch 'church'	tc 'chat'	c
/tʃ'/			tch'	tc'	ć'
/tɬ'/	Tχl'?	tɬ'?	'kl, 'hsl		T' (S), λ' (P)
/s/	s 'usual sound'	s 'sauce'	s 'see'	s	s
/ʃ/*	ç 'shine'	sh 'shoe'		c 'sure'	
/x/	χ Span. <j>	kh German 'buch'	ch German 'ach'	x	x
/χ/					
/h/	h 'usual sound'	h 'how'		h	
/l/	l 'usual sound'	l 'lull'		l	l
/ɬ/	(T)χl'?[7]			ɬ'surd l'	ɬ
/m/	m 'usual sound'	m 'mimic'		m	m
/n/	n 'usual sound'	n 'noon'		n	n
/w/	w 'usual sound'	w 'wayward'		w	w
/j/	y 'usual sound'	y 'year'		y	y

Table 1.4: Orthography used for consonants by Hale, Powers, Merriam, Goldschmidt, Pitkin, and Swadesh. Symbols marked (S) or (P) represent particular usages of Swadesh and Pitkin, respectively.

1.7 Nomlaki bibliography & finding guide

The sources used in this grammar were those known and accessible to me at the time of writing. Two audio sources are known: Freeman (1953) and Simmons (1975). Freeman (1953) is approximately 20 minutes long (the full 60-minute recording was discovered after the bulk of phonetic analysis was completed), while Simmons (1975) is around five minutes long. As the 20-minute Freeman recording contains considerably more audio than the former, only Freeman (1953) is used here for phonetic study (for analysis, see Chapter 2). The majority of text sources come from the Nomlaki materials Pitkin (1884-1968) (henceforth cited as Pitkin Papers), archived by the American Philosophical Society. These papers represent

[7] '*tl* pronounced in the side of the mouth, with a strong impulsion of breath.'

a trove of notebooks, slip files, vocabularies, texts, correspondences, and other documents collected over Pitkin's lifetime. In total, the Pitkin Papers span more than a hundred years of work, from early American contact with Nomlaki in the mid-nineteenth century to research with some of the last first-language speakers in the mid-twentieth. The Nomlaki materials within the Pitkin Papers consist of vocabularies, field notes, and grammar sketches. Table 1.5 indicates all Nomlaki sources known to me, presented in chronological order.

Most Nomlaki sources cited in Table 1.5 are vocabulary lists; most are short, numbering only a few hundred words. These lists frequently contain the same basic domains, such as common plants, animals, natural phenomena, kinship, and tools. This means that a given vocabulary list often does not include many unique vocabulary items, and is less informative than it might otherwise be given its length. By far the most useful (and cited) text sources in this grammar are 5.6 P6 (1953c) and 4.4 N4 (1958), followed by 4.2 N2 (1953a), 4B (1956), 4.1 N1 (1951a), and N3 (1953b). These sources are the only ones which document a variety of sentence types, and are additionally of good phonetic quality. Even so, these field notes are only preliminary fieldwork, and many morphological and syntactic elements appear in them only incidentally.

Table 1.5: Known Nomlaki sources, including text and audio data. Sources are arranged in chronological order. Speakers' names (or nicknames) are presented exactly as they are recorded; 'Called' refers to what Nomlaki is referred to in the text.

Author	**Source**	**Speaker(s)**	**Called**	**Location**	**Notes**
Pitkin Comparative Wintun (ND[a])			Nomlaki		Word lists comparing California and Oregonian languages hypothesized to be Penutian.
Pitkin Proto-Wintun (ND[b])			W(N)		Includes correspondences between sounds in Wintu, Nomlaki, and Patwin.
Curtin (ND)	3.1 (W1)		'Creation myths...' [sic]		Word list from creation story. Likely Wintu, but filed by APS as possibly Nomlaki.
Curtin (ND)	3.3 (W1)		'Nomloki (probably)' [sic]		Word list possibly from River Nomlaki.

Continued on next page

Table 1.5 – continued from previous page

Source	Pages	Speaker(s)	Called	Location	Notes
Johnston (1854)	pp. 414–415			Upper Sacramento	Basic vocabulary and some sentences; collected 1850.
Powers (1877)	pp. 518–534	Shasta Frank	Win-tūn	Tehama Co., CA	Basic vocabulary; collected 1872 by Stephen Powers. Smithsonian alphabet.
Powers (1877)	pp. 518–534		Noema, Wylacker	between the Sacramento River and Clear Lake	Basic vocabulary; collected by J. R. Bartlett, from H. B. Brown. Original orthography.
Powers (1877)	pp. 518–534		Tehama	Tehama Co., CA?	Basic vocabulary; collected by J. R. Bartlett, from H. B. Brown. Original orthography.
Powers (1877)	pp. 518–534		Nome Lackee		Basic vocabulary; copied by Mr. Israel S. Diehl from Mrs. Van Tassel's scrap-book. Original orthography.
Barrett (1908)	pp. 81–87, 109–111, 284–300		Northerly dialect (Wintun)[8]		Vocabulary template over diverse semantic domains; alphabet on p. 51.
Merriam (1919)	Reel 56, pp. 1–29		Nō'm'-lik-kah	Grindstone Creek, Tehama Co., CA	Vocabulary template over diverse semantic domains. English-based orthography.
Merriam (1919)	Reel 56, pp. 35–63		Nō'm'-lik-kah	Upper Thoms Creek, Tehama Co., CA	Vocabulary template over diverse semantic domains. English-based orthography.

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[8]Barrett leaves a footnote stating that the 'Northerly dialect' is the same as the 'central dialect' of Kroeber (1906); i.e. Nomlaki.

Table 1.5 – continued from previous page

Source	Pages	Speaker(s)	Called	Location	Notes
Merriam (1919)	Reel 56, pp. 65–141	Dominic Hastings (Ō'l-we'-te-le), old Pete, old Ellen, Johnny Martin and wife	Nōm-lak'-ke, Nō'm'-lik-kah Wintoon	Upper Thoms Creek near Paskenta (Tehama Co., CA)	Vocabulary template over diverse semantic domains. Collected at the speakers' rancheria three miles above Paskenta. English-based orthography.
Gifford (1922)	pp. 41–43	Dixie Edsall, James McGettric, Mrs. Cecil Poe	Central Wintun	Round Valley, Mendocino County	Extensive kinship terms, geneological notation key on p. 14.
Curtis (1924b)	pp. 73–96, 189–192, 220–229		Central Wintun	Paskenta, Tehema Co., CA	Basic vocabulary; alphabet on p. ix.
Kroeber (1932)	pp. 355–364	Dominic (Grindstone), Thomas Bailey (Paskenta)	Central or Proper Wintun		Vocabulary interspersed in ethnography. Alphabet on p. 256.
Freeman (1953)	Audio	Andrew Freeman	Nomlaki	Gerber, CA	1-hr long recording generally matching text in 5.6 P6 (1953c).
Halpern (1936)		Andrew Freeman, Rebecca 'Becky' Freeman	Nomlaki	Butte City, CA	Basic vocabulary and sentences. Erroneously labelled 'Patwin'.
5.6 P6 (1953c)	5.6 P6	Likely same as 4.2 N2 (1953a)	Central [Wintunian]	Likely same as 4.2 N2 (1953a)	50-page elicitation of vocabulary and basic sentences.
4.2 N2 (1953a)	4.2 N2	Andrew Freeman, Jeff Jones, Ann Raglin	Wintunian	Gerber, CA?	200-word list, copied from unpublished field notes (likely 4.2 N2 1953) and given to Pitkin.
N3 (1953b)	MS No. 6 N3	Andrew Freeman, Jeff Jones, Ann Raglin	Central (Nomlaki)	Likely same as 4.2 N2 (1953a)	Approx. 160 slip files containing basic sentences.

Continued on next page

Table 1.5 – continued from previous page

Source	Pages	Speaker(s)	Called	Location	Notes
4B (1956)	4-B: Nomlaki: N4, pp. 5–14	Maude Garcia	Nomlaki	Vina, CA	Template for numerals, kinship, plants, animals, food, materials, etc. and basic sentences.
4B (1956)	4-B: Nomlaki: N4, pp. 15–24	Ann(a) Raglin	Paskenta Nomlaqa	Gerber, CA	Template for numerals, kinship, plants, animals, food, materials, etc. and basic sentences.
4B (1956)	4-B: Nomlaki: N4, pp. 43–51	Joe Freeman	Nomelaki	Gerber, CA	Basic word list, elicited in English alphabetical order.
4B (1956)	4-B: Nomlaki: N4, p. 51	John Jordan	Nomlaki	Paskenta?	List of only 11 words.
4.4 N4 (1958)	MS No. 7 N4	Maude Garcia, Ann Raglin	Nomlaki	Paskenta (dialect)	Approx. 160 slip notes containing basic sentences.
Pitkin Proto-Wintun (ND[b])	2.2.5		Nomelaki	Tehama Co., CA	Comparative vocabulary across Wintu, Nomlaki, and Patwin.
Pitkin and Shipley (1958)			Wintun		Comparative vocabulary across Wintun, Maidun, Yokutsan, Miwokan and Costanoan.
Pitkin (1963)		James McGentric	Nomelaki		Includes correspondences between sounds in Nomlaki, Wintu, Patwin, Maidu, Yokuts, and Lake Miwok.

Continued on next page

Table 1.5 – continued from previous page

Source	Pages	Speaker(s)	Called	Location	Notes
Sawyer (1972-1975)		Sylvester Simmons	Nomlaki		Includes phonemic inventory, basic sentences, and correspondence notes with Victor Golla.
Simmons (1975)	Audio	Sylvester Simmons	Nomlaki	Paskenta	Approx. 5 minutes of audio, generally matching text of Whistler (1976).
Whistler (1976)	pp. 111–114	Joe Freeman	Nomlaki	Paskenta	Basic vocabulary and some sentences.
Blankinship and Wenger (1978a)		Wallace Burrows	Nomlaki	Grindstone	Tribal textbook written with some of the last first-language speakers; intended for tribe-internal language teaching.

Of course, none of this research would be possible without the speakers of Nomlaki who gave their time and their knowledge to the sources in Table 1.5. Too often, they are not named. Those who are named are listed below in Table 1.6, along with any available biographical information present in the notes. In addition to the consultants directly named in the sources, 4B (1956) also lists several Nomlaki speakers (or people who knew Nomlaki speakers) who may or may not have been consulted for Pitkin's notes. These include Ben L. Reames (Oroville), the Keluche family (Red Bluff), Leonard Daniels(on) [sic] (Red Bluff), Leroy Raglin (Gerber), Lyle Williams (Red Bluff), Walter Philpot's father (Red Bluff), Don Smith (Red Bluff), Wallace Burrows (Grindstone; consultant for Blankinship and Wenger 1978), and Mrs. Henthorn (Grindstone).

Table 1.6: Nomlaki speakers who contributed to the sources used in this grammar. This list is presented alphabetically and is not exhaustive, as many sources do not record which speaker(s) contrfibuted their knowledge. 'DOB' refers to date of birth, 'Age' refers to age at the time of recording, and 'Location' refers to location of recording.

Name	DOB	Age	Location	Source(s)
Thomas Bailey			Grindstone	Kroeber (1932)
Continued on next page				

Table 1.6 – continued from previous page

Name	DOB	Age	Location	Source(s)
Wallace Burrows			Round Valley	Blankinship and Wenger (1978a)
Dominic	ca. 1846	86	Paskenta	Kroeber (1932)
Dixie Edsall				Gifford (1922)
Albert Franks			Red Bluff	4B (1956)
Shasta Frank				Powers (1877)
Andrew Freeman	1870	83	Gerber	Freeman (1953), 4.2 N2 (1953a), 5.6 P6 (1953c)
Joe Freeman			Gerber	4B (1956), Halpern (1936)
Rebecca 'Becky' Freeman			Gerber	4B (1956), Halpern (1936)
Maude Garcia	1906	50–52		4.4 N4 (1958), 4B (1956)
Jeff Jones	1865	88	Gerber	4.2 N2 (1953a), 5.6 P6 (1953c)
John Jordan	1861	96	Paskenta	4B (1956)
James McGettric				Gifford (1922), Pitkin (1963)
Mrs. Cecil Poe				Gifford (1922)
Ann Raglin	1878	78+	Paskenta	4.4 N4 (1958), 4B (1956), 4.2 N2 (1953a), 5.6 P6 (1953c)
Deck Raglin			Gerber	4B (1956)
Ellen Raglin			Gerber	4.4 N4 (1958), 4B (1956)
Sylvester Simmons				Sawyer (1972-1975), Simmons (1975)
Wm. Dock			Colusa	5.6 P6 (1953c)
Willie Wiley			Colusa	5.6 P6 (1953c)
Fred Gonsalez			Colusa	5.6 P6 (1953c)

The rest of this section provides further information on the sources (and associated researchers) consulted for this grammar. These sources are presented in chronological order. Much information about these documents' origins is furnished by the APS notes included in the front matter of the Pitkin Papers.

Horatio Hale, b. 1817 (Hale 1846): Horatio Hale began his studies at Harvard in 1833, where he specialized in ethnology. In 1846, US Congress commissioned an expedition to the Pacific, called the Wilkes Expedition, intended to explore large areas of South America

and Oceania. Hale was brought along to collect ethnological and linguistic data. During this expedition, Hale amassed large and varied ethnolinguistic notes for native groups throughout the Pacific coast, including the American northwest (Gruber 1967). From the Wilkes Expedition, Hale published about 25 words 'of the language spoken by the Indians of that river [the Sacramento], about two hundred and fifty miles above its mouth.' However, 'the name of the tribe was not ascertained' (Hale 1846:630). Based on this description, this vocabulary is likely Nomlaki, or an intermediate variety within the Wintu/Nomlaki continuum. The language is classified as 'Nomlaki' by the APS Pitkin Papers. This short vocabulary includes of terms for body parts, animals, common nouns, and basic verbs.

Stephen Powers, b. 1840 (Powers 1877): Stephen Powers was born in Waterford, Ohio and graduated from the University of Michigan in 1863. From 1869-1874, Powers wandered on foot across California, where he amassed a large amount of cultural and linguistic data on the native Californians he encountered. Powers' predecessors consisted largely of travellers, missionaries, government officials, and other non-specialists whose notes often did not systematically distinguish the native groups they documented. Powers' central contribution, despite lacking training in ethnography, anthropology, or linguistics, was in paying close attention to the location of various tribes, and making an effort to group them linguistically (Park 1975). The results of these efforts is *Tribes of California* (Powers 1877). This work contains comparative vocabularies for multiple Nomlaki, Wintu, and Patwin-speaking groups. These vocabularies include reprints of previously collected word lists, as well as some original vocabularies collected by Powers. Reprinted Nomlaki data includes Johnston (1854), collected in the upper Sacramento 'near Mag. Readings'; two vocabularies in Bartlett (1849-1863) collected 'between the Sacramento River and Clear Lake, California' as well as from an unknown location; and a vocabulary copied by Israel S. Diehl 'from Mrs. Van Tassel's scrapbook', of the 'Nome-Lackee' language.

Jerimah Curtin, b. 1835 (Curtin ND; Curtin 1898): Jeremiah Curtin was born in Greenfield, Wisconsin and received a bachelor's degree from Harvard in 1863. He was employed in 1883 by the Bureau of American Ethnology, where he recorded the unpublished manuscripts cited here (Curtin and Curtin 1940). Curtin (1898) consists of a word list culled from an elicited creation story text. The APS notes that the word list 'conforms to a Northern Wintuan model as far as phonology and morphology indicate'. This source is included for the sake of completion, but is not heavily referenced in this grammar. Curtin likewise does not specify the language or exact location of Curtin (ND). The APS assumes it to be Nomlaki based on the geographic names under consideration, though vocabulary such as *sas* 'day, sun' is more suggestive of Wintu (in Nomlaki: *holol* 'day, sun'). This source includes place names and times of day.

Samuel A. Barrett, b. 1879 (Barrett 1908): Samuel Alfred Barrett was born in Conway, Arkansas and later moved with his family to California. Barrett received a PhD in anthropology from UC Berkeley in 1908, with a dissertation entitled *Pomo Indian Basketry*. Barrett spent the majority of his career as Curator of Anthropology and later director for the Milwaukee Public Museum, and later as Research Associate of the UC Berkeley Museum of Anthropology (currently the Phoebe A. Hearst Museum of Anthropology.) From 1953-

1957, Barrett worked with Alfred Kroeber to document many California groups, including Nomlaki (Peri and Wharton 1965). Barrett (1908) focuses primarily on Patwin ethnology and anthropology, but includes some words from neighboring languages, including Nomlaki (listed as 'Northerly dialect'). This description is atypical, as Nomlaki is more commonly referred to as 'central' Wintun. This document consists of a hundred of so lexical items, covering common semantic areas such as body parts, daily tools, geographic features, animals, plants, and numbers.

C. Hart Merriam, b. 1855 (Merriam 1919): Primarily a naturalist, Clinton Hart Merriam first became acquainted with speakers of indigenous American languages on field expeditions, where he relied on their local knowledge to help him find plant and animal specimens. Merriam later devoted many years to studying native California groups. To this end, Merriam collected many vocabulary lists (often from standardized templates) as well as the names and locations of tribal sites (Golla 2011). Self-taught, Merriam functioned largely outside of the linguistic establishment. He is noted for believing that all languages could be represented using English orthography, to poor phonetic results (Anderton 1988). Merriam recorded several notebooks of Nomlaki field notes, now digitally accessible as scanned microfilm reels (Merriam 1919). Nomlaki vocabulary lists were collected for 'Nom'-lik-kah or Nom'-lak-ke', as it was spoken in 'Upper Thom[e]s Creek (near Paskenta), Tehama County, [and] Grindstone Creek.' The vocabulary templates Merriam used are extensive, but not always fully filled out. As Merriam was primarily a naturalist, much space is devoted for plant and animal terms. Other domains like natural phenomena, tools, kinship, emotions, clothing, and numbers are also included.

Edward Gifford, b. 1887 (Gifford 1922): Edward Gifford achieved full professorship at Berkeley despite having never attended college. He served for several decades as director of the UC Berkeley Museum of Anthropology, currently the Phoebe A. Hearst Museum of Anthropology (Heizer 1959). Gifford's work spanned a variety of topics, including ethnology, anthropology, and mythology, with much of it centered in native California. Gifford (1922:97–98) contains extensive kinship terminology for Nomlaki, where it is called 'Central Wintun'. These terms were collected at the Round Valley Reservation in Mendicino County, by speakers of the Paskenta (Tehama County) variety of Nomlaki. The speakers are identified as Dixie Edsall, James McGettric, and Mrs. Cecil Poe (Gifford 1922:13).

Edward S. Curtis, b. 1868 (Curtis 1924): Edward S. Curtis was a photographer and ethnologist. Commissioned by J. P. Morgan to photograph the so-called 'vanishing' life of indigenous North Americans, Curtis' resulting 20-volume work entitled *The North American Indian* consists of photographs, vocabularies, and wax-cylinder recordings extensively documenting the cultural life of many North American native groups (Curtis 1924). Nomlaki data included in Volume 14 of this work include a few hundred words spanning body parts, animals, plants, tools, clothing, natural features, and numbers. Curtis describes the territory of the 'Central Wintun' as spanning Tehama and Glenn Counties, on Elder, T[h]om[es], Grindstone, Elk, and Stony Creeks. Curtis observes that these speakers referred to themselves as '*nai-mak*' (translated by Curtis as 'south belong', but more correctly as 'southern people'), while those to their east referred to them as '*Nóm leka*' ('west language')

(Curtis 1924:75).

Alfred Kroeber, b. 1876 (Kroeber 1932): Alfred Kroeber was born in New Jersey to a German-American family, and grew up in New York City. He received his PhD in anthropology in 1901 from Columbia University, where he was Franz Boas' student. Shortly thereafter, Kroeber was appointed a member of the anthropology department at UC Berkeley. Boas emphasized detailed linguistic documentation, typically through the elicitation of long texts, which Kroeber continued to do throughout his research career (Golla 2011; Garrett 2023). Kroeber's importance to California linguistics is hard to overstate. Kroeber, along with Roland Dixon, first hypothesized the Penutian language phylum (Dixon and Kroeber 1913; Dixon and Kroeber 1919). Among Kroeber's California works is *The Patwin and Their Neighbors* (Kroeber 1932), which focuses largely on ethnography. Like Goldschmidt (1951b), Nomlaki vocabulary is interspersed throughout the text, but linguistics is not its main concern. The Nomlaki vocabularies were attributed to 'the Central or proper Wintun', who occupied the area east of the Coast Ranges north of Patwin territory until the fork of Cottonwood Creek (Kroeber 1932:355). The included Nomlaki words amount to some tens of items pertaining largely to cultural practices.

Abraham Halpern, b. 1914 (Halpern 1936): Halpern began graduate studies at UC Berkeley under Kroeber. At Kroeber's suggestion, Halpern finished his PhD studies at the University of Chicago, where he studied under one of Sapir's students. Because of this, Halpern was among the first linguists to be trained under Sapir's program of American structuralism. Halpern was also among the first crop of researchers to study indigenous California languages as a linguist, rather than as an anthropologist (Golla 2011). In California, Halpern largely studied Pomoan and Yuman languages. However, several notebooks containing Wintu field notes were produced in the 1930s, where they are archived by the California Language Archive at UC Berkeley. Among these is a notebook labelled 'Patwin' (Halpern 1936); however, this notebook appears to be Nomlaki, as it features Nomlaki speakers Becky and Joe Freeman (of the Freeman family also featured in Freeman 1953). The elicitation location is listed as 'Butte City, Glenn County, California'. This notebook consists largely of vocabulary, with some simple sentence elicitation. The vocabulary is typical of the sources cited for this grammar, and includes words for body parts, natural features and phenomena, kinship terms, numerals, temporal adverbs, verbs. Basic sentences include some simple declaratives and interrogatives.

Walter Goldschmidt, b. 1913 (Goldschmidt 1951; 4.1 N1 1951): Walter Goldschmidt was born to a German-American family in San Antonio, Texas. This German background, in Goldschmidt's words, made him 'remarkably pre-adapted to the Boasian frame of reference that was gaining ascendancy in academia and dominated the anthropology of [his] era' (Goldschmidt 2001). Goldschmidt earned a PhD in anthropology from UC Berkeley in 1942. His first anthropology textbook was Kroeber's *Anthropology*, which Goldschmidt notes was 'the standard and virtually the only one available at the time' (Goldschmidt 2001). Goldschmidt's *Nomlaki Ethnography* contains some elements of language in the course of describing Nomlaki cultural life (Goldschmidt 2001). The primary consultants used for this work were Jeff Jones and Andrew Freeman, and the traditional Nomlaki lands described are

those east of the Coast Range between Stony and Cottonwood Creek. The Nomlaki terms collected pertain to ethnographic domains; they are overwhelmingly single lexical items. The Nomlaki words used throughout the ethnography are gathered together in 4.1 N1 (1951a).

Morris Swadesh, b. 1901 (5.6 P6 1953; 4.2 N2 1953; N3 1953; Freeman 1953): Morris Swadesh was born in Holyoake, Massachusetts. He earned his PhD in linguistics from Yale in 1933. At the University of Chicago, Swadesh was taught by both Sapir and Bloomfield, which strongly oriented Swadesh's work towards structuralism. Swadesh's materials are the single largest source of data for this grammar. This is largely because, in addition to eliciting (as might be expected) Swadesh-list type vocabulary, Swadesh is one of the few documenters who records a large number of sentences. Swadesh's interest in California linguistic relationships is reflected in the general content of both his audio and text data, which were collected as part of a Penutian vocabulary survey (Swadesh 1954). 5.6 P6 (1953c) appears to be the text elicitation upon which the audio recording of Freeman (1953) was based. Only 20 minutes of Freeman (1953) were available at the time of my writing this grammar, though Swadesh (1954) mentions recording an hour: the remaining 40 minutes were recently found and shared with me. In addition to 5.6 P6 (1953c) and Freeman (1953), 4.2 N2 (1953a) is a 200-word list also recorded as part of the same language survey. Consultants are listed as Jeff Jones, Andrew Freeman, and Anne Raglin. N3 (1953b) consists of several hundred slip files containing full sentences.

Harvey Pitkin, b. 1884 (Pitkin Comparative Wintun ND; Pitkin Proto-Wintun ND; 4.4 N4 1958; 4B 1956; Pitkin and Shipley 1958; Pitkin 1963): Harvey Pitkin was a Wintuan scholar who authored the only grammar (Pitkin 1984) and one of only two dictionaries (Pitkin 1985) of Wintu. Both of these sources are used extensively in this grammar for comparative purposes. He received his PhD in linguistics from UC Berkeley in 1963, with a dissertation that would serve as the core of *Wintu Grammar* (Pitkin 1984). Pitkin spent most of his career at Columbia University. I extensively use 4.4 N4 (1958) and 4B (1956) in this grammar, which include vocabulary lists spanning multiple domains, as well as slip files documenting sentences. These field notes were collected in collaboration with speakers Maude Garcia and Anne Raglin, who spoke the Paskenta Nomlaki dialect. Minor Pitkin sources include Pitkin Comparative Wintun (ND[a]), Pitkin Proto-Wintun (ND[b]), Pitkin and Shipley (1958), and Pitkin (1963). Pitkin (1963) was conducted for a Penutian dialect survey, though only the first portion (numerals) is filled out. The Nomlaki (labelled 'Wintun') sheet was filled out in collaboration with James McGentric on January 12, 1963.

Jesse O. Sawyer, b. 1918 (Sawyer 1972-1975; Simmons 1975): Jesse O. Sawyer's California work includes research in Yukian, Wappo, Marin Miwok, and Nomlaki. Sawyer (1972-1975) contains notes on Nomlaki phonetics and phonology, including a phonemic inventory and initial impressions on stress. These notes were produced with Nomlaki speaker Sylvester Simmons. The bulk of the notes consist of an elicitation list of mixed vocabulary and basic declarative and interrogative sentences. Semantic domains are typical, and include basic verbs, natural phenomena, animals, plants, and clothing items. This list contains an audio counterpart, recorded as Simmons (1975). This audio recording is not used in this grammar: as it is only a quarter of the length of Freeman (1953) (which is already slight), I

did not think its inclusion worth the effort needed to speaker-normalize the two recordings.

Bernice Blankenship and Pat Wenger (Blankinship and Wenger 1978): *Learning to Talk Nomlaki* (Blankinship and Wenger 1978) is a tribe-internal textbook developed by the Covelo Indian Community Council of the Round Valley Reservation, in Mendocino County, California. This textbook was developed with some of the last first-language speakers of the language, including Wallace Burrows. As the description implies, this source was developed primarily to assist community members in learning the language, rather than as a theoretically oriented text. Blankinship and Wenger (1978a) is divided into sections detailing phonemic inventory, basic syntax, nouns, and verbs. A Nomlaki-English dictionary is also included. This source provides the largest corpus of basic sentences, though they lack much of the morphology present in other sources. This resource serves as the sole source for several morphemes, such as the directional hortative *-du* and the dual hortative *-wen* (see Chapter 4).

Kenneth Whistler (Whistler 1976): Kenneth Whistler received a PhD in linguistics from UC Berkeley in 1980 with a dissertation entitled *Proto-Wintun Kin Classification: A Case Study in Reconstruction of a Complex Semantic System* (Whistler 1980). A portion of Whistler (1976) contains Nomlaki data, recorded with Andrew Freeman as the consultant. These notes consist of a few tens of Nomlaki words covering common topics, such as body parts and animals. The notebook notes that Whistler recorded Andrew Freeman for half an hour, but this recording was not available to me at the time of writing this grammar.

1.8 Strategies for low-resource grammar writing

A 'low-resource' language is one which lacks sufficient documentation for a robust coverage of the phenomena covered in a typical reference grammar. Writing such a grammar presents unique challenges, more so when the language is also archival. Scarcer resources often prevent the use of standard field techniques, and require the documenter to tolerate higher levels of uncertainty. Many of the clearest examples of low-resource grammars are written for archival languages like Nomlaki. Because in these cases the target language is no longer spoken, new materials cannot be produced to cover research gaps. Rather, the grammar must use already existing materials, which were recorded by other researchers for other purposes.

Under the auspices of Mary Haas and the Survey of California and Other Indian Languages (SCOIL) at Berkeley, many grammars were written as dissertations for California languages rapidly falling from first-language use. Their typically tripartite structure consists of a grammar (detailing phonology, morphology, and syntax), text collection, and lexicon (Hamp 1966). This structure is typified by Bright's grammar of Karuk (Bright 1957).

This grammar follows in the tradition of many California grammars compiled with no contemporary first-language speakers. The rest of the section discusses a selection of these grammars, orienting the reader towards the archival materials and linguistic status of each. These grammars show similarities in coverage, style, and source material to this grammar, making them ideal for providing comparison and context for Nomlaki's archival situation.

Later sections will discuss strategies these grammars employed in making the most of their limited data.

Kitanemuk [Uto-Aztecan] (Anderton 1988): Kitanemuk is an Uto-Aztecan (Takic) language of the western Mojave Desert. It was last documented in 1937, and likely lost its last first-language speakers around this time. Anderton (1988) uses four main sources: the unanalyzed field notes of J. P. Harrington and C. Hart Merriam, ethnobotanical word lists collected by Maurice L. Zigmond, and word lists collected by A. L. Kroeber. No sound recordings are referenced; none are known to exist.

Cupeño [Uto-Aztecan] (Hill 2014): Like Kitanemuk, Cupeño is a member of the Takic branch of Uto-Aztecan, located in San Diego County. It no longer has first-language speakers. Materials for Hill (2014) come from nine speakers who consulted with Paul-Louis Faye. Faye elicited a series of texts and grammatical materials; William Bright also elicited some sentences, which Hill later re-elicited. A small body of materials also come from J. P. Harrington's notes. Altogether, this material 'constitutes a relatively small closed corpus' which likely leaves many questions permanently unanswered (Hill 2014:9). These data are reexamined in Hill and Hill (2019)'s comparative Takic grammar. J. P. Harrington is the primary source of this Takic data, supplemented by texts collected by Eric Elliot, Pamela Munro, and others. Some languages represented in Hill and Hill (2019) are extremely undersourced; Nicoleño, for instance, is represented by only four words and two songs.

Samala/Ineseño [Chumash] (Applegate 1972): Samala, also called Ineseño, is a Chumashan language of the middle Santa Ynez River of central California. At the time of Applegate (1972)'s writing, Samala (like all Chumash languages) had no first-language speakers. The grammar is based almost entirely on field notes from J. P. Harrington. No sound recordings are presumed to exist. Samala is revisited in Klar's historical grammar of the Chumash language family, where the languages presented are almost entirely based on the work of J. P. Harrington. Data from Purisimeño, Obispeño, and Cruzeño are taken entirely from Harrington's notes; Samala (Ineseño) and Ventureño are based on various published and unpublished analyses of Harrington's notes by Applegate; Barbareño data is taken from a sketch grammar by Madison Beeler.

Yuki [Yukian] (Balodis 2016): Yuki, also called Northern Yuki (Golla 2007), is a member of the Yukian language family located in the northern California Coast Range. Northern Yuki consists of the Yuki (termed 'Yuki proper' in Balodis 2016), Huchnom, and Coast Yuki varieties. The last speaker of Yuki passed in 1983. Balodis's description of Yuki proper is mostly based on a collection of texts by A. L. Kroeber and Ralph Moore, as well as short stories recorded by Hans Uldall. Huchnom data is taken from elicitations by Sidney Lamb; Coast Yuki is based on notes from J. P. Harrington. Phonetic description is based on a one-hour long recording of speaker Frank Logan.

Eel River Dene [Dene] (Begay 2018): Eel River Dene is a Dene (Athabaskan) language of Mendocino, Trinity, and Humboldt counties in northern California. Eel River Dene includes the Wailaki, Sinkyone, Nongatl, and Lassik language varieties. Of these, Wailaki is the best documented. The term 'Wailaki' is used by Begay (2018) to refer to the entire Eel River Dene complex, a convention which will be followed here. The last first-

language Wailaki speaker passed away in the 1940s. Begay's grammar is mostly based on unpublished notecards, texts, and word lists by Li Fang-Kuei. Texts by Pliny Earle Goddard and was well as word lists from C. Hart Merriam were also consulted. No recordings of spoken Wailaki are referenced or presumed to exist.

Chimariko [Hokan?] (Jany 2014): Chimariko is a language isolate within the proposed Hokan phylum, spoken along parts of the Trinity River in northern California. The last first-language speaker likely passed in the 1930s. Jany (2014) is based almost entirely on notes from J. P. Harrington, whose work is preserved on five microfilm reels containing lexical items, sentences, texts, and interviews. One audio source exists, a 13-minute recording of Martha Ziegler. Jany considers this recording to be of too poor quality for detailed phonetic analysis.

Mutsun [Ohlone] (Okrand 1977): Mutsun is an Ohlone (also called Coastanoan) language spoken around the area of Monterey Bay. Okrand's Mutsun grammar is based entirely on two and a half boxes of unpublished notes by J. P. Harrington, amounting to 'about 3%' of Harrington's total work with the language. Many of Harrington's notes are re-elicitations of previous work, including Arroyo de la Cuesta (1861), the first description of a California language to be published. No audio sources are mentioned or used.

Rumsen [Ohlone], Saclan [Miwok], Esselen [Hokan?]: Also considered in the following sections are briefer grammatical descriptions of Rumsen, Saclan, and Esselen. Like Mutsun, Rumsen is an Ohlone language, the last first-language speakers of which passed in 1939. Nine vocabulary lists were used in Broadbent (1957), collected by various observers from 1786 to 1933. Saclan, a Miwok language of the East Bay, is attested in a single vocabulary recorded by Arroyo de la Cuesta in 1821. This vocabulary forms the entire basis for the analysis in Callaghan (1971). Esselen (perhaps a member of the hypothesized Hokan phylum) has the unfortunate distinction of being the first native California language to fall out of first-language use. Existing documentation consists of only a few hundred words (Shaul 1995). No sound recordings exist for any of these languages.

1.9 Problems & solutions for low-resource grammars

The philological perspective

Philology is concerned with obtaining systematic information from a record beyond the purposes for which it was originally created (Goddard 1973:727). Much of traditional philology is what Hymes (1963:63) terms 'national philology', which is largely concerned with a single language and its literary tradition. Later, 'general philology' –or general linguistics– would develop from this tradition, seeking to theorize properties of language as a whole (Hymes 1963).

In the sense that linguistic field notes are a kind of record, interpreting them is a matter of philology. However, general linguistics has developed a distinct orientation. While general linguistics is primarily concerned with the completed linguistic analysis, philology

is concerned with the difference between the linguistic facts as they are and the facts as they are recorded (Goddard 1973). That is, the documentary process is not assumed to be ghostly and clean. Rather, the theoretical orientation of the fieldworker, the purposes of the document, the limitations and finite nature of the transcription, etc. all leave fingerprints. These traces should not be ignored. They not only provide insight into the document's limitations, but often reveal linguistic details that were not intentionally recorded.

For sleeping languages like Nomlaki, which is preserved in a small corpus of mostly written documents, philological methods offer an important analytical lens. This is not an uncommon situation in the Americas. Comparing the situation of Americanist linguistics to that of Romance, for which ample written materials spanning centuries exist, Hymes (1976:13) notes, 'Americanist linguistics might be seen as greatly determined by initial absence of material, and difficulty of access to it.' Despite this general paucity of data, Goddard (1973:729) notes that traditional philological methods are often ignored by Americanists. Because philology began by studying Eurasian cultures with long histories of native written records, philology is often regarded as irrelevant for American languages, whose cultures were almost universally oral. Particularly among phoneticians and phonologists, historical documents –almost always written in what a modern phonetician would deem substandard phonetics– are often seen as unfit for purpose. Many of the conclusions drawn will be tentative or fragmentary. However, as Hymes (1965:330) notes, 'It is a question of gaining what we can, or letting all lapse.'

Use of others' materials

One of the most concrete challenges of using found materials is the sheer amount of data with which the researcher must familiarize themselves. Because the researcher did not create the materials, their contents are not known: the only way to learn is to read through them. These materials are usually hand-written and often undigitized. For instance, Okrand (1977) references 2,500 pages of Harrington's handwritten notes to analyze Mutsun;[9] Jany (2014) uses 3,500 pages.[10] Thoroughly familiarizing oneself with even a small corpus takes many hours. As Bowern (2018) notes, it is often the case that the only person with enough knowledge to use raw corpus data is the linguist who originated it. This contributes to many linguists finding working with found data to be frustrating, difficult, and unrewarding.

In the simplest sense, using found data may result in insufficient coverage of the phenomena under analysis. As Whalen and McDonough (2019) discuss, contemporary phonetic research methodologies assume that the researcher is in full control of the data collection process and is able to elicit targeted data for that purpose. This assumption does not hold for found data.

For many California languages, the only extant texts are Catholic catechisms, written by Spanish-speaking priests interested in converting the indigenous laity. Catechisms and other

[9]Note that even 2,500 pages of notes are insufficient for a full understanding of Mutsun: recall that there were only six examples of three case markings.

[10]As with Okrand's experience with Harrington, recall the many gaps in Jany's Chimariko data despite 3,500 pages of notes. Some examples are illustrated in (9) and (10).

religious material tend to reflect the proselytizers' cultural notions much more than they do the indigenous peoples' they wished to convert: is it reasonable to assume that pre-Mission indigenous Californians had a concept of the Christian Trinity? Do catechisms represent a natural text? What level of formality or naturalness do they represent? For example, (1) shows the first half one of the only existing Esselen texts.

(1) a. Pasiguis legis tetelpa Dios?
what thing order God
'And what things are commanded by God?' (Shaul 1995)

b. taiappa Masssanim Alali chhese cumas
? earth(?) three(?) ? ?
[unclear] (Shaul 1995)

c. egua pasalis cuminam egoacaztz nichi
? ? all equally NOM?
[unclear] (Shaul 1995)

d. ejanquis lechitz [illegible]
? us(?) ?
[unclear] (Shaul 1995)

A simple perusal of (1) shows how little can be reliably glossed. Only the first sentence (1a) is fully glossed (though without detailed morphological analysis), as questions were the only part of the catechism paired with Spanish translations. The grammatical coverage of a catechism is also limited to a question and answer format, with little chance for insight into other grammatical forms or non-religious lexical items. The undoubted disparity between the catechisms' Catholic and the Esselen worldview may also impede an understanding of Esselen semantics, as illustrated in an excerpt from the Galiano-Malaspina catechism (2):

(2) Dios lech-poyo patama
God our-POSS lord
'Dios nuestro Señor' [Our Lord God] (Shaul 1995)

The statement in (2) contains two words with potential religious meaning: *Dios* 'God' and *patama* 'Lord'. The first is a clear loan from Spanish; the second appears to be a native Esselen term. The fact that the former is loaned appears to be evidence that the Spanish concept of 'God' was not shared by the Esselen, while the Esselen seemed to have found a (semi-)comparable native concept to 'lord.' However, the exact nuances of this word are lost in the act of glossing it as a lexical item with set Spanish meaning. What really is the Esselen concept of *patama*, allegedly 'lord'?

Working with found data is itself an act of interpretation. Many philological methods are centered on being aware of this fact, and documenting this process. Catholic priests and generativist syntacticians alike carry theoretical biases which color their output. These biases, and the interpretation needed to engage with them, are an inherent feature of records

created by others in times not our own for purposes not our own. Language documentation is an analytical activity: choosing what data to collect, how to collect it, and how to transcribe it are not atheoretical decisions (Dobrin and Schwartz 2021). In the case of Esselen catechisms or Merriam's choice to transcribe California languages exclusively using 'English spelling', these purposes may be overt, and the limitations they impose on the data obvious. Other impositions on the data may be more subtle, as when the source a linguist chooses to work with is one researcher's compilation of someone else's work: this is the case for Acjachemem, where older data collected by Spanish priest Fray Geronimo Boscana is only available through Harrington's redaction of the material (Hill and Hill 2019).

The ability for a linguist to use another's materials is greatly limited by the reliability (and presence) of transcriptions, accompanying analyses, glosses, and free translations. In many cases, transcription errors may be compounded with errors in free translation. These may obscure what would otherwise be a clear alternation. (3),(4), and (5) show three sets of examples from Nomlaki. Although Pitkin wrote a grammatical dissertation (Pitkin 1963) –and later full grammar (Pitkin 1984)– on closely related language Wintu, Pitkin makes a few notable mistakes in transcribing Nomlaki. In the collection of slip files from which (3), (4), and (5) are taken (N3 1953), Pitkin only includes free translations. However, these translations have numerous errors concerning the suffix *-da* and the free translations it occurs with.

(3) a. phu-tha dow-da
3SG-OBJ give-1
'He gave it to me.' (original translation, N3 1953:15)
'I gave it to him.' (my translation)

b. pu-ta c'ubay-ta
3SG-OBJ borrow-1
'I borrowed it from him.' (original translation, N3 1953:17)
'I borrowed it from him.' (my translation)

(3) indicates two sentences marked with a suffix which appears to be a verbal agreement marker. The suffix *-da* appears in (3a) where Pitkin translates the sentence with a third person subject. The suffix *-ta* appears in (3b), where the sentence is translated with a first person subject. If we assume the correctness of Pitkin's transcription, we may take from these examples that *-da* shows third person agreement, whereas *-ta* shows first person agreement. However, this picture is confused by (4).

(4) a. olel hay-ta
up go-1
'He went up.' (original translation, N3 1953:29)
'I went up.' (my translation)

b. yelto-k'on hayya-∅
behind-? go-INDIC

'He went back there/backward.' (original translation, N3 1953:27)

'He went back there/backward.' (my translation)

The suffix *-ta* recurs again in (4a). In (3b), this suffix occurs in a sentence translated with a first person subject; however, in (4a), the suffix occurs with third person subject. (4b) is also translated with a third person subject– yet there is no *-ta* suffix present. The examples presented in (3) and (4) then raise several questions. Are *-ta* and *-da* separate morphemes, or are they mishearings of a single morpheme? Further, how are we to understand why the third person seems to be accompanied sometimes with *-ta*, and sometimes without?

Pitkin's inconsistencies lead to many uncertainties that are not easily solved with reference only to Pitkin's own materials. It is only through examining other sources like Blankinship and Wenger (1978a) that we see that *-da* is a first person verbal agreement marker and *-ta* is a variant transcription.

Pitkin's transcription of this marker as alternatively *-ta* or *da* has clear phonetic motivation. Though Nomlaki /d/ is phonetically voiced (see Chapter 2), it is easy enough to imagine that Pitkin may have been uncertain on this point through listening alone. Pitkin overwhelmingly chooses to record this morpheme as *-ta*. More difficult for using Pitkin's materials to analyze Nomlaki is Pitkin's inconsistencies in free translation. Pitkin almost always translates sentences containing *-ta* with the third person subject. This miscommunication is likely a misunderstanding of deixis between Pitkin and his consultant(s). Crucially, this understanding of Pitkin's elicitations can only be fully understood with reference to other materials without this class of errors. Such materials do not always exist.

Pitkin's free translation errors can also have compounding effects on understanding other grammatical phenomena. An example is shown in (5).

(5) a. se-putal-ta
all.sides-stretch-1

'It stretched.' (original translation, N3 (1953b:21))

'I stretched it.' (my translation)

b. se-yeqiqa-∅
all.sides-shake-INDIC

'He shook it.' (original translation, N3 (1953b:21))

'He shook it.' (my translation)

Pitkin translates (5a) as intransitive, while (5b) is transitive. Given these translations –and Pitkin's generally opaque treatment of the *-da/ta* marker– a researcher may wonder if the *-ta* in (5a) is a reflexive marker, or perhaps otherwise involved in valency changing operations. This is a rabbit hole that may lead linguists astray if there is not enough data to pull them out. However, with the context from other materials, we see that the difference between 5a and 5b is not valency, but rather person agreement.

Reconstructing phonetics

When trying to gain phonetic knowledge from textual records, two problems are apparent: 1) the problem of multiple orthographies, with differing levels of rigor, and 2) the problem of subpar phonetics. With the exception of Hill (2014) and Jany (2014), none of the grammars discussed above have attested sound recordings.

The grammars discussed here have considerable overlap in their cast of transcribers. By far the most common is J. P. Harrington; others include Merriam, Kroeber, Dixon, and Sapir. It is fortunate that of these, the quality of Harrington's transcriptions is consistently high. However, these transcriptions are not without problems. The system appears to be partly idiosyncratic and with notes often undated; the narrowness of transcriptions also varied between sessions (Anderton 1988; Okrand 1977).

Early efforts at producing standardized orthographies like Pickering (1820) (used in Hale 1846), form the intellectual kernel of later endeavors like the International Phonetic Alphabet. Even so, these efforts are hampered by a lack of developed articulatory phonetic vocabulary. For instance, though Pickering (1820) and Gibbs (1863) attempt to create a common orthography to aid transcription, phonetic values are still set based on reference to an existing word in some language. Thus <a> is described as the vowel in English *far* (Pickering 1820:35), and <kh> is described as the final sound in German *buch* (Gibbs 1863:36).

Common transcriber pitfalls include conflating phones into a single symbol, representing a single phone as multiple symbols, or simply miscategorizing the phone entirely. All of these issues occur in C. Hart Merriam's work. In some cases, Merriam maps multiple symbols to a single sound: he transcribes <oo>, <ĕ>, <o>, and <u> all for Kitanemuk high central /ɨ/ (Anderton 1988). In other cases, Merriam conflates multiple sounds using a single symbol. Wailaki /kʰ/, /k'/, /kʲ/, /k'ʲ/, and /gʲ/ are all transcribed by Merriam as <k> (Begay 2018). Merriam often do not transcribe ejectives at all, as Merriam does not for Wailaki (Begay 2018) and Dixon does not for Chimariko (Jany 2014).

Table 1.7 illustrates a small set of Wailaki velars as they were transcribed by Li, Goddard, Essene, and Merriam. These five velars were all transcribed by Merriam as <k>, despite differences in voicing, aspiration, palatalization, and airstream mechanism. More accurate interpretations of Merriam's <k> is based on Li's transcriptions.

As Goddard (1973:730) observes, it is typical for a phonetician's interaction with historical documentation to extend only to standardizing the document's orthography. However, this is not a solution as much as it is a matter of reader convenience. Firstly, standardizing an archival document's orthographic inconsistencies may unwittingly cover up informative phonetic details. Secondly, this standardization can only paper over areas of true uncertainty.

Haas (1965) reviews the case of John R. Swanton's dictionary of Ofo and Biloxi (Siouan), which consists of original work by Swanton on Ofo appended to older materials of Biloxi by James Owen Dorsey. During this process, Swanton normalized Dorsey's older transcriptions of Biloxi. Among these normalizations was his collapse of Dorsey's inconsistently aspirated stops into only unaspirated stops. The logic here is that any phonetic value that is not con-

IPA	Li	Goddard	Essene	Merriam
k^h	k', k, G	k	k	k
k'	k'	k'	k'	k
g^j	$C^g_{\hat{}}$	ky	$\underset{\uparrow}{k}$	k
k^j	$\underset{\hat{}}{k}$	ky	$\underset{\uparrow}{k}$	k
$k^{j'}$	$\underset{\hat{}}{k}$'	ky	$\underset{\uparrow}{k}$	k

Table 1.7: Partially reproduced table of Wailaki velar stop transcription by various transcribers (Begay 2018). IPA values are based on Li's transcriptions, corroborated by Goddard.

sistently annotated cannot be informative. However, within Dorsey's corpus, Haas observes that some words are still consistently annotated, even if this is not true for the corpus as a whole. Examining these tokens, Haas finds that Ofo /t/ reflexes to Proto-Siouan **t* or **r*, while Ofo /t^h/ reflexes to Proto-Siouan **t^h* or **t?*. Here we see how even inconsistent, substandard phonetic transcription can be used for comparative purposes– and how normalizing this orthography would militate against these discoveries.

Even very rough phonetic transcriptions can offer diachronic information. In a study of Atsina (Algonquian), Taylor (1967) mostly uses data from the 20th century. However, also included is a 24-word vocabulary collected in 1785 by Edward Umfreville, a trader with the Hudson Bay Company. Even such a scant vocabulary, collected by a non-technical source, offers valuable diachronic information. For instance, Taylor (1967:122) notes that Umfreville writes the word 'four' as *ne-an*, while in modern Atsina the word is yéín or yɛ́ɛ́n, ultimately deriving from Proto-Algonquin **n^j* (this palatalization is presumably what Umfreville failed to accurately note). Despite the fact that sister languages Atsina and Arapaho both share this change from **nj > j*, the date of Umfreville's list shows that it had not yet happened in the late 18th century, well after the two languages diverged. Thus this sound change is an independent innovation in both sister languages. A very short vocabulary, only capturing coarse phonetic detail, can still shed important light on historical Algonquin.

Begay et al. (2017) also discusses the case of Wailaki, a sleeping language undergoing revitalization from archival documents. Wailaki is documented chiefly by three people: Li Fang-Kuei, C. Hart Merriam, and P. E. Goddard. The transcription systems of these researchers are all different: Goddard uses an early Americanist variant developed by Kroeber, which Li mostly follows. Merriam's transcriptions follow an English-only transcription philosophy, which limits the level of phonetic detail it can capture. Table 1.8 provides examples of how some sounds in the Wailaki documentation are represented by these three transcribers.

More important than simply deciphering a researcher's transcription system is assessing that system's accuracy. In the case of Wailaki, Begay et al. (2017) believe that Li is the most accurate. This is partially based on some of Goddard's own notes, where he states that

IPA	Merriam	Goddard	Li
ŋ	ŋ	ñ	ŋ
tʃ	ch, tch	tc	tc
ɬ	hl, sl	ł	ł
i:	ē	i	i:

Table 1.8: Transcription correspondences in Wailaki across three transcribers, from Begay et al. (2017:408).

he does not consistently transcribe glottalized consonants, and omits [h] and [ʔ] in syllable coda position. Having decided that Li's phonetics are the most accurate, Begay et al. (2017) use Li as a baseline, resolving inconsistencies between the three transcribers in favor of Li's interpretation.

Like many of the cases discussed here, Nomlaki has been transcribed by numerous researchers using varied orthographies, with and without explicit transcription keys. Fortunately, the Nomlaki corpus includes an hour of documented audio (Freeman 1953), which allows direct phonetic observation. 5.6 P6 (1953c) is likely an earlier revision of the elicitation session that produced Freeman (1953). Because these sources are basically paired, we can directly check Swadesh's transcription quality in most cases. Swadesh's phonetics are broad and almost always accurate: the only exception is his inconsistent transcription of the first-person agreement marker *-da* as either *-ta* or *-da* (the former is more common): compare *bihda* 'I'm smoking' and *hayta* 'I'm going' (5.6 P6 1953). However, phonetic analysis indicates that the phoneme in question is actually voiced (see Chapter 2). It is not surprising that an English speaker like Swadesh would make this error, as a lack of aspiration often cues voiced stops more consistently than voicing throughout the stop closure. This in turn underscores the importance of keeping in mind a transcriber's first and/or working language(s) when deciphering their transcriptions.

Because Swadesh's phonetics are demonstrably reliable, this grammar uses his transcriptions as a baseline for relating to other documents, just as Begay et al. (2017) uses Li Fang-Kuei's transcriptions for Wailaki. Pitkin is also of phonetically good quality. The two almost never disagree and are used in tandem. However, there are cases where a word is not represented in the texts of either Swadesh or Pitkin. When these words contain anomalous orthographical elements, it is still often helpful to refer to Swadesh or Pitkin. For instance, Bartlett in Powers (1877:520) often transcribes <r>, despite the loss of this phoneme in the most recent documentation Nomlaki. In many cases, <r> is found in <Vr> sequences: *gúmmosher* 'big', *timmer* 'cold', *parlel* 'two'. Compare *qomosa* 'big', *temha* 'cold', *palel* 'two' (5.6 P6 1953). Given the distributional evidence, as well as Swadesh's transcriptions, it seems likely that Bartlett's <r> in <Vr> environments is based on analogy to English non-rhotic <Vr> sequences, and likely roughly refers to [a].

Bartlett's generally crude phonetics can still shed light on phonetic issues. For instance, Bartlett rather consistently transcribes *sh* where Swadesh and Pitkin write <s>: *shorno* 'nose', *shee* 'teeth', *shem* 'hand' (Powers 1877); cf. *sono*, *si:*, and *sem* (5.6 P6 1953). As Barlett was untrained, his choice to transcribe <sh> suggests a post-alveolar place of articulation: writing in the mid-20th century, Swadesh and Pitkin transcribe <s>. It is possible that Swadesh and Pitkin, as trained linguists, simply recognized this post-alveolar fricative as phonemically /s/ and so transcribed it <s>. Phonetic evidence indeed suggests that /s/, as recorded by Swadesh in Freeman (1953), was pronounced at a somewhat post-alveolar place of articulation (see Chapter 2). Golla (2011:206) observes that California alveolar fricatives typologically vary between apical and post-alveolar positions; the post-alveolar 'California s' is common in the region. Thus Bartlett's transcriptions can actually give more narrow phonetic those of more trained linguists.

Using a comparative strategy called 'reconstitution,' Broadbent (1957) examines the phonetic forms of Rumsen, a sleeping Ohlone language for which only nine vocabulary lists exist. Reconstitution leverages multiple researchers' transcriptions of the same word in order to reconstruct the word's original phonetic values. In the first step, the researcher tries to convert each previous researcher's transcriptions to a conventional phonetic transcription. During this step, it is important to consider each orthography as its own system, and not simply as something to be mapped one-to-one to IPA. The key for the original system may be recorded on the schedules used by the recorder: in the case of Rumsen, Merriam printed his personal system on his schedules; others recorders used Powell's schedules. When the system is not made explicit, the researcher should consider the recorder's knowledge of other languages. Broadbent (1957) remarks that though one Rumsen recorder was French, transcriptions were given with Spanish translations; therefore when the recorder crosses out <i> in favor of <x>, we should assume a the value closer to Spanish [x].

Following this step, the researcher compares how different recorders transcribed the same word. Forms recorded by a single person are left until after that recorder's transcription style can be better understood. The actual process of reconstituting a given phone occurs in two steps. Firstly, as with the comparative method, sounds that are transcribed the same by multiple recorders are accepted as they are. In cases where transcriptions differ, the researcher must find which sound best explains the variation, taking into account the phonology of the recorder's working languages. When French or Spanish-speaking recorders transcribe Rumsen with <p>where English-speaking Taylor and Kroeber write <b>, Broadbent (1957) concludes that the original sound is likely [p]. If a single transcriber inconsistently transcribes a particular sound, Broadbent (1957) concludes that the original sound is phonetically somewhere between those suggested by the alternation. The end result of this process is a reconstructed phone or phoneme called a 'sone' or 'soneme'. This method is explicitly used by Shaul (1995) and broadly used by Begay (2018), Jany (2014), Balodis (2016), and Anderton (1988).

Limited data & comparative strategies

By definition, the low-resource grammars in this section must contend with using far less data than others. This may result in the work missing some grammatical elements entirely. However, even very limited resources can prove informative. As Saclan is limited to a few words and phrases, Callaghan (1971)'s description is limited to a sketch of the language's phonemic system, some prosodic features, and some morphology gleaned from word lists. The Esselen data is similar in scope to Saclan. It is largely limited to sketches of phonology and some morphology, such as noun class and person marking. It is fortunate that most California languages considered in this chapter are morphologically rich, with considerable grammatical phenomena evident in even a short word list. In the case of Nicoleño (Hill and Hill 2019), for which only four words and two songs exist, the situation is even more extreme. The Nomlaki corpus is not so limited as these examples. As we will see in the upcoming chapters, a fair amount of linguistic information can be gleaned from these materials.

There are some Mutsun cases that occur only a handful of times in the corpus. Yet these occurrences cannot be ignored, as they represent crucial information. The six examples shown in (6)-(8) indicate all known instances of three Mutsun case markers: *-me* is represented three times (6), *-way* (7) is represented twice, and *-ya* is represented once (8). In some cases like this it is simply not possible to deduce what kind of function the morpheme in question has. This analysis is particularly limited without available cognates in other Ohlone languages.

(6) a. haysa towra diyo:s-me
3PL live god-PERS.LOC
'They live with God' (Okrand 1977:159)

b. ha:yi makam man-pappa-me
come.here 2PL 2PL.POSS-grandfather-PERS.LOC
'Come to your grandfather!' (Okrand 1977:159)

c. ha:yi kannis-me
come.here 1SG.OBJ-PERS.LOC
'Come here to me!' (Okrand 1977:159)

(7) a. minis-way
mass-?
'Sunday' (Okrand 1977:160)

b. pi:na-way
that-? go you-COM
'Therefore' (Okrand 1977:160)

(8) a. maria-ya sitnun-e
Maria-GEN? offspring-OBJ
'To Maria's son' (Okrand 1977:160)

In Chimariko, Jany (2014) contends with multiple instances of morphemes with uncertain meaning. (9) and (10) show examples of morphemes whose precise functions are unclear due to the limited contexts in which they appear, and a lack of clear cognates to compare with.

(9) čimar-ot hisik-inda, hisik-ni čimar-a nunu
person-DEF good-ASP good-ASP person-? ?
'Good folks, the people are good' (From 'Fugitives at Burnt Ranch') (Jany 2014)

(9) contains two morphemes of unknown meaning, *-a* and *nunu*. Jany (2014) notes that *-a* only occurs with the word *čimar* 'person'. It seems to occur with information that is already known, much like a definite suffix; however, (9) also shows the existence of a definite suffix *-ot*. The word *nunu* is even less understood, and Jany (2014) does not speculate at all about its meaning.

In other cases, a morpheme may be well understood in a given context. However, lack of materials makes its distribution and behavior in other contexts uncertain. An example is demonstrated in (10), which shows the exclusive suffix *-aikulla* 'only.' In the available data, this suffix only attaches to adjectival stems; it is not clear whether it can attach to other kinds of stems, nor whether inflectional suffixation can be added.

(10) ʔeloh-aikulla h-ama-t, ʔalla p'un, sumu-su-t h-iwo-t, p'olalla
hot-only 3-eat-ASP month one like-be-ASP 3-stay-ASP alone
'She only eats hot, for one month, she lives like this, alone' (Jany 2014)

The Mutsun and Chimariko examples show how limited data may lead to dead ends without leveraging comparative data. When data from a single language or source is insufficient, finding analogous forms in a related language can serve as a lens to magnify the existing data's analytical power. This approach is used most explicitly in Klar (1977)'s comparative grammar of Chumash, as well as Hill and Hill (2019)'s comparative grammar of Takic. When discussing morphological correspondences in Chumash, Klar (1977:43) notes that particles are so common among the Chumash languages that they can be confirmed in an Interior Chumash dialect with only a sixty-word vocabulary list. If this list had been analyzed alone, it is unlikely that these particles would have been comprehensible. On the strength of their similarity to cognates in better described sister languages, they can be put into fuller context.

Working on comparative Takic, Kenneth Hill notes: 'Only within the comparative framework worked out by [coauthor] Jane [Hill] did [grammatical] details take on meaning. She had a marvelous ability to reach meaningful conclusions from what often appeared to me to be inadequate evidence. This comparative approach has also been very fruitful in dealing with the extremely limited evidence on grammatical patterns found in the Harrington materials' (Hill and Hill 2019).

One Takic language considered in Hill and Hill (2019) is Tongva, which is attested in five microfilm reels by J. P. Harrington. Within these materials, there exist several constructions which are attested only once. Alone, there is not enough evidence to understand their

meaning. However, Hill and Hill (2019) gain more clarity through identifying cognates in sister languages. An example is shown in (11).

(11) ne-ʂie:ʔe-vo-nga
1SG-cute-REAL-LOC
'where I cured' (Hill and Hill 2019:990)

The morpheme *-vo* is attested only once in the Tongva data. It is defined as a realis subordinator by Hill and Hill (2019), largely on the strength of cognate constructions in Serrano and Cupan (Cahuilla), where the marker is *-ve* and *-iv*, respectively. These cognates are shown in (12).

(12) a. pe-ʔe-ʔnan=qal-e pe?i-j pish nek-i-**ve**-ʔa
3SG.OBJ-IPVF-know=NFUT.SG-FCT 3SG-ACC COMP come-ABLAUT-REAL-PST
'He knew that he arrived.' (Cahuilla, Hill and Hill 2019:966)

b. mi=n ny-maatʂ-**iv** ajay' ∅
DUB=1SG >3SG 1SG-hear-REAL-SUB then be
'I seem to be the one that has only heard about it [the eagle dance].' (Serran, Hill and Hill 2019:1033)

Besides the phonological similarity between the three realis markers in (11) and (12), Hill and Hill (2019) also cite similarities in structure between the better documented Cahuilla and Serran realis marker compared with Tongvan *-vo*, where *-vo* exhibits the expected realis structure of a subject prefix and locative suffix. Without sister languages with which to compare cognates, it is hard to imagine how well the single attested example of Tongvan *-vo* could be understood.

There exist several morphemes in Nomlaki which are only attested a handful of times. In some of these cases, the other morphemes are known enough, and the gloss clear enough, that the unknown morpheme's function can be roughly deduced. For instance, the ablative case marker *-wa* is only attested four unique times in the corpus. These are shown in examples (13)-(16). In the first two examples, (13) and (14), the English gloss is somewhat non-literal ('north wind' vs 'wind from the north'), such that the role that *-wa* plays is not clear. However, the other two examples (15 and 16) contain the word 'from' in the English gloss. Because the other words in the Nomlaki sentence are also known, this allows us to deduce that *-wa* roughly corresponds in meaning to English 'from'. Taking into account morphological behavior, we then assume that *-wa* is an ablative case marker. Notably, this morpheme does not have a cognate in Wintu, and so comparative methods are limited in this case.

(13) way-wa ƛeeha
north-ABL wind
'north wind ['wind from the north']' (5.6 P6 1953:32)

(14) nuy-wa ƛeeha
south-ABL wind
'south wind' ['wind from the south'] (5.6 P6 1953:32)

(15) 'ukhaa-wa wey-ta yelto-qon
there-ABL come-1 behind-?
'[I] came from the house' (5.6 P6 1953:5)

(16) uka χɛl-wa we-da
there house-ABL come-1
'I came from the house' (Freeman 1953)

There exist other morphemes in the Nomlaki corpus whose function can really only be understood by comparison with its sister languages. For example, the directional ablative morpheme *-da* (not to be confused with the first-person agreement morpheme *-da*) only occurs three times in the corpus. All examples are shown in (17)-(19)

(17) se:-da
all.sides-DIR.ABL
'along the edge' (Freeman 1953)

(18) nom-da
west-DIR.ABL
'this side' (Freeman 1953)

(19) pui-da
east-DIR.ABL
'the other side' (Freeman 1953)

From the examples in (17)-(19) alone, it is not precisely clear what function *-da* serves. All examples form prepositional phrases in the English gloss, and we see from *-da*'s suffixation to these directional nouns that it is not the same as the first-person agreement marker *-da*. The English glosses for (18) and (19) are also not literal, referring to 'this side' and 'the other side', while the Nomlaki literally refers to the directions west and east. All that might be gleaned from the Nomlaki alone is that *-da* modifies directional nouns in some way, and may form prepositional phrases.

However, examining Wintu reveals a cognate *-da* which Pitkin (1985:107) describes as 'from, of...suffixed also to directional and temporal adverbs'. Pitkin gives the examples *hida* 'very, more', *tuda* 'further, away, more', and *wayda* 'from the north.' The last example is very illuminating, as its form is almost identical to (18) and (19), which involve the directions west and east instead. The Nomlaki facts harmonize very well with the Wintu: both morphemes have the exact same form, and co-occur with directional words. We can therefore be reasonably comfortable saying the two are cognate, and ascribe the general

meaning of the Wintu *-da* to the Nomlaki *-da*. Of course, it is not possible to know if Nomlaki *-da* follows Wintu *-da*'s usage in all respects; this may never be known. However, leveraging comparative documentation allows us to label the general behavior of a morpheme that may otherwise have remained largely mysterious. Comparative Wintu(an) analysis has similarly allowed this grammar to identify scarcely documented morphemes such as the instrumental case marker *-in*, the completive marker *-k*, the reportative marker *ʔuni*, and the proximal auxiliary *ʔiya*.

1.10 Summary

This introduction has provided an overview of Nomlaki in its linguistic and archival contexts, with additional focus on the problems and solutions presented by creating a grammar solely from archival materials. The reader should now feel more prepared to examine the phonetics, phonology, morphology, and syntax of Nomlaki in more detail.

To summarize, Nomlaki is a language in the Wintuan language family of northern California, which comprises Wintu, Nomlaki, and Patwin. The Wintuan language family is thought to belong to the Penutian language phylum, first theorized by Dixon and Kroeber (1913) and Dixon and Kroeber (1919). Like other Penutian languages, Nomlaki is mostly suffixing, with a limited set of prefixes; it also marks formal grammatical categories, has true case marking, and participates in extensive stem ablaut. The Wintuan language family is approximately 2000 years old, with Wintu and Nomlaki making up the Northern Wintuan branch. Both languages are members of a dialect continuum; the earliest Nomlaki documentation did not make a distinction between Wintu and Nomlaki at all. One of my goals for this grammar is to demonstrate the ways in which it is worthwhile to study Nomlaki as a separate entity.

The documentation of Nomlaki is fragmentary, leading to likewise fragmentary scholarship. While Wintu and Patwin both have grammars, Nomlaki (until now) has not. Though its earliest documentation reaches back to the mid-19th century, the bulk of materials used in this grammar come from the mid-20th century work of Harvey Pitkin and Morris Swadesh. The Nomlaki corpus includes two audio recordings, notes of vocabulary elicitation, and some slip files containing sentence elicitation.

While it is certainly possible to learn a great deal from these sources, they are not comprehensive. Working with archival sources present many challenges that are tied up in philological concerns: namely the consideration of documentation for purposes beyond which it was originally created, with a focus on the background, biases, and intentions of those who created these documents. Using others' materials requires a sensitivity to the documenters' background and theoretical orientation. We have discussed how useful phonetics can be extracted from records with even sub-par transcriptions by using comparative methods such as reconstruction (Broadbent 1957); even phonetic alternations that are only recorded partially or imperfectly may yield meaningful data. We've also discussed how using comparative data from sister languages can allow for meaningful analysis of elements that are poorly attested

in their target language. These strategies, particularly the use of comparative data, help me make the most of the limited data available.

Chapter 2

Nomlaki phonetics

Nomlaki is a member of the Wintuan language family, whose ancestral land stretches along the northern Sacramento Valley from Mount Shasta to Suisun Bay. The Wintuan languages lie vertically along the valley, from Wintu (ISO: wnw) in the north to Patwin (ISO: pwi) in the south. Bracketed between these languages is Nomlaki (ISO: nol). For this reason, Nomlaki is sometimes referred to as 'Central Wintun'. Like its sister languages, Nomlaki does not have first-language speakers.

The Wintuan languages are closely related, with an estimated time depth of 1,500-2,500 years (Whistler 1980; Shepherd 2005). Whistler (1977) hypothesizes that the Wintuan family originated to the north of its present location, in far northern California or southern Oregon. This conclusion is based on evidence from reconstructed Proto-Wintun as well as flora and fauna vocabulary in Miwok (a present-day neighbor to Patwin). The Wintuan languages are split into two sub-branches, aptly named Northern and Southern Wintuan. Southern Wintuan, comprising Patwin and a variety whose classification is debated called Southern Patwin, is believed to have diverged first from the Proto-Wintun homeland. Wintu and Nomlaki, comprising the Northern Wintuan branch, followed after. Wintu and Nomlaki are consequently very closely related, and comprise a dialect continuum. This high degree of mutual intelligibility led to field workers generally neglecting Nomlaki in favor of Wintu.

Nomlaki itself is divided into River and Hill regions. Though Golla (2011:143) states that the two represent different language varieties, little work has been done exploring this. The River region is further comprised of *Noymaq* 'south people' (near Red Bluff) and *Puymaq* 'east people' speakers, while Hill Nomlaki was separated into Red Bank Creek, Elder Creek, Thomes Creek, and Grindstone Creek (Goldschmidt 1979; Kroeber 1932). The preponderance of existing documentation is for Hill Nomlaki.

The phonetic data used in this chapter comes from a recording of Andrew Freeman made by linguist Morris Swadesh during a Penutian vocabulary survey (Freeman 1953; Swadesh 1954). The goal of the survey was to collect lexical and morphological comparative evidence from languages hypothesized to belong to the Penutian phylum. This survey recorded twenty languages in ninety days, with approximately sixty minutes' of tape available for each language. After some trial and error, Swadesh (1954) settled on a system where about

1000 expressions were recorded for each language, first recorded on paper and then on tape. 5.6 P6 (1953c), archived as 'Wintunian Word Lists' by the APS, contains the handwritten notes accompanying the audio recording (Freeman 1953). However, the two are not an exact match. 5.6 P6 (1953c) likely represents the results of the elicitation session conducted before any audio of the language was recorded.

All data used in this chapter is drawn from Freeman (1953). This recording records Nomlaki speaker Andrew Freeman, was at the time 82 years old. A later recording, made by Jesse O. Sawyer with Nomlaki speaker Sylvester Simmons, also exists (Simmons 1975). However, Simmons (1975) is only five minutes long, while the portion of Freeman (1953) used is twenty. So as not to potentially introduce confounding multi-speaker effects, only Freeman (1953) is used in this chapter. Freeman (1953) was recorded on July 21, 1953 in Gerber, California. The original recording was made on analogue tape, later digitized at a sampling rate of 22050 Hz. All phonetic measurements in this chapter were taken with Praat (Boersma and Weenink 2025), with spectral moment measurements calculated with the Phonlab Python library (Phonlab Development Team 2025). Statistical analyses are conducted in R with Kassambara (2023).

At the time of writing this chapter, only a portion of Freeman (1953) was known to me. The full sixty-minute recording was discovered and shared with me shortly after this chapter had been completed, too late for it to be integrated into this analysis. I plan to incorporate the full recording into a future full grammatical treatment of Nomlaki.

2.1 Phonemic inventory

The Nomlaki consonant inventory includes thirteen stops, five fricatives, two affricates, two nasals, and three approximants, while the vowel inventory includes ten vowels in five long/short pairs. Tables 2.1 and 2.2 summarize the Nomlaki inventory of consonants and vowels respectively. Sounds whose phonemic status is uncertain are indicated in parentheses.

Nomlaki stops maximally contrast plain, aspirated, ejective, and voiced laryngeal states. This four-way stop contrast is typologically unusual for California, where a three-way contrast (voiceless aspirated, voiceless unaspirated, and ejective) is most common. The Nomlaki situation may be the result of borrowing from the Hokan phylum (Golla 2011:205).

Nomlaki fricatives contrast at three places of articulation: alveolar, velar, and glottal. Many California languages, including Nomlaki, have only the sibilant /s/. 'The vast majority' of California languages also have the velar fricative /x/ (Golla 2011:206), which is attested (though infrequently) in Freeman (1953). /x/ is attested both as a separate phoneme (Blankinship and Wenger 1978 (henceforth cited as BW Ch. 1); Shepherd 1989) as well as an allophone of /q/; /χ/ is also observed as an allophone of /q/. The Nomlaki lateral fricative /ɬ/ is relatively rare in the region: it is only found in Wiyot, Yurok, Athabaskan (Oregon and California), Seri, and Wintuan (Golla 2011:206).

Nomlaki has three affricates, all alveolar or post-alveolar. /tʃ/ and /tʃ'/ form a plain/ejective pair, while /tɬ/ is paired with /ɬ/. There is some limited evidence that /tɬ/ is also

Manner	**Bilabial**	**Alveolar**	**Post-alveolar**	**Palatal**	**Velar**	**Uvular**	**Glottal**
Stop	p, p^h, p', b	t, t^h, t', d			k, (k^h), k'	q, (q^h), q'	ʔ
Fricative		s			x	χ	h, (ɦ)
Lateral fricative		ɬ					
Affricate			tʃ, tʃ'				
Lateral affricate		tɬ'					
Nasal	m	n					
Approximant	w			j			
Lateral approximant		l					

Table 2.1: Nomlaki consonant inventory. Sounds whose phonemic status is uncertain are indicated in parentheses.

Height	**Front**	**Mid**	**Back**
High	i, iː		u, uː
Mid	e, eː		o, oː
Low		a, aː	

Table 2.2: Nomlaki vowel inventory.

present in the language, perhaps as an allophone of /ɬ/. This is difficult to assess, as most potential instances of /tɬ/ are word-initial (where any word-initial closure is undetectable). All California languages have at least one apical or palatal affricate, while the lateral affricate /tɬ'/ is unique to Wintuan and California Athabaskan (Golla 2011:206).

Nomlaki's nasal and approximate inventory is typologically common, spanning the nasals /m/ and /n/, the approximants /w/ and /j/, and the lateral approximant /l/. 'Nearly all' California languages distinguish /m/ from /n/ (where /n/ may be alveolar, apico-alveolar, or apico-dental), while 'all' have at least three approximants: /w/, /j/, and either /l/ or /r/ (Golla 2011:207). /r/ is reconstructed in Proto-Wintun, but lost in modern Nomlaki, where it has several reflexes. Intervocalically, it is deleted, as in Proto-Wintun **nur* 'salmon' > Nomlaki *nu* 'salmon' (5.6 P6 1953:25).[1] Morpheme-finally, **r* becomes Nomlaki /j/, as in **xurxur* > *kUykut* 'sugar' (Blankinship and Wenger 1978:11 (henceforth cited as BW Ch.

[1]Shepherd (2005) actually gives the Nomlaki reflex as *nūt*. However, this appears to be a misanalysis of the noun stem *nū* 'salmon' and the particular noun marker *-t*. Based on analogous behavior in Wintu, the particular suffix likely marks a live animal, while the generic suffix marks its meat.

7)). There are also some cases where **r* > /d/, likely because intervocalic **r* was phonetically a flap: **tarak* 'woodpecker' > *tadatdat* 'woodpecker, woodchuck' (5.6 P6 1953:27). There are exceptions to these observations, indicating that this sound change is still not fully understood (Shepherd 2005:11).

Nomlaki has a ten-vowel system comprising five long/short vowel pairs. These pairs consist of two high/high-mid front pairs, two high/high-mid back pairs, and one low mid pair. This pattern is also typical for California languages, where 'the majority' have two high vowels (/i/, /u/), two mid vowels (/e/, /o/), and one low central vowel (/a/) (Golla 2011:207–208). In distinguishing long/short members of each vowel pair, as well has having no nasalized vowels, Nomlaki is also typical for California.

2.2 Minimal pairs

Table 2.3 shows minimal pairs for Nomlaki stops and affricates, while Table 2.4 shows minimal pairs for non-obstruent consonants. Despite the fact that aspirated velar and uvular stops are not found in Wintu, nor attested in Nomlaki in some sources (Blankinship and Wenger 1978), evidence for these stops is shown in near-minimal pairs shown in Table 2.3.

Plain		Aspirated		Ejective		Voiced	
paqq-	'hard'	*pʰooq*	'head'	*p'aq*	'bone'	*bok*[2]	'milkweed'
temh-	'cold'	*tʰam-*	'turn'	*t'on*[1]	'tarweed'	*dona*[3]	'louse'
can-	'roast'			*c'ansem*	'five'		
koko	'basket'	*kʰi:n*	'someplace'	*k'o-*	'sick'		
qot-	'strong'	*qʰos*	'steam'	*q'oww-*	'melt'		

Table 2.3: Minimal pairs for stops and affricates in Nomlaki. Laryngeal contrast is arranged by column. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from 4.4 N4 (1958); [2] are from 4.1 N1 (1951); [3] are from Blankinship and Wenger (1978a).

Lateral	*lol*	'tobacco'	*ɬol wini*	'cook basket'	*tɬ'ol*[2]	'cradlebasket'
Fricative	*son*	'stone'	*xon-*	'away'	*ho:n*	'when'
Nasal	*muq-*[1]	'dizzy'	*nu:q*	'smoke'		

Table 2.4: Minimal pairs for non-obstruent consonants in Nomlaki. Rows are arranged by manner of articulation. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from Blankinship and Wenger (1978a); [2] are from 4.4 N4 (1958).

Nomlaki also has ten contrastive vowels arranged in five long/short pairs. This inventory is shown in Table 2.2. Table 2.5 shows minimal pairs for vowels of the same quality

(irrespective of length). Table 2.6 shows minimal pairs between vowel qualities (regardless of length). A statistical examination of these vowels and their cues is found in Chapter 2.3.

2.3 The vowel space

Nomlaki distinguishes ten vowels in five pairs. These pairs are typically transcribed only with a vowel length distinction, implying an equivalence of vowel quality (e.g. <i> vs. <i:>). However, there is evidence (explored further in this section) that these vowels pairs differ not only by length, but by quality (Björklund 2021). This system differs from both Nomlaki's sister languages or Proto-Wintun, which in turn suggests a Nomlaki innovation Freeman (1953).

Shepherd (2005) reconstructs Proto-Wintun with a ten-vowel inventory of five long/short pairs, typologically common in California (Golla 2011:207–208). These are *i/i:*, *e/e:*, *a/a:*, *u/u:*, and *o/o:*. This reconstruction comes cleanly out of Shepherd's data for Wintu, Nomlaki, and Patwin: Shepherd reports that all three languages have the same system. However, at the time of writing, only Wintu had been described (Pitkin 1984), and no Wintuan language had an acoustic phonetic analysis.

Wintu vowels may be either long or short across both stress conditions (Pitkin 1984:37). Vowel length is contrastive, while quality (varying in a generally tense/lax manner) is phonologically conditioned. In Patwin, only stressed vowels may be long, due to considerations of syllable weight and stress assignment. Within stressed vowels, Lawyer (2021:47–56) does not report differences in quality. Thus within Patwin vowel pairs, length is contrastive, while quality is not. As this section will discuss in more detail, the Nomlaki pattern is different from that of Wintu, Patwin, or Proto-Wintun. Like Wintu, Nomlaki vowel pairs differ in both quality and length; unlike Wintu, quality is contrastive. However, while vowel length consistently distinguishes Nomlaki vowel pairs, vowel quality only sometimes does. This suggests that at the time of Freeman (1953), Nomlaki was undergoing a unique shift from a historical length-only cuing system to a mixed length/quality system.

Figures 2.1 and 2.2 show the Nomlaki F1/F2 vowel spaces for stressed and unstressed vowels respectively. Within each figure, the top image shows a F1/F2 scatterplot of vowel tokens, while the second image shows ellipses marking a 75% confidence interval around the same data points. Short vowels are marked in cool colors, while long vowels are marked in warm.

The stressed vowel space in Figure 2.1 shows very close overlap between long and short vowels, as we would expect if the difference between vowel pairs is largely one of length rather than quality. Vowel pairs are distributed around the extremities of the vowel space in a typical five-vowel pattern, which Liljencrants and Lindblom (1972) hypothesize is intended maximize perceptual contrast. In contrast, the unstressed vowel space in Figure 2.2 is noticeably more centralized. Compared to the confidence ellipses of the stressed vowels, the unstressed vowels' ellipses overlap to a far greater extent. This is true both within and between vowel pairs.

The noticeable gap in the middle of the stressed vowel space is closed in the unstressed vowel space, suggesting unstressed vowel centralization.

Tables 2.7 and 2.8 show the means (μ) and standard deviations (σ) for vowel F1/F2 in stressed and unstressed conditions, respectively. Inspecting these tables, we see that stressed long vowels generally have higher F1 values than their short counterparts. The only exception to this pattern is [i:]. Stressed F2 values are higher for long [i:] and [e:] compared to their short counterparts; this is reversed for [a:], [u:], and [o:]. This pattern reflects a general tendency for long vowels to extend towards the extremities of the F2 space: towards the front for front vowels, and the back for back vowels. That stressed [a:] patterns with stressed back vowels [u:] and [o:] rather than stressed front vowels [i:] and [e:] may suggest that stressed [a:] is phonologically considered a back vowel. These patterns are generally preserved for unstressed vowels, where long [e:], [a:], and [o:] have higher F1 than their short counterparts. However, unstressed [i:] and [u:] are lower than their short counterparts.

Looking at the standard deviations listed in 2.7 and 2.8, the standard deviation for F2 is generally greater for the unstressed counterpart. These standard deviations cannot be easily compared, as statistics such as the F-test are strongly dependent on normally distributed data. However, a non-statistical inspection confirms the visual impression in Figures 2.1 and 2.2 that unstressed vowels have greater variation about the F2 axis than stressed ones. This in turn suggests that unstressed vowels not only exhibit more F2 centralization, but also less articulatory precision. This is most notable in the low-central vowel pair [a]/[a:], where unstressed [a] takes up nearly the entire center of the unstressed vowel space; this can be seen in Figure 2.8. Unstressed [a] certainly overlaps the space expected for [ə], a fact reflected in Blankinship and Wenger (1978a). In this tribally authored pedagogical text, unstressed [a] (written <3>) is described the same vowel as English 'the', presumably [ə].

To assess whether the long and short vowel within each pair have significantly different quality (as measured by F1 and F2), I first conduct a Wilcoxon Signed-Rank test to each pair. Though this test is intended for non-parametric data, it is applied here to all data. Results are presented in Table 2.9. An examination of this table indicates that most long/short vowel pairs across both stress conditions differ in either F1 or F2. Particulars are less consistent. Only stressed e/e:, unstressed a/a:, and unstressed o/o: differ significantly in F1, while stressed i/i:, unstressed i/i:, stressed e/e, stressed a/a:, unstressed a/a:, and stressed u/u: differ significantly in F2. Unstressed e/e:, unstressed u/u:, and stressed o/o: do not significantly differ in either F1 or F2. Stressed o/o: and unstressed u/u: show significant difference across both F1 and F2.

The results shown in Table 2.9 indicate that F2 more consistently distinguishes vowel pairs than F1 does. All stressed vowel pairs (except o/o:) differ significantly in F2, while only stressed e/e: differs significantly in F1. There are more F1 and/or F2 differences among stressed pairs than unstressed pairs. Interestingly, the only unstressed pair to show both F1 and F2 differences is a/a:. As seen in Figure 2.1, unstressed [a] is highly centralized and covers nearly the entire central area of the vowel space, while unstressed [a:] is articulated further back in the oral cavity, overlapping in backness with [u]. Taking visual and statistical evidence together, [a] appears to function phonetically very much like schwa, while [a:]

Short		Long	
mi	2SG	*mi:*	'tree'
tehke	'ladder'	*teede*	'buttocks'
k'a	'cloud'	*k'aa*	'sand'
tuduhu[1]	'ball'	*tuuku*	'sun'
tso[2]	'rush'	*tsoonoo'koko*	'skull'

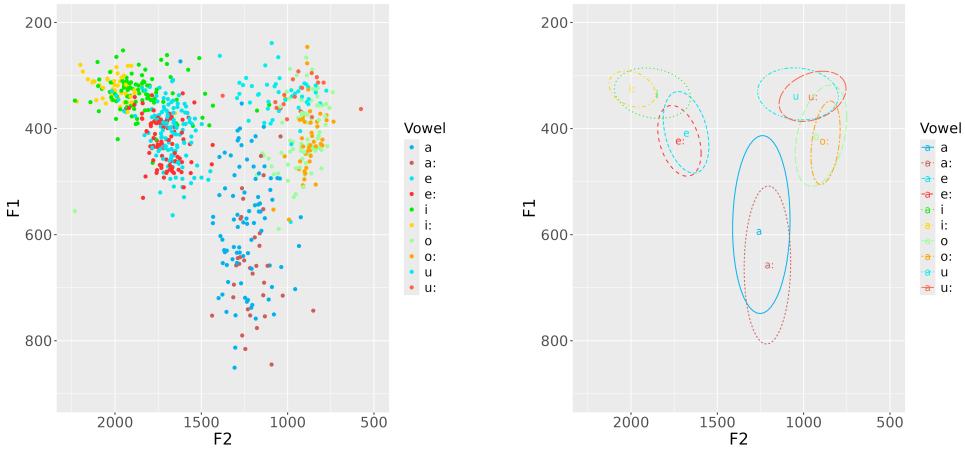
Table 2.5: Minimal pairs for vowel length in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from Blankinship and Wenger (1978a); [2] are from Hale (1846).

i vs. **e**	*kiti*	'cat'	*kete*	'one'
i vs. **a**	*cali*	'good one'	*cala*	'be good'
i vs. **u**	*cūt*[2]	'burden net'	*ciit*	'fish (particular)'
i vs. **o**	*hi*[5]	'again'	*ho*	'yes'
e vs. **a**	*kě*[3]	'earthworm'	*ka:t*[4]	'belly'
e vs. **u**	*leh*[1]	'bush rabbit'	*ɬuh*	'egg'
e vs. **o**	*k'eh*	'earthworm'	*ko*	'all'
a vs. **u**	*ćat*	'pinecone'	*cūt*	'burden basket'[1]
a vs. **o**	*ka:t*[4]	'belly'	*ko*	'all'
o vs. **u**	*bok*[1]	'milkweed'	*buq*	'pus'

Table 2.6: Minimal pairs for vowel quality in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from Merriam (1919); [2] are from Barrett (1908); [3] are from Curtis (1924b); [4] are from 4B 1956; [5] are from Swadesh and Melton (1953).

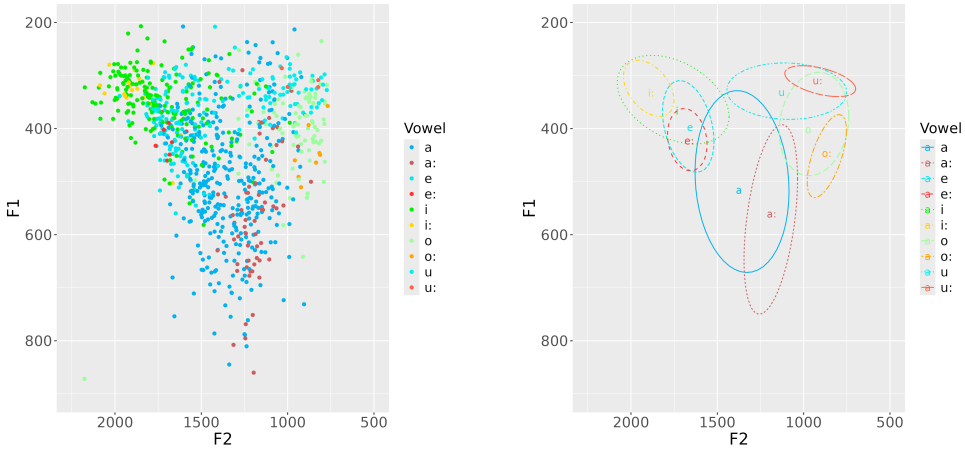
	F1 μ	F1 σ	F2 μ	F2 σ	n
í	335.147	35.711	1852.938	182.460	104
í:	324.430	23.045	2001.417	108.986	49
é	408.525	51.884	1678.597	113.912	132
é:	422.624	44.250	1714.883	91.046	93
á	590.612	137.751	1257.761	168.124	87
á:	651.575	103.051	1196.272	106.923	32
ú	338.868	48.545	1042.674	150.288	46
ú:	339.442	28.939	945.584	157.318	19
ó	413.728	66.102	925.978	177.101	79
ó:	423.075	61.522	879.749	64.853	45

Table 2.7: Means (μ) and standard deviations (σ) for the F1 and F2 of each stressed Nomlaki vowel. Stressed vowels are marked with an acute accent. F1 and F2 are measured in Hz.



(a) (b)

Figure 2.1: F1/F2 of stressed Nomlaki vowels, presented as a scatterplot (left) and ellipses with 75% confidence intervals (right). The mean of each vowel is noted by the vowel placed inside its respective ellipsis. Cool colors indicate short vowels, while hot colors indicate long.



(a) (b)

Figure 2.2: F1/F2 of unstressed Nomlaki vowels, presented as a scatterplot (left) and ellipses with 75% confidence intervals (right). The mean of each vowel is noted by the vowel placed inside its respective ellipsis. Cool colors indicate short vowels, while hot colors indicate long.

	F1 μ	F1 σ	F2 μ	F2 σ	n
i	366.905	182.686	1729.002	235.624	190
i:	333.183	50.640	1888.851	117.091	20
e	396.947	59.251	1657.226	108.101	121
e:	422.947	38.276	1663.430	76.165	10
a	516.717	181.417	1374.270	239.978	364
a:	565.882	127.859	1185.236	111.574	60
u	331.137	42.252	1128.385	234.791	84
u:	309.470	16.699	919.732	112.722	4
o	402.204	86.860	975.519	195.088	86
o:	446.491	49.777	865.937	68.491	8

Table 2.8: Means (μ) and standard deviations (σ) for the F1 and F2 of each unstressed Nomlaki vowel. F1 and F2 are measured in Hz.

	F1 W	F2 W
í/í:	2943	**1082****
é/é:	**4902***	**4460****
á/á:	601	**1887***
ú/ú:	398	**599***
ó/ó:	1636	2036
i/i:	2196	**1080****
e/e:	419	601
a/a:	**7794****	**16427****
u/u:	240	257
o/o:	**182***	489

Table 2.9: Differences in mean F1/F2 for long and short vowels of the same stress condition, using the Wilcoxon Signed-Rank test. Stressed vowels are marked with an acute accent. Bolded pairs show significantly different means for $p < 0.05$ [** $p<0.01$, * $p<0.05$].

does not. That it is short [a] which is more 'schwa-like' is also in line with phonological expectations, as schwa typically occurs in unstressed, reduced conditions. These results suggest firstly that unstressed vowels are associated with centralization, and secondly that unstressed [a] functions phonetically as a schwa.

Having established that long/short vowel pairs contrast in F1 and/or F2, we now examine whether stress affects these values. Table 2.10 shows results. These results show fewer consistent F1/F2 differences than the long/short vowel comparisons in Table 2.9. Stressed/unstressed [i] and [i:] show significant differences in F2. Stressed/unstressed [a], like unstressed [a]/[a:], show significant differences in F2. Stressed/unstressed [a:] also shows differences in F1. Other vowels do not show significant differences.

Between-stress comparisons indicate that [i] and [i:] (but not [e] and [e:]) differ significantly in backness between stress conditions. While Figure 2.9 indicates that unstressed [a] and [a:] differ in F1 and F2, Figure 2.10 shows that short unstressed [a] also differs in F1 and F2 from short stressed [a]. Inspecting the unstressed vowel space in Figure 2.2 suggests that unstressed [a] is extremely centralized, differing from its unstressed long counterpart [a:] as well as its stressed counterpart [a].

Examining the F1/F2 means shown in Tables 2.7 and 2.8 in tandem with statistical measurements shown in Tables 2.9 and 2.10, the difference between stressed and unstressed [a] appears stark. Unstressed [a] significantly differs in both height and backness from stressed [a], and in fact appears in the vowel space where we might expect a schwa. Schwa is typically regarded as a featureless and targetless vowel. When modelled by a uniform tube, formants are expected at 500 Hz (F1), 1500 Hz (F2) and 2500 Hz (F3) (Fant 1960). We indeed see that Nomlaki [a] F1 is quite close to the projected schwa F1, at 516 Hz. Nomlaki [a] F2 is more deviant, but still close: 1374 Hz, compared to an estimated schwa F2 of 1500 Hz. That [a] centralizes in unstressed position is suggestive of a schwa. However, other phonological considerations may suggest otherwise; for example, Nomlaki [a] is not the reduction target of multiple unstressed vowels (Recasens 2021).

Schwa is typologically unusual in California. Golla (2011:209) reports that a reduced vowel [ə] appears in Oregon and California Athabaskan (except Chetco-Tolowa), where it phonologically contrasts with non-reduced vowels. Other languages reported to have schwa by Golla (2011) (e.g. Palaihnihan, most Yuman languages, northern Pomo, and Klamath-Modoc) typically show an epenthetic schwa that is the result of phonological insertion, rather than vowel reduction.

Having examined F1/F2 differences among vowels, we now examine differences in duration. Figure 2.3 shows duration in milliseconds for long and short stressed/unstressed vowels. Visual inspection of this figure suggests that vowel duration is relatively stable across stress conditions: long vowels have similar durations regardless of stress, as do short vowels. However, there is a large difference between long and short vowel duration when compared with each other.

Means (μ) and standard deviations (σ) for long and short vowel duration are shown in Table 2.11. We see that the mean difference between stressed and unstressed short vowels is about 12 ms (1.113 V:/V ratio), while the mean difference between stressed and unstressed

long vowels is about 7 ms (1.039 V:/V ratio). Across length conditions, we see that the mean difference between stressed long and stressed short vowels is 93.702 ms (1.828 V:/V ratio), while the mean difference between unstressed long and unstressed short vowels is 97.519 ms (1.960 V:/V ratio). The ratio between stressed/unstressed short vowels, as well as the ratio between stressed/unstressed long vowels, appears very close to 1:1 and likely not perceptible. Within the stressed or unstressed category, the difference between long and short vowels is much starker. In Patwin, Lawyer (2021:56) reports long/short stressed vowel ratios for three speakers as 2.37, 3.40, and 1.96. The last ratio, taken from the speech of Ida Mitchum, appears very close to those reported here for Nomlaki speaker Andrew Freeman (1.828 for stressed V:/V). Altogether, this suggests that while long and short vowels differ in duration from each other, vowels of a given length do not differ much in duration across stress condition.

To assess the differences between long and short vowels across stress contexts, a Wilcoxon Signed-Rank test is used again. Results are shown in Table 2.12. The results of this table generally match a visual inspection of Figure 2.3 and Table 2.11. Long and short vowels differ significantly within stress conditions, as do short vowels between stress conditions. Stressed short vowels and unstressed short vowels have a mean difference of 12 ms. Though this difference was found to be statistically significant, it seems unlikely that it is auditorily significant, as this ratio (1.113) is not cross-linguistically involved in contrastive length distinctions.

Unlike short vowels, long vowels are not significantly different across stress conditions. This is somewhat surprising, as a statistical examination of stress (see Chapter 2.4) indicates that vowel duration is a significant predictor of tress. The explanation may have a phonological component. Because long vowels are preferentially stressed, at least one long vowel per word will always be stressed if present (though the precise interaction between weight and length has not yet been fully examined). This means that a preponderance of long vowels in the data set are stressed, not because duration itself *cues* stress, but because most long vowels are *assigned* stress to satisfy weight-based assignment constraints.

Lawyer (2021:54) finds that stressed long vowels in Patwin have an average duration 2 to 3 times longer than stressed short vowels. The distributions of long and short Patwin vowels may overlap considerably. Thus a phonemically short vowel may be equal in duration to some phonemically long vowels. Because of this, a Patwin vowel without context cannot easily be classified as long or short. This is also true of Nomlaki vowels. As seen in Figure 2.3, the fourth quartile of both stressed and unstressed short vowels overlaps with the first to third quartiles of long stressed/unstressed vowels. Future work in this subject should normalize speech rate to account for these considerations.

Based on the results in Table 2.12, long and short vowels appear significantly different in duration. Table 2.13 shows how vowel duration differs between long and short members of each vowel pair within the same stress condition. This again uses the Wilcoxon Signed-Rank test. Results show significant differences in duration for all vowel pairs, across both stress conditions.

In sum, we find that Nomlaki vowels consist of ten long/short pairs grouped generally

	F1 W	F2 W
í/i	8794	**12971****
í:/i:	473	**737****
é/e	9017	8783
é:/e:	457	621
á/a	**21822****	**10285****
á:/a:	**1464****	1076
ú/u	2124	1588
ú:/u:	60	45
ó/o	4005	2793
ó:/o:	125	193

Table 2.10: Differences in mean F1/F2 for vowels of the same length across stress conditions, using the Wilcoxon Signed-Rank test. Stressed vowels are marked with an acute accent. Bolded pairs show significantly different means for $p < 0.05$. [** $p<0.01$, * $p<0.05$].

	V μ	V σ	n	V: μ	V: σ	n
Stressed	113.128	30.920	448	206.830	53.783	238
Unstressed	101.616	35.343	845	199.135	57.630	102

Table 2.11: Means (μ) and standard deviations (σ) for long and short vowel length, for stressed and unstressed vowels. Measurements in milliseconds.

		Difference (ms)	W
Vowel length	Stressed	93	**102161****
	Unstressed	98	**80518****
Stressed	V́:	8	13079
	V́	12	**231720****

Table 2.12: Wilcoxon Signed-Rank test for long and short vowel duration, within and across stress conditions. Bolded pairs show significantly different F1 or F2 means for $p < 0.05$ [** $p<0.01$, * $p<0.05$].

into high front, high back, high-mid front, high-mid back, and low central regions of the vowel space. Long/short vowel pairs are consistently distinguished by duration, and usually –but not always– by either F1 or F2. Unstressed vowels appear to centralize to some degree, especially low-central [a], which phonetically resembles a schwa. Among all vowels, F2 variance appears greater for unstressed vowels, also suggestive of unstressed vowel reduction. Vowel duration is distinct between long and short vowels across stress conditions. Duration is also distinct between stressed and unstressed long vowels, but not stressed and unstressed short vowels. This latter observation may be a phonological outcome of weight-based stress assignment.

The findings above corroborate Björklund (2021), which reported that Nomlaki vowels are consistently distinguished by duration, and usually (but less consistently) distinguished by quality. Taken in tandem with the Wintu and Patwin literature, these findings suggest that the Proto-Wintu vowel space consisted of five long/short vowel pairs distinguished by duration alone. Both Nomlaki and Wintu demonstrate quality differences that suggest a Northern Wintuan phonetic shift, as Patwin (Southern Wintuan) does not exhibit significant differences between long/short vowel pairs (Lawyer 2021:50). However, Wintu vowel quality differences are independent of length. The use of quality to distinguish long/short vowel pairs in Nomlaki thus appears to be a Nomlaki innovation.

2.4 Stress

The acoustic correlates of stress have not been well studied for any Wintuan language. It is obligatory and culminative, marking one and only one syllable per word for highest prominence (Hyman 2006). Because stress serves a relational function, it does not need to be signaled by a single acoustic feature, like F0 marks pitch or dB marks intensity. Rather, any one or combination of acoustic features could conceivably mark stress, so long as they result in the prominence of a particular syllable. Common acoustic correlates of stress are increased F0, duration, intensity, and more extreme articulation of F1/F2 (Gordon 2014).

Pitkin (1984:18) reports that primary stress in Wintu is signalled by increased 'tenseness and loudness', while Lawyer (2015:56) observes that stress in Patwin is correlated with increased loudness, pitch, duration. However, acoustic studies have not been carried out for either language. This section finds that Nomlaki stress is associated with nearly all of the correlates outlined by Gordon (2014): increased pitch, intensity, duration, and extreme F2 articulation. Understanding these correlates is important not only to better see how stress is expressed cross-linguistically, but to understand more complex prosodic structures (some of which are discussed in Chapter 3).

This section examines the phonetic correlates of Nomlaki stress. 376 total tokens were analyzed, comprising 188 stressed and 188 unstressed vowels. Lexical items elicited in isolation are produced as intonational phrases, and therefore subject to phrasal effects (Gordon et al. 2002). Because of this, it is ideal to embed a target lexical item in a carrier phrase that draws phrasal stress away from it. Such constructions were not recorded in Nomlaki,

and as Nomlaki currently does not have first-language speakers, it is not possible to elicit them. To mitigate potentially confounding effects between lexical and phrasal stress, this study examines stress only for single lexical items, where phrasal and lexical stress align on the same syllable.

To examine stress correlates, duration (in ms), F0 (in Hz), and intensity (in dB) are compared across stressed and unstressed vowels. Tables 2.14 and 2.15 summarize the mean, standard deviation, and token count for stressed and unstressed F0 and intensity, respectively. Duration values were previously examined in Table 2.11.

Examining F0 (Table 2.14), intensity (Table 2.15), and duration (Table 2.11) for stressed and unstressed vowels, we see that stressed vowels appear to have higher values for all three phonetic measurements. To examine these statistically, I fit a binary logistic regression model using R's *glm()* function (Kassambara 2023). F0, F1, F2 (in Hz), duration (in ms), and intensity (in dB) are used as predictors, while a vowel's stressed status is the outcome. Because F1 and F2 are intended to reflect vowel centralization, the absolute values are centered (scaled) around 0. This reflects the notion that vowel centralization in unstressed vowels (or conversely, more extreme articulation in stressed vowels) reflects motion away from a center point, rather than a strictly linear motion in one direction of the oral cavity. Results of this binomial logistic regression model are shown in Table 2.16.

We see from Table 2.16 that all predictors except the intercept and F1 are significant for predicting stress. In this model, the unstressed condition is coded as the reference level. Examining estimates, we see that F0, F2, intensity, and duration are all positively associated with stress. This suggests that tongue frontness/backness is more associated with stress than tongue height. That F2 is a more stable correlate of stress than F1 is corroborated visually in Figure 2.2, where the unstressed counterparts of stressed vowels diverge more in backness than height. This observation also matches results from Table 2.10, which observed that F2 more consistently differed between stressed conditions. Taking these results together, we can conclude that Nomlaki stress is associated with higher pitch (F0), more extreme articulation of F2, intensity, and duration. F1 is less consistently associated with stress, though it differs significantly between some vowel pairs.

Lawyer (2021:56) states that Patwin stress is associated with higher loudness, pitch, and slight duration, while F1 and F2 are not significantly associated. In Wintu, stress is associated with higher pitch (Pitkin 1984:21). Nomlaki stress is associated with all of these cues, as well as F2.

	W
í/í:	**283.5****
i/*i* :	**96****
é/é:	**219.5****
e/*e* :	**119****
á/á	**59****
a/*a* :	**1456.5*****
ú/ú	**81.5****†
u/*u* :	**8****
ó/ó	**175****
o/*o* :	**3****

Table 2.13: Kruskal-Wallace test for long and short vowel duration, within and across stress conditions. Bolded pairs show significantly different means for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$]. Pairs marked with a dagger (†) indicate that the test statistic has tied values.

Condition	μ	σ	n
stressed	149.87	25.98	188
unstressed	105.60	26.74	188

Table 2.14: Means (μ) and standard deviations (σ) for stressed and unstressed vowel F0 (in Hz).

Condition	μ	σ	n
stressed	78.82	4.44	188
unstressed	69.37	6.37	188

Table 2.15: Means (μ) and standard deviations (σ) for stressed and unstressed vowel intensity (in dB).

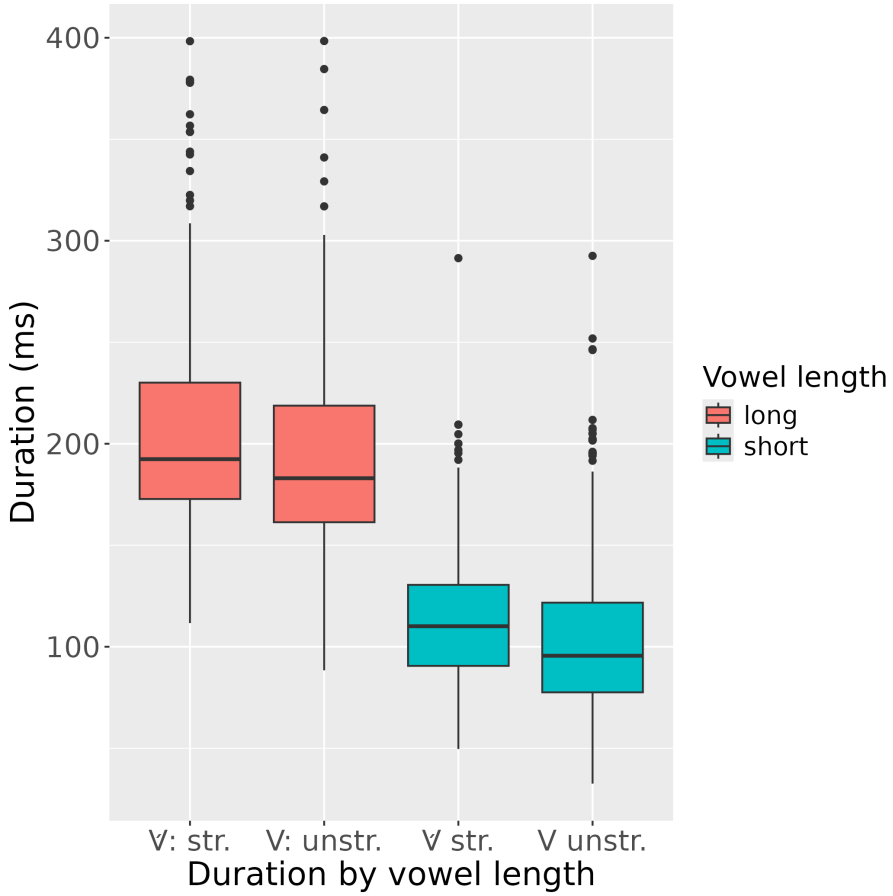


Figure 2.3: Boxplot for vowel duration for long and short vowels, across stressed (left for each pair) and unstressed (right for each pair) conditions. Measurements in milliseconds.

Coefficient	Estimate	Std. Error	Z
Intercept	-3.49	0.42	-8.24
F0	0.02	0.003	**6.57****
F1 (abs scaled)	-0.15	0.12	-1.27
F2 (abs scaled)	0.74	0.13	**5.93****
Intensity	0.34	0.12	**2.93****
Duration	0.49	0.07	**7.45****

Table 2.16: Summary table for binomial logistic regression, with F0, F1, F2 (in Hz), duration (in ms), and intensity (in dB) as predictors for stress. Bolded pairs show significantly different F1 or F2 means for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

2.5 Oral stops

Nomlaki has a particularly rich stop inventory, distinguishing five places of articulation and four laryngeal states. Bilabial and alveolar stops distinguish all four laryngeal states, while velar and uvular stops distinguish voiceless unaspirated and voiceless ejective stops. However, aspiration contrasts in these latter places of articulation are not documented in all sources; e.g. Blankinship and Wenger (1978a).

Wintu stops pattern identically to Nomlaki, with the exception of some attestations of Nomlaki [k^h] and [q^h]. Patwin stops pattern the same as Wintu and Nomlaki for the bilabial and alveolar series, while its velar series includes /k^h/ (Lawyer 2021:32). As a result of a uvular fronting chain, Patwin velar and uvular stops are merged. These differences are shown in Table 2.17.

Proto-Wintun is reconstructed with the same four-way bilabial/alveolar stop contrast that all three languages share, while velar and uvular stops are reconstructed as voiceless unaspirated, voiceless aspirated, and voiceless ejective. Golla (2011:204) notes that 'a basic three-way contrast between plain, glottalized, and aspirated stops and affricates is the most widespread pattern in California languages', a pattern which Nomlaki possibly follows for velar and uvular places of articulation (depending on the status of [k^h] and [q^h]). The contrastive voicing present in the bilabial and alveolar stop series is typologically rarer and is limited geographically to an area in north-central California that Golla (2011) speculates may show borrowing from languages of the Hokan phylum.

Glottal state

This section examines all four laryngeal contrasts in Nomlaki, with a special focus on ejective typology. Figure 2.4 shows waveforms for all four glottal contrasts. This section confirms that phonologically voiced stops are phonetically voiced, despite transcribers such as Swadesh marking voiced stops as their voiceless equivalents, e.g. [d] as <t>. This section also confirms that Nomlaki ejectives, like those in many other California languages, may either be produced as 'true' ejective stops (that is, with a glottalic egressive airstream) or as glottalized pulmonic egressive stops. I also find that Nomlaki ejectives pattern typologically with 'Hausa'-style ejectives over 'Navajo'-style ones (Ladefoged and Maddieson 1996); this is contrasted with Patwin, where ejectives freely alternate between both styles (Lawyer 2021:41–42). Acoustic measurements for Wintu ejectives have not yet been measured.

As seen in Figure 2.4, [t], [t^h], and [t'] are indeed phonetically voiceless, with no glottal pulsing within their stop closures. Voicing of [t] begins approximately 20 milliseconds after the oral release, directly following the release burst. Voicing begins later for both the aspirated counterpart [t^h] and ejective [t], at around 30 milliseconds following the oral release. The oral release of [t'] is of characteristically high amplitude, followed by temporary glottal stricture before the onset of the following vowel. The glottal stricture is not totally complete, as seen by the very low-amplitude aperiodic vibrations between the oral release and the vowel onset. In contrast, [d] shows low-amplitude periodic vibrations throughout

	Bilabial	Alveolar	Velar	Uvular	Glottal
Proto-Wintun	p, p^h, p', b	t, t^h, t', d	k, k^h, k'	q, q^h, q'	ʔ
Nomlaki	p, p^h, p', b	t, t^h, t', d	k, (k^h), k'	q, (q^h)*, q'	ʔ
Wintu	p, p^h, p', b	t, t^h, t', d	k, k'	q, q'	ʔ
Patwin	p, p^h, p', b	t, t^h, t', d	k, k^h, k'		ʔ

Table 2.17: Summary of stop contrasts across the Wintuan languages. Wintu data is from Pitkin (1984), Patwin data is from Lawyer (2015), and Proto-Wintun data is from Shepherd (2005). The phonemic status of phones in parentheses is not certain.

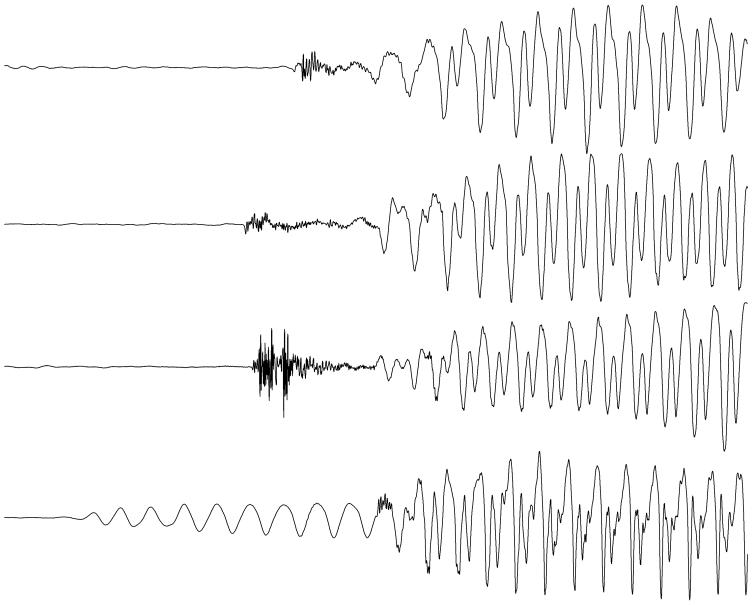


Figure 2.4: Nomlaki alveolar stop series. From top to bottom: [t] in *tupupa* 'thunder', [t^h] in *t^hu:ku* 'sun', [t'] in *t'umit* 'fog', and [d] in *dohqo* 'flint stone.' These tokens are taken from stressed, syllable-initial segments. Each waveform is 16 ms in duration, aligned at the onset of voicing.

the oral closure, indicative of voicing. The patterns seen here hold throughout all Nomlaki places of articulation for which the laryngeal setting is applicable.

Unlike bilabial and alveolar stops, all velar and uvular stops are voiceless. Aspirated velar and uvular stops are recorded in some sources.

Shepherd (2005:6) considers Proto-Wintun *k^h to have the Nomlaki reflexes /x/, /χ/, and possibly /k^h/ (the Wintu reflex is /k/). The reflexes of *q^h are listed as 'q^h, k^h, x̣ (?)'). These aspirated stops are also recorded in some written documentation, primarily by Swadesh. These include *khani* 'gills', *khewnay* 'why', *khiikhi* 'snake', *khat* 'stomach', *qhos* 'steam', and *qhoowo* 'apple' (5.6 P6 1953). Waveforms of aspirated stops from all places of articulation are shown in Figure 2.5.

As seen in Figure 2.5, all aspirated stops are voiceless, with no glottal pulsing during the oral closure. VOT varies considerably by place of articulation, with uvular stops being the longest by a considerable margin, followed by bilabial, velar, and alveolar stops. This visual observation is confirmed by the statistical testing discussed below, which finds that uvular stop VOT differs significantly in length from alveolar stops (though not from velar or bilabial stops).

As with the other Wintuan languages (and many other California languages), Nomlaki has a rich ejective inventory. This includes four stops (/p'/, /t'/, /k'/, /q'/) and two affricates (/tʃ'/, /tɬ'/). Waveforms of these stops (except for [p'], which is not present in the audio data) are shown in Figure 2.6.

Ladefoged and Maddieson (1996) note that ejectives cross-linguistically tend to follow 'Navajo-like' or 'Hausa-like' patterns. These variations reflect the timing of the oral and glottal releases of the ejective. Following the release of the oral closure, 'Navajo-like' ejectives maintain glottal closure for several milliseconds before the glottis finally opens. This tightness of the glottis directly adjacent to the onset of the following vowel leads to creakiness on the initial portions of this vowel or even a glottal stop release burst. In contrast, 'Hausa-like' ejectives release the glottal closure very shortly after the oral closure. This is followed by voiceless, non-periodic airflow, after which comes the onset of vowel voicing. As the glottis has already been open for some milliseconds at this time, voicing of the following vowel is modal.

Nomlaki ejectives appear to follow the Hausa pattern. As seen in Figure 2.6, the release of each ejective's oral closure is followed by a period of low-amplitude, aperiodic, unvoiced energy. This continues for several milliseconds before the onset of vowel voicing. The subsequent vowel is modally voiced, without creakiness. This phenomenon is harder to see in the ejective affricates, as by definition the release of the stop's oral closure is followed by frication, which obscures the aftermath of the stop release. However, there is a period between the stop release and onset of frication where low-amplitude, almost frication-like energy can be seen on the waveforms of [tʃ] and [tɬ']. This matches the 'Hausa-like' pattern. The consistent presence of 'Hausa-like' ejectives in Nomlaki differs from its sister language Patwin, where 'Navajo-like' and 'Hausa-like' ejectives occur in free variation (Lawyer 2021:41). No such research has yet been conducted in Wintu. Hausa-type ejectives, which are sometimes called 'stiff ejectives' (Kingston 2005), are found among several North American languages,

including Nez Perce, Sahaptin, and Montana Salish (Wright et al. 2002).

Though the stops described above are here called 'ejectives', the level of glottal closure actually achieved in a given utterance may differ, apparently in free variation. Some ejectives show very high amplitude energy at the moment of oral release, and so presumably were produced with a high degree of glottalic air pressure (pressure produced by the glottalic airstream mechanism). Others have a much more low-amplitude release, suggesting a laxer glottalic pressure. The latter stops may be more accurately described as 'glottalized' rather than ejective, and indeed many Wintuan (and Californianist) researchers prefer to call this stop series 'glottalized' (Golla 2011:204).

Figure 2.7 shows the the alveolar ejective /t'/ with both a high- and low-amplitude oral release. Both segments are stressed, word-initial alveolar stops. Both additionally follow the 'Hausa-like' ejective pattern, where the oral and glottal releases follow closely behind each other, and the period between the release(s) and the vowel onset is characterized by low-amplitude aperiodic airflow. The high-amplitude release is quite perceptually salient and is a more typical ejective, whereas the low-amplitude release may be considered simply glottalized. This distinction appears to freely vary and does not contribute to contrastive meaning. This tendency is also noted in Patwin (Lawyer 2021:42).

Voice Onset Time (VOT)

Voice Onset Time (VOT) is one of the most common acoustic measurements used to distinguish stops, first proposed by Lisker and Abramson (1964). Essentially measuring the lag between the release of an oral stop and the beginning of voicing for the following vowel, the VOT values associated with a given stop category are language-specific (Ladefoged and Maddieson 1996). Ladefoged and Maddieson describe aspiration in two ways: 1) as a measure of glottal opening, and/or 2) as a measure of timing between a stop's oral release and the voicing of the following vowel. The latter measurement is much more achievable when working with exclusively acoustic data, and will thus be adopted here. This section finds that Nomlaki stops, even when compared with Patwin stops, have quite low VOTs across category types. While Patwin aspirated stops are on average 95 ms VOT (Lawyer 2015:39), Nomlaki aspirated stops are half of this: 47.42 ms. Ejectives pattern similarly. This places them typologically between unaspirated and aspirated stops (Cho and Ladefoged 1999). These consistently low VOTs across laryngeal categories appears to be a distinctive phonetic feature of Nomlaki.

VOT typically varies by place of articulation. In their study of 18 languages across several unrelated language families, Cho and Ladefoged (1999) find that VOT is typically longest for velar or uvular stops, and shortest for bilabial stops. There are several explanations for why this is so. A common aerodynamic argument is that velar and uvular stops have a smaller cavity behind the stop closure than alveolar or bilabial stops, which can produce greater pressure before the stop's release. Following the stop release, this greater pressure may take longer to lower to the transglottal differential needed for voicing the following vowel. The result is longer aspiration times (Maddieson 1997).

The Nomlaki stops discussed here are collected from stressed syllables in word-initial position, as stress may significantly affect VOT (Cho and Ladefoged 1999). 166 tokens are considered overall. Though attested in written documentation, ejectives [p'] and [q'] are not present in the available audio. Table 2.18 presents means (μ) and standard deviations (σ) for each oral stop in Nomlaki. A box plot of these VOTs is shown in Figure 2.8.

As seen in Table 2.18 and Figure 2.8, the number of tokens per stop category varies considerably. Voiceless unaspirated stops are most represented, overwhelmingly [p]. Within voiceless unaspirated stops, [p] and [t] have a nearly identical mean VOT, at 23.09 and 22.99 ms respectively. The mean VOT for uvular [q] is slightly longer, at 25.33 ms. The mean VOT for velar [k] is longest, at 39.65 ms.

Within voiceless aspirated stops, the longest mean VOT is for [q^h], at 63.53 ms. [p^h] and [k^h] follow closely behind, at 44.61 ms and 44.33 ms respectively. [t^h] has the shortest mean VOT, at 37.08 ms. Ejective VOTs pattern generally with their aspirated counterparts; of the ejectives with available audio data, [k'] is longer, at 58.62 ms (cf. [k], 39.65); alveolar [t'] is shorter, at 31.42 ms (cf. [t], 22.99 ms). That ejective VOTs pattern generally with aspirated stop VOTs, rather than shorter ones, is likely because a large number of tokens have double oral releases. This is most common with [k'], which shows the highest mean VOT of any stop. An example of a double-released [k'] is shown in Figure 2.6.

Hypothesis testing confirms the general observations from Table 2.18. Kruskall-Wallace tests were used to examine whether the mean VOT of any category was significantly different from those of the other categories. If the Kruskall-Wallace results suggested a significant difference, Dunn's post-hoc test (with Bonferroni correction) was used to determine which stop pairs showed a significant difference. Significance for all tests was set at $p < 0.05$, using the adjusted p-value to account for the multiple comparisons being done. These statistics are shown in Table 2.19.

Testing in this manner reveals an extremely stark difference in VOT between stops of differing laryngeal settings (p=2.968e-16), as expected from my own auditory perception and a visual examination of Figure 2.8. Highly significant differences are shown across all stop combinations except for the aspirated/ejective pair. As discussed above, this may be because Nomlaki ejectives frequently show a double oral release, which would increase average VOT. As we fully expect these laryngeal settings to have significantly different VOTs, these results serve as a confidence test for further testing.

Results comparing unaspirated and aspirated stop VOT are summarized in Table 2.20

Within unaspirated stops, VOT differs significantly between velar stops and all other places of articulation. Results are summarized in Tables 2.20 and 2.21, respectively. As the mean VOT for [k] is highest among unaspirated stops (39.95 ms), this is expected. Within aspirated stops, mean VOT differs significantly only between alveolar and uvular stops. As aspirated alveolar stops have the smallest mean VOT (37.08 ms) and uvular stops have the largest mean VOT (63.65 ms), this result trends in the expected direction.

For ejective stops, only alveolar and velar ejective stops have available measurements. Results are shown in Table 2.22. Velar ejectives have a longer mean VOT (58.62 ms) than

	μ	σ	n
p	23.09	11.79	59
p^h	44.61	9.52	5
p'	–	–	–
b	-60.07	14.07	6
t	22.99	7.19	16
t^h	37.08	9.55	6
t'	31.42	7.32	8
d	-45.81	14.07	6
k	39.65	18.12	18
k^h	44.33	10.04	21
k'	58.62	16.72	4
q	25.33	7.92	13
q^h	63.65	13.88	5
q'	–	–	–

Table 2.18: Means (μ) and standard deviations (σ) for the VOT of each Nomlaki oral stop category.

	z
aspirated/ejective	1.2
aspirated/unaspirated	**7.01****
ejective/unaspirated	**2.92***
aspirated/voiced	**7.32****
ejective/voiced	**4.84****
unaspirated/voiced	**3.60****

Table 2.19: Differences in VOT for stops between each pair of laryngeal settings. Results are from a post-hoc Dunn's test following significant Kruskall-Wallace results (p=2.968e-16). Bolded pairs show significantly different VOTs for adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

alveolar ejectives (31.42 ms). This difference was found to be significant ($p = 0.017$). No significant difference in mean VOT was found between voiced stops.

Statistical results generally agree with the visual impression shown in Figure 2.8. Mean VOT is significantly different between all laryngeal settings, except for aspirated vs ejective stops. This may be because a large amount of Nomlaki ejectives are accompanied by double oral releases. For unaspirated stops, VOT is longest for velar stops, and mean velar VOT is significantly different between velar and bilabial, alveolar, and uvular stops (other unaspirated stop VOTs are not found to be significantly different). For aspirated stops, VOT is longest for uvulars. Mean uvular VOT is only significantly different from mean alveolar VOT, which has the shortest aspirated VOT. For ejectives, VOT is longest for velars and is significantly different than alveolar VOT (no other places of articulation are available for ejectives). No significant differences in mean VOT were found for voiced stops.

These observations are generally in line with findings in Cho and Ladefoged (1999). Cho and Ladefoged (1999) note that cross-linguistically, typically the velar or uvular stop has the longest VOT: however, there is little consistency in which of the two is actually longest. This tendency is corroborated here, where velars have the longest VOT among unaspirated and ejective stops and uvulars have the longest VOT among aspirated stops. That the mean aspirated uvular VOT is longer than aspirated velar (when the opposite is true for unaspirated and ejective stops) is possibly due to a tendency towards weak uvular oral closure. Unlike for other places of articulation, Nomlaki uvular stops are consistently released with a very weak or almost indiscernible release burst; the weakness of the stop closure is underscored by how they often surface as fricatives (see Chapter 3).

Less expected are the aspirated stop VOTs, where only the difference between alveolar and uvular VOT is significant. While the difference is in the expected direction (uvular stops are longer than alveolars), it is unexpected that no other places of articulation show significant differences. This may be due to the uneven number of data points for each sample.

It is somewhat surprising that ejective VOTs are separable from the other three stop types, as ejectives are not necessarily distinguished from other stops by VOT. Within the Nomlaki data, ejective VOT lengths vary with respect to other stops at the same place of articulation: for the alveolar series, the VOT of ejective [t'] lies between unaspirated [t] and aspirated [t^h]; for the velar series, the VOT of ejective [k'] is higher than [k] and [k^h]. The exceptionally long VOT for velars is probably partially explained by a high number of observed double release bursts. This is common in velar stops, for reasons which are not fully clear but which may have to do with the Bournoulli force acting on the tongue dorsum (Kingston 1983).

Hausa-style 'stiff ejectives' like those in Nomlaki typically have longer VOTs than Navajo-style 'slack ejectives' (Wright et al. 2002). This is because the glottal release follows closely behind the oral release of a Hausa-style ejective, leaving more time (i.e. VOT) between glottal release and voicing. This is in contrast with Navajo-style ejectives, where the glottal release follows some time after the oral. This observation is fully corroborated for Nomlaki velar ejectives, and partially corroborated for alveolars. These findings mimic patterns found in other North American languages. In their study of the Athabaskan/Dene lan-

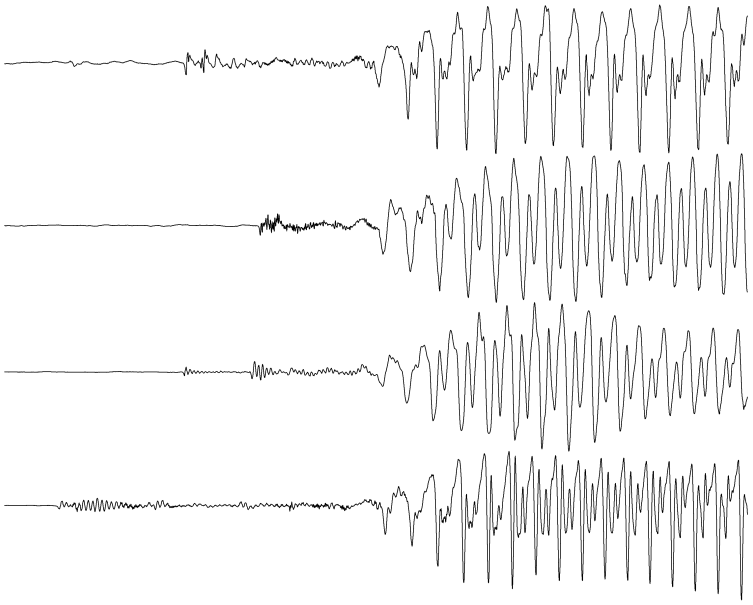


Figure 2.5: Nomlaki aspirated stop series. From top to bottom: [p^{h}] in *p^{h}oh* 'fire', [t^{h}] in *t^{h}u:ku* 'sun', [k^{h}] in *k^{h}uma* 'be dark', and [q^{h}] in *q^{h}os* 'steam.' These tokens are taken from stressed, syllable-initial segments. Each waveform is 18 ms in duration, aligned at the onset of voicing.

	z
alveolar/bilabial	0.47
alveolar/uvular	-0.80
bilabial/uvular	-1.41
alveolar/velar	**-3.80****
bilabial/velar	**-5.36****
uvular/velar	**-2.77****

Table 2.20: Differences in VOT for unaspirated stops between each pair of places of articulation. Results are from a post-hoc Dunn's test following significant Kruskall-Wallace results (p= 1.784e-06). Bolded pairs show significantly different VOTs for adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

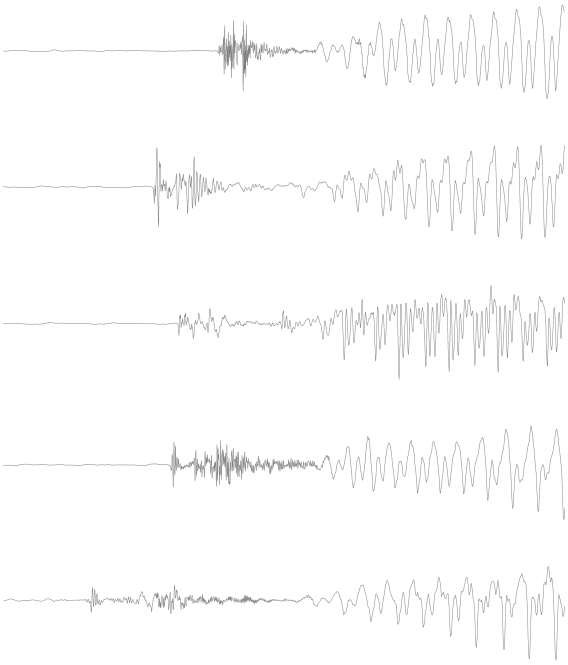


Figure 2.6: Nomlaki ejective stop series. From top to bottom: [t'] in *t'umit* 'fog', [k'] in *k'oktin* 'with a stick,' [q'] in *q'a* 'together', [tʃ'] in *tʃ'owol* 'mud', and [tɬ'] in *tɬ'olaha* 'be frozen.' All measurements are 18 ms long, taken from stressed, syllable-initial segments and are time-aligned at the onset of vowel voicing.

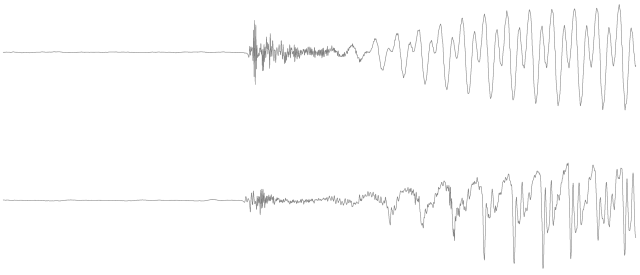


Figure 2.7: Nomlaki 'ejective' vs 'glottalized' alveolar stops. From top to bottom: [t'] in *t'iba* 'spark' and [t'] in *t'awasa* 'left'. All measurements are 18 ms long, taken from stressed, syllable-initial segments and are time-aligned at the stop release.

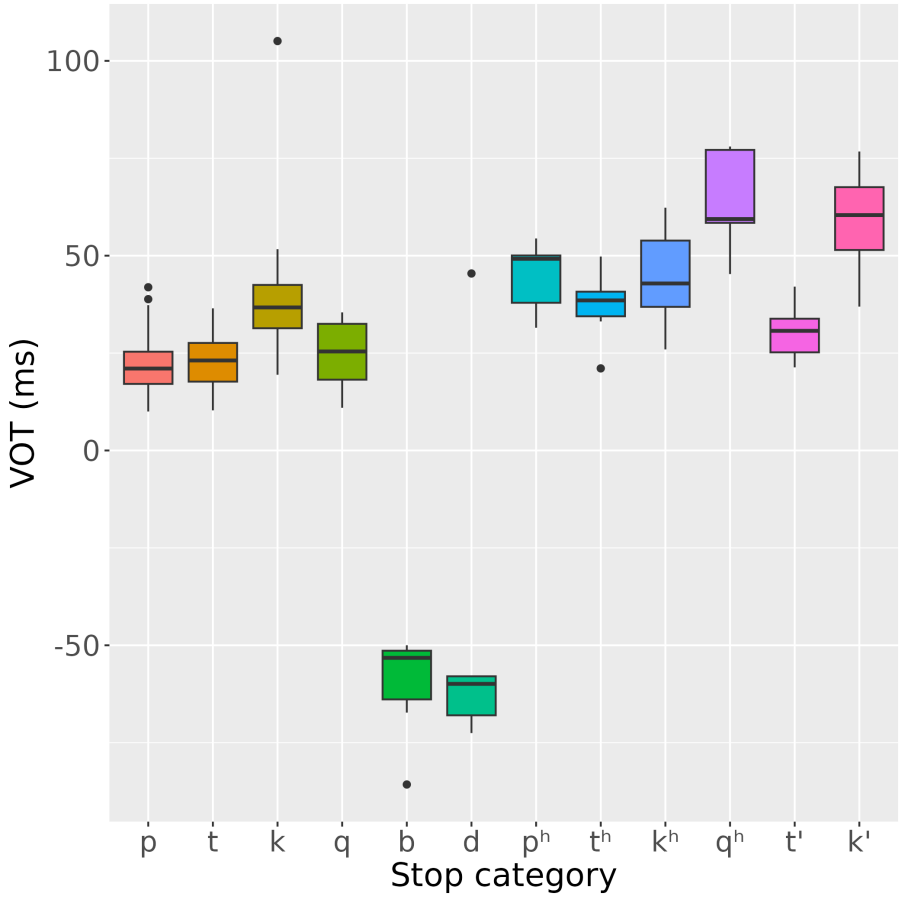


Figure 2.8: Boxplot for VOT (in ms) taken from stressed, utterance-initial segments. From left to right, stops are ordered as voiceless unaspirated, voiced, voiceless aspirated, and ejective. [p'] and [q'] are not included, as there are no stressed, word-initial examples in the available audio.

guage Witsuwit'en, Wright et al. (2002) note that aspirated stops had the longest average VOT, followed by ejectives, and then voiceless unaspirated stops. This pattern is observed with Nomlaki alveolar ejectives, but not velar ejectives. However, this effect was not found consistently in Wright et al. (2002), and the notion of a typical Witsuwit'en ejective was rejected. This too matches the Nomlaki observation that subglottal pressure for 'ejectives' can vary considerably, such that some stops categorized phonologically as ejectives are only phonetically glottalized.

Cho and Ladefoged (1999) suggest breaking the VOT space into four aspirated categories for voiceless stops. These are 'unaspirated' (approx. 30 ms), 'slightly aspirated' (approx. 50 ms), 'aspirated' (approx. 90 ms), and 'highly aspirated' (approx. 140 ms). Nomlaki stops, while separable statistically, do not exactly reflect the stark categorical differences proposed

by Cho and Ladefoged (1999). Nomlaki unaspirated stops are universally unaspirated: with the exception of [k], all unaspirated stops are below 30 ms (22.99-25.33 ms); [k] is slightly above, at 39.65 ms. Aspirated stops generally lie somewhere between 'unaspirated' and 'slightly aspirated', at 37.08-44.33 ms. Uvular [q^h] falls on the other side of 'slightly aspirated', at 63.65 ms. Of the ejective stops available syllable-initially (that is, [t'] and [k']), both fall within the 'aspirated' (but not 'highly aspirated') category. Nomlaki VOT is very low across stop categories, even aspirated stops.

2.6 Nasal stops

Like Wintu and Patwin, Nomlaki has two nasal stops: /m/ and /n/. This is cross-linguistically typical. Figure 2.9 shows a spectrogram and waveform for [m] as produced in *mi:* 'tree', while Figure 2.10 shows [n] as produced in the first-person singular pronoun *ni*. As expected for a bilabial stop, the spectrogram for [m] shows all formants pointing downwards towards the oral closure. The downward angle of F2 is particularly pronounced, pointing towards a locus at approximately 1000 Hz. In contrast, the formant transitions for alveolar [n] show an F2 locus pointing at a shallower angle, towards approximately 1800 Hz. That the F2 locus is higher for alveolar [n] than bilabial [m] is expected (Delattre et al. 1955), as the closure for bilabial [m] is at the F2 antinode at the lips, while the closure for [n] is nearer the palatal F2 node.

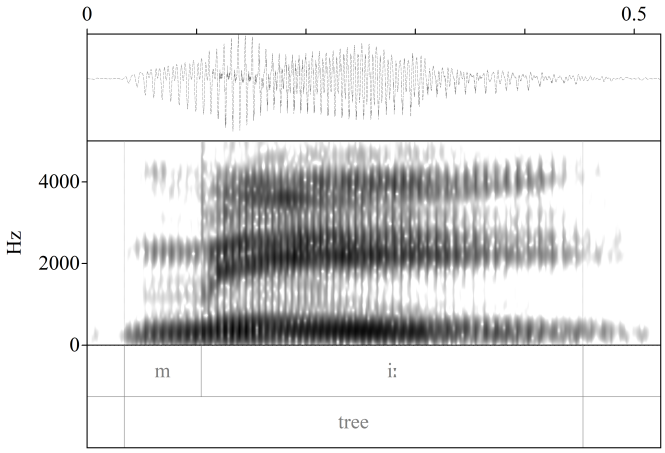


Figure 2.9: Spectrogram and waveform of Nomlaki [m] in *mi:* 'tree'.

Inspection of Figures 2.9 and 2.10 indicates a nasal murmur at approximately 250 Hz for [m] and [n]. A murmur at around this value is generally expected for nasals (Pruthi and Espy-Wilson 2004). LPC and FFT spectra for [m] and [n] are shown in Figures 2.11 and

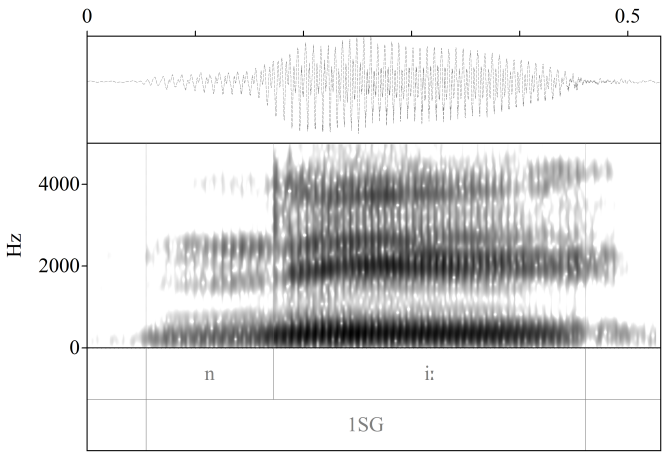


Figure 2.10: Spectrogram and waveform of Nomlaki [n] in the first-person singular pronoun *ni*.

2.12, respectively. FFT is calculated with a view range of 0-5000 Hz, a window length of 5 ms, and a dynamic range of 50 dB in order to filter background noise. LPC is calculated using the Burg method, a prediction order of 44, and a window length of 40 ms.

Figures 2.11 and 2.12 show FFT and LPC spectra for each Nomlaki nasal. Inspecting [m] in Figure 2.11, we see a nasal murmur at around 200 Hz, represented by the highest amplitude peak in both the LPC and FFT spectra. This is accompanied by several dips in energy, representing nasal antiformants. The first two are located at approximately 1200 Hz (N1) and 2000 Hz (N2). Examining [n] in Figure 2.12, we see a nasal murmur again around 250 Hz, similar to [m]. The first nasal antiformant (N1) for [n] appears to be slightly higher than for [m], perhaps at around 1500 Hz; N2 likewise appears slightly higher for [n] than [m], at around 2200 Hz.

Locus equations

Because stops represent an oral closure, they are are wholly or partly silence. This makes understanding a stop's place of articulation challenging. One method involves measuring the locus of the F2 transition from the stop to an adjacent vowel, as first proposed by Lindblom (1963). However, this measurement is naturally sensitive to the formants of the adjacent vowel. Locus equations, proposed by Sussman and Shore (1996), aim to circumvent this, providing a stable measure of a stop's place of articulation regardless of adjacent vowel quality. This locus measure does so by quantifying the degree of a stop's coarticulation with the adjacent vowel. This section finds that bilabials and uvulars pattern almost identically, highlighting both their high degrees of coarticulation and the failure of these equations to

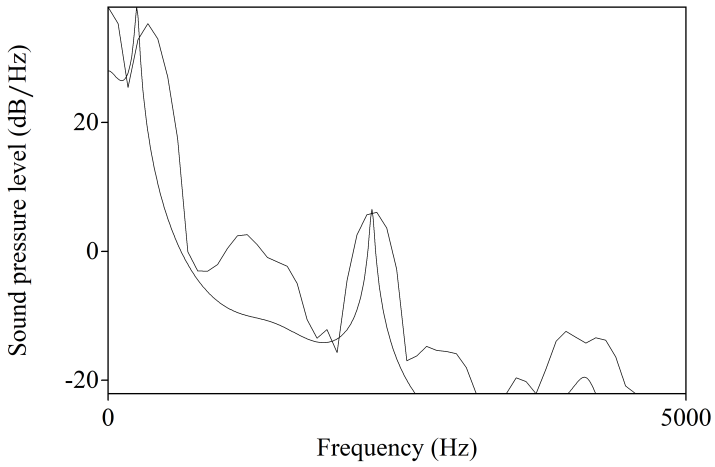


Figure 2.11: LPC and FFT spectra for Nomlaki [m] in *mi:* 'tree'. LPC was measured from the midpoint of the nasal token, with 40 ms on either side.

distinguish them. Comparing Nomlaki alvolars to locus equations across several languages, I find that they pattern most with English. This suggests both English and Nomlaki alveolar stops have a similar place of articulation, further front than the based apicals of many California languages, including Yukian (Yuki and Wappo), Chimariko, Pomo, Yokuts, Miwok, Costanoan, Salinan, (possibly) Esselen, Serrano, (possibly) Kitanemuk, Diegueño, Cocopa, Quechan, Maricopa and Obispeño (Golla 2011:205).(Golla 2011).

The locus equations used in this study, as defined by Sussman, Hoemeke, et al. (1993), are simple linear equations where y is measured at the F2 onset and x is F2 as measured at the vowel midpoint (see Equation 2.1). Sussman, Hoemeke, et al. (1993) measure F2 onset 'at the first glottal pulse'; here, the onset is measured at 10% into the vowel to ensure reliable measures. The x and y values themselves are not the subjects of examination. Rather, it is the slope and intercept of the fitted line described by them. The measurements under consideration are therefore second-order.

$$F2_{onset} = F2_{mid}\beta + b \tag{2.1}$$

Table 2.23 shows the fitted slope, intercept, and R-squared value for each locus equation drawn across the Nomlaki places of articulation. In general, velar and uvular stops have the lowest F2 onset; alveolar stop onsets are consistently high. Velar stops have the steepest slopes. The results for each place of articulation are averaged in Figure 2.14. More discussion for measuring onset F2 in aspirated stops can be found in Sussman and Shore (1996).

Despite not sharing a place of articulation, average bilabials and uvular equations pattern almost identically. Locus equations for uvulars are generally understudied. In Tlingit,

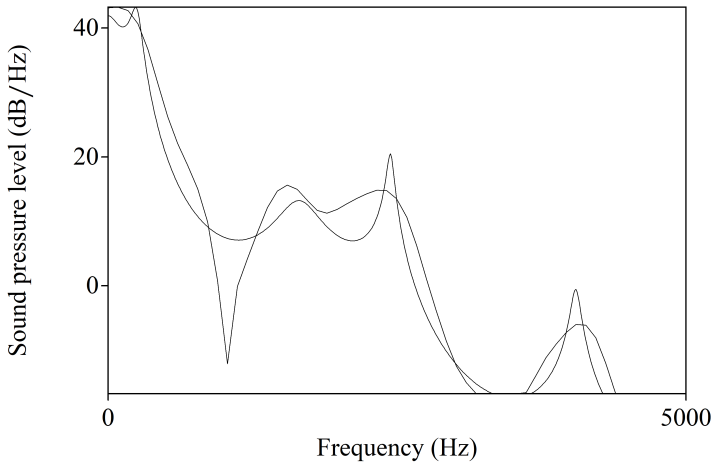


Figure 2.12: LPC and FFT spectra for Nomlaki [n] in *ni:* 'first-person singular pronoun'. LPC was measured from the midpoint of the nasal token, with 40 ms on either side.

Denzer-King (2021) reports an intercept of 823 and a slope of 0.443 for [q], compared to an intercept of 816 and slope of 0.509 for [k]. In the Nomlaki data, [k] and [q] do have generally similar intercepts (557.497 vs 560.007, respectively), but quite dissimilar slopes (0.739 vs 0.516, respectively). The similar patterning of bilabials and uvulars would suggest similar levels of coarticulation according to Krull (1988). This may reflect the greater dorsal tongue involvement (i.e. greater coarticulatory involvement) of the tongue dorsum in uvulars as opposed to velars. However, there are far fewer tokens for uvular stops than there are for bilabials, and only one uvular phoneme (with ten or more tokens) compared to three types of bilabial. There appears to be a great amount of variation between bilabials of different types, which are lost when they are collapsed together. The variation and overall small amount of data limits the generalizations that can be made from these results.

A scatterplot for each stop's F2 onset and F2 mid values, as well as the locus equation fitting it, is shown in Figure 2.13. These scatterplots are generally linear, with [p] as a partial exception. We can also see that the general fit of each line varies by stop. Overall, fit (as measured by R-squared) is highest for [q^h] (0.893), [k] (0.788), and [k^h] (0.608), and [t'] (0.602). It is lowest for [p] (0.320), [t^h] (0.285), and [k'] (0.261). These poorest fit values are quite low, and usually (but not always) seem to correspond to the stops with the lowest number of measurements. They may also be partially influenced by the identity of the following vowel, which was not controlled for in this study because of the limited overall sample size.

Figure 2.15 plots each stop's fitted intercept and slope on a scatterplot. This plot shows some general differentiation by place of articulation. All alveolar stops ([t], [t^h], [t'], [d]) cluster in the upper right quadrant, along with [m]. The other bilabial stops ([b], [p]) cluster

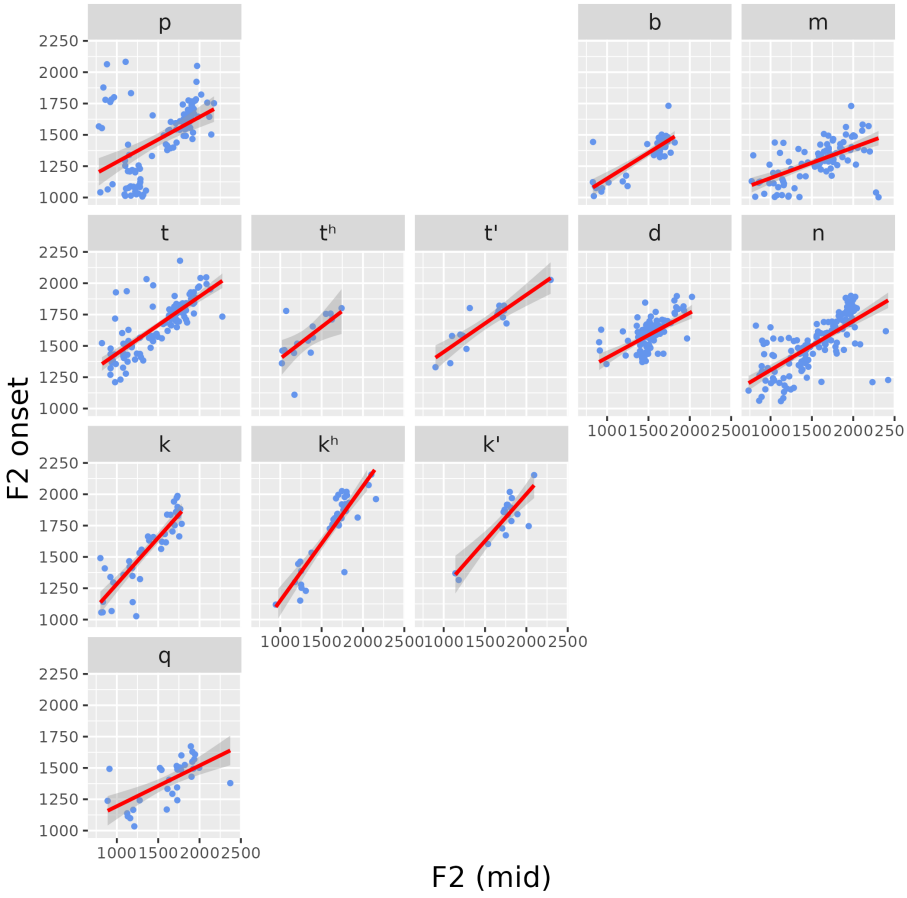


Figure 2.13: Locus equations (red) for each place of articulation, plotted on top of scatterplots. Scatterplots indicate each data point's F2 measured from the midpoint (x) and onset (y). Top to bottom: bilabial, alveolar, velar, and uvular stops. Right to left: unaspirated, aspirated, ejective, and voiced stops. Stops with less than 10 data points are not included here.

in the mid-bottom of the plot. Velar stops ([k], [kʰ], [k']) cluster in the bottom right quadrant, with [k'] at the furthest extreme. Uvular [q] appears to pattern with bilabials, suggesting a similar degree of coarticulation. However, this tight patterning suggests that these locus equations cannot separate bilabial from uvular place of articulation.

In their study, Sussman, Hoemeke, et al. (1993) compare locus equations from several languages' [b], [d], and [g]. These values are replicated below in Table 2.24, with the addition of the Nomlaki data. Sussman, Hoemeke, et al. (1993) discuss using the cross-linguistic values obtained in 2.24 (plotted in the style of 2.15) to search for 'phonetic hot spots'; that is, places within the F2 stop and adjacent vowel space that are universally preferred. Results among examined languages (Thai, English, Swedish, Arabic, Urdu) showed a 'moderately

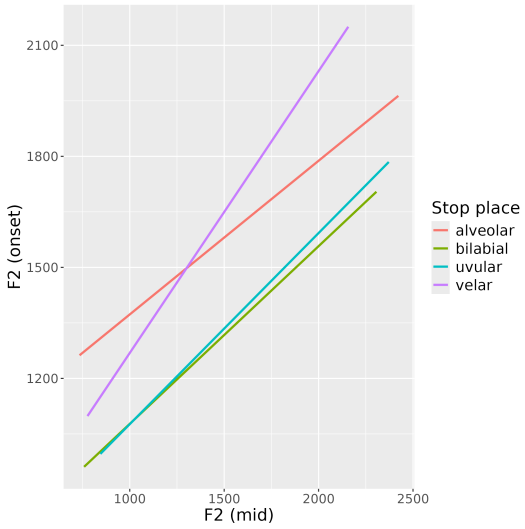


Figure 2.14: Locus equations averaged for each place of articulation.

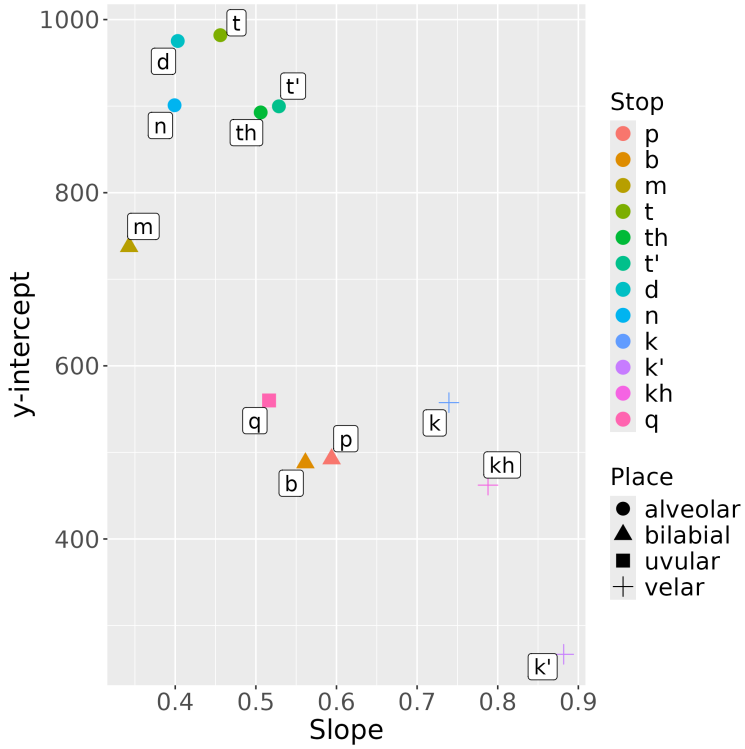


Figure 2.15: Scatterplot of locus equation coefficients for each stop with 10 or more tokens.

viable' hotspot for [b] among Thai, Arabic, and Urdu. No hotspot was found for [d]. This bilabial hotspot is attributed to the relatively consistent articulation of labials across the world's languages. Comparable Nomlaki data is only available for [b] and [d], as voiced velar stops are not present in the language. Examining this data, we see that Nomlaki [b] does not pattern with the Thai/Arabic/Urdu hotspot, but rather appears closest to Swedish in both intercept (where it is nearly identical) and slope (where it differs by 0.11). Like the previously examined languages, Nomlaki [d] does not seem to contribute to a cross-linguistic hotspot, though its intercept and slope are closest to English.

Overall, locus equations provide a moderate separation of Nomlaki stop places of articulation: however, they fail to separate bilabial from uvular stops, probably at least partially due to data limitations. Nomlaki alveolars pattern closest to English alveolars, suggesting a similar place of articulation that is further front than the backed apicals of many California languages, including Yukian (Yuki and Wappo), Chimariko, Pomo, Yokuts, Miwok, Costanoan, Salinan, (possibly) Esselen, Serrano, (possibly) Kitanemuk, Diegueño, Cocopa, Quechan, Maricopa and Obispeño (Golla 2011:205). Pitkin (1984:32) also reports that Wintu /s/ is post-alveolar for older speakers.

2.7 Fricatives

Nomlaki has five plain and one lateral fricative: /s/, /x/, /χ/, /h/, /ɦ/, and /ɬ/. /χ/ is an allophone of /q/, while /ɦ/ is an allophone of /h/. While /x/ can function as a contrastive phoneme, it is also a word-initial allophone of /q/. /s/, /x/, /h/, /ɬ/, and / k^h/ are all reconstructed as contrastive in Proto-Wintun. Wintu shares all four contrastive fricatives and /χ/ with Nomlaki (Pitkin 1984:25), while Patwin shares /s/, /ɬ/, and /h/ (/x/ and /χ/ were lost to processes of fronting and debuccalization, respectively).

This section examines four spectral moments, first proposed by Forrest et al. (1988), to determine their ability to distinguish these Nomlaki fricatives. These are center of gravity (COG), standard deviation (variance), skew, and kurtosis. In this section I find that not every measurement significantly differs between fricatives. COG, skew, and kurtosis do well to distinguish glottal fricatives from others. However, they so not appear to distinguish fricatives closer in place of articulation, such as [s] and [ɬ] or [h] and [ɦ]. As expected, COG is higher for alveolar fricatives and lower for glottal fricatives, reflecting the size of the oral cavity; skew was also much higher (and positive) for glottal fricatives, indicating more acoustic energy concentrated below the mean than above. Kurtosis likewise is generally higher for glottal fricatives, indicating a high number of spectral peaks. However, these spectral measurements are quite sensitive to vowel context, which was not controlled for here due to an overall low volume of data.

Figure 2.16 shows waveforms and spectrograms of [s], [ɬ], [χ], [h], and [ɦ]. Examining the waveforms, we see that all but [ɦ] lack a voice bar. Most of the energy for [s] is concentrated in the upper frequencies, as expected for a sibilant. Both [χ] and [h] show formant structure at a little under 1000 and a little over 3000 Hz, suggestive of stridents with similar oral tract

configurations. The acoustics of lateral fricatives such as [ɬ] are cross-linguistically variable. Figure 2.16 shows a word-initial [ɬ] with energy concentration within the mid-high frequency range. Statistical examination of these fricatives is carried out below. Looking at the bottom figure, we see a high energy concentration in the low frequencies for [ɦ], again with regular glottal voicing. We also see the quite flat spectrum for the lateral [ɬ] between 0-6000 Hz, which sharply drops off following this. The peak for [s] is very similar to the peak for [tʃ] and [tʃ'] (see Chapter 2.8), suggesting a similar place of articulation. This recalls the

Multitaper spectra for [s], [χ], [h], and [ɦ] taken from word-initial segments followed by [o(:)] are shown in Figure 2.17. The top figure shows spectra for [s], [χ], [h], and [ɦ] followed by [o:], while the bottom figure shows spectra for [ɬ] and [ɦ] followed by [ɛ]. Examining these spectra, we see that the strident [s] appears to have the highest energy concentration, at around 4000 Hz, typical of a strident and of the fricative with the frontmost constriction among those considered. The other fricatives, all of which are produced with very back constrictions have energy concentrations in the very low energy regions. Regular voicing can be seen in the spectrum for the voiced glottal fricative [ɦ].

To examine Nomlaki fricatives quantitatively, center of gravity, standard deviation (variance), skew, and kurtosis were measured. These measurements were calculated following the methods in Forrest et al. (1988) as implemented by Phonlab Development Team (2025). These functions used multitaper spectra, filtered between 300 and 11000 Hz. Measurements were taken from a 20 ms window from the midpoint of a segment. Center of gravity was calculated as the average frequency of the fricative spectrum, weighted by amplitude; standard deviation (or variance), as the deviation between the frequencies in the fricative and the mean center of gravity; skew, as the distribution of spectral energy across frequencies; and kurtosis, as how much the spectrum's distribution around the center of gravity differs from a Gaussian distribution; i.e. its 'peakedness.'

Although fricatives are susceptible to coarticulatory affects, the sample size of fricatives in this dataset is too limited to control for this and maintain a semblance of statistical power. All fricatives in the corpus are therefore analyzed here. Future work, using the newly discovered full 60-minute recording of Freeman (1953), will incorporate more fine-grained control for coarticulatory effects.

For each spectral measurement, mean, standard deviation, and number of tokens (n) were calculated (Table 2.25). To measure the statistical differences between fricatives and spectral measurements, a Kruskall-Wallace test was first conducted for each measurement. The results are shown in Table 2.26. As seen, results are significant ($p < 0.05$) for all spectral measurements. To probe which pairs of fricatives show significantly different spectral measurements, post-hoc Dunn's tests were conducted following significant Kruskall-Wallace results. The results for center of gravity, variance, skew, and kurtosis are shown in Tables 2.27, 2.28, 2.29, and 2.30, respectively.

Results of Dunn's test indicate that though significant differences exist between fricatives for each spectral measurement, they do not exist between all (or even most) fricatives. Examining adjusted p-values, center of gravity, skew, and kurtosis all significantly distinguish [h] and [ɦ] from [ɬ], as well as [ɦ] from [s]. Skew additionally distinguishes [s] and [χ], while

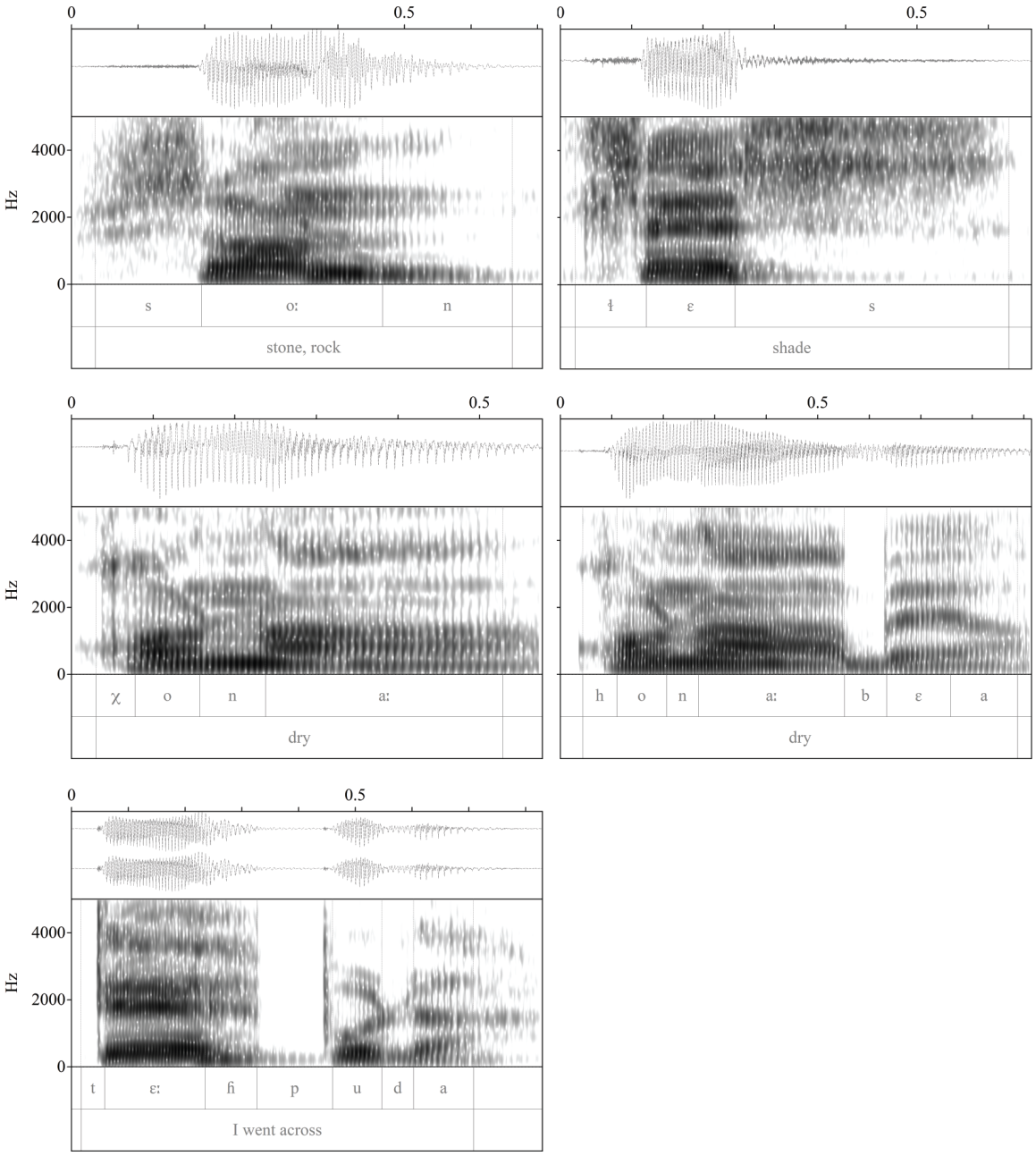


Figure 2.16: Spectrograms and waveforms of Nomlaki fricatives. Upper left: [s] in *son* 'stone'; upper right: [ɬ] in *ɬes* 'shadow, shade, spirit'; middle left: [χ] in χona 'dry'; middle right: [h] in *hona bea* 'It is wet'; bottom: [ɦ] in *tehpuda* 'I followed, I went across'.

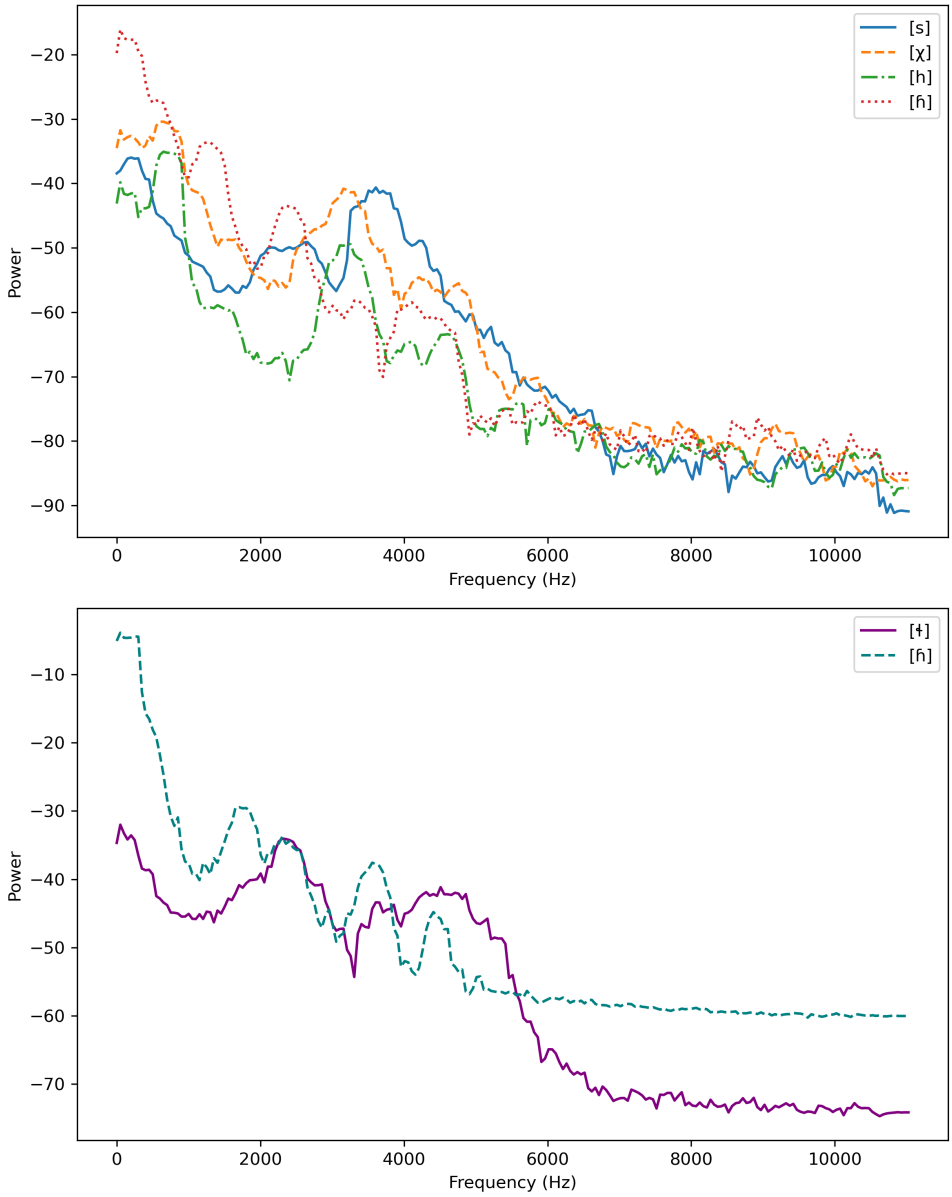


Figure 2.17: Multitaper spectra for Nomlaki fricatives. Above: [s] in *son* 'stone' (solid blue), [χ] in *χona* 'be wet' (dashed orange), [h] in *ho:na* 'be wet' (dashed-dotted green), and [ɦ] in *ɦoloqtai* 'early' (dotted red). Below: [ɬ] in *ɬes* 'shade, shadow, spirit' (solid purple), and [ɦ] in *teɦipuda* 'I follow' (dashed teal)

kurtosis only distinguishes [ɦ] and [χ]. Variance, or standard deviation, is only significantly different between [ɦ] and [ɬ]. Altogether, the consistency of which fricative pairs are distinguished by center of gravity, skew, and kurtosis is remarkably robust. These measurements appear to mostly distinguish glottal fricatives from others, particularly alveolars (both lateral and non-lateral). These results are visualized with kernel density plots in Figure 2.18.

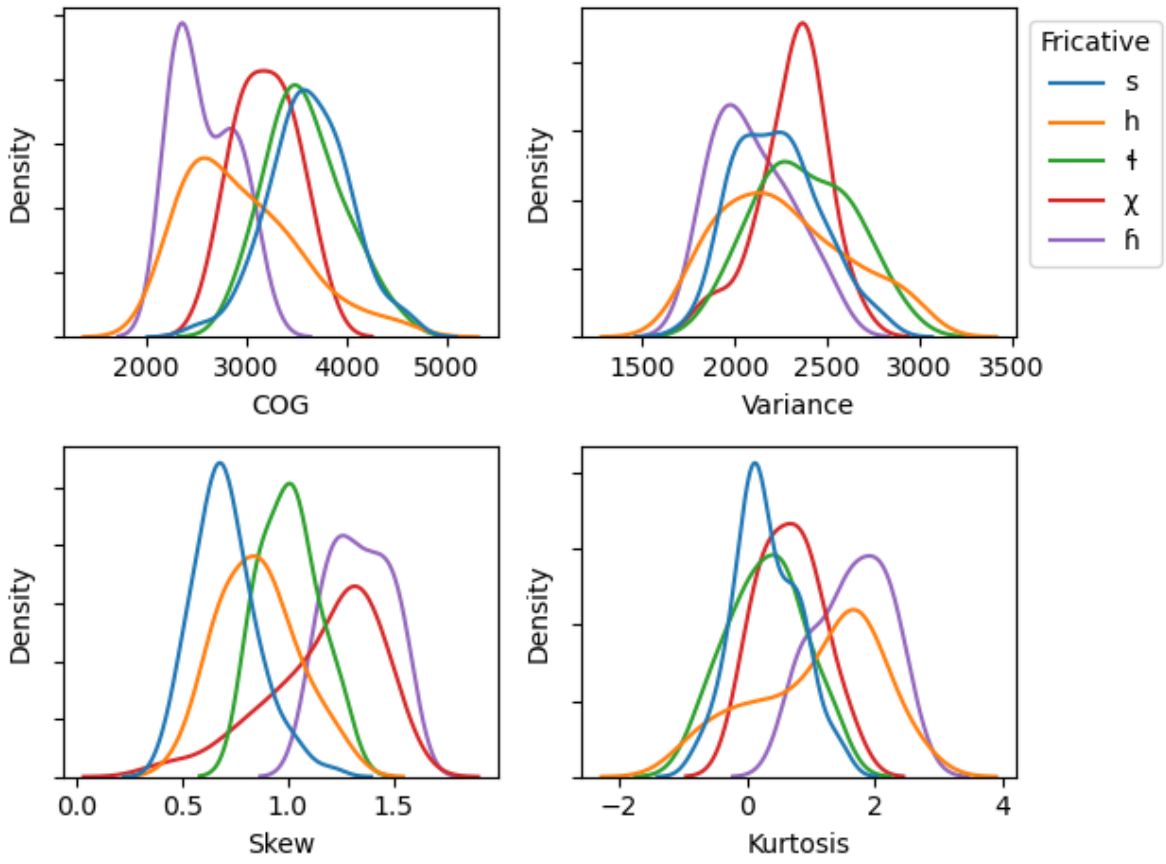


Figure 2.18: Kernel density estimation (KDE) plots for each fricative, across four spectral measurements. Top-to-bottom, left-to-right: center of gravity, variance, skew, and kurtosis.

2.8 Affricates

Nomlaki has three affricates: the plain/ejective pairs /tʃ/ and /tʃ'/, and the lateral ejective /tɬ'/ whose counterpart is the fricative /ɬ/. This pattern is reconstructed in Proto-Wintun and present in Wintu, while Proto-Wintun /tʃ/ and /tʃ'/ have strengthened to the stop counterparts /t/ and /t'/ in Patwin (Shepherd 2005:6). It can sometimes be ambiguous

whether /ɬ/ is actually the affricate /tɬ/, particularly word-initially. Where /tɬ/ is included in this discussion, it represents an ambiguous case that I tentatively labelled as an affricate.

This section examines four spectral moments, first proposed by Forrest et al. (1988), to determine their ability to distinguish these Nomlaki fricatives. These are center of gravity (COG), standard deviation (variance), skew, and kurtosis. Unlike with fricatives, these measurements did not show any significant differences between affricates. As spectral measurements are quite sensitive to vowel context, which was not controlled for here due to an overall low volume of data, this is likely an artifact of the limitations of the data.

Figure 2.19 shows spectrograms and waveforms for [tʃ], [tʃ'], and [tɬ']. Energy is more diffuse for the lateral [tɬ'] (bottom panel of Figure 2.19), compared to alveolar [tʃ']. Comparing the ejectives [tʃ'] and [tɬ'], we see that both stops' oral releases are accompanied by a high-amplitude spike in the waveform, followed by a period of low-energy vibration typical of 'Hausa-style' ejectives (Ladefoged and Maddieson 1996). The difference in energy between the release of the ejective stop [t'] and plain stop [t] is most evident comparing [tʃ] and [tʃ']/. Nonetheless, these ejectives may be better classified as 'glottalized' releases when compared with higher-energy ejectives like the first example of Figure 2.7.

Multitaper spectra for each Nomlaki affricate are shown in Figure 2.20. [tʃ] and [tʃ'] pattern very closely with one another, with a peak near 4000 Hz, similar to [s]. [tɬ'] shows higher energy concentrations in the lower frequencies, with a spike ar around 500 Hz. All three affricates drop off sharply in energy after 5000 Hz.

To examine Nomlaki affricates quantitatively, center of gravity, standard deviation (variance), skew, and kurtosis were measured in the same manner as fricatives (see Chapter 2.7). For each spectral measurement, mean, standard deviation, and number of tokens (n) are calculated. These are found in Table 2.31.

To measure the statistical differences between fricatives and spectral measurements, a Kruskall-Wallace test was first conducted for each spectral measurement. The results are shown in Table 2.32. As seen, results are significant ($p < 0.05$) only for skew and kurtosis. To probe which pairs of affricates show significantly different spectral measurements, post-hoc Dunn's tests were conducted following significant Kruskall-Wallace results. The results for skew and kurtosis are shown in Tables 2.33 and 2.34, respectively. These measurements are visualized with kernel density plots in Figure 2.21.

Results of Dunn's test are far less informative for affricates than for fricatives. Though significant values exist for unadjusted p-values (accounting for the significant Kruskal-Wallace result), there are no significant results for adjusted p-values, which attempts to maintain predictive power after multiple comparisons. Given this, these spectral measurements do not show significant differences between affricates at all. This is more likely a result of low token numbers, and a lack of contextual control, than it is a fact of Nomlaki affricate phonetics.

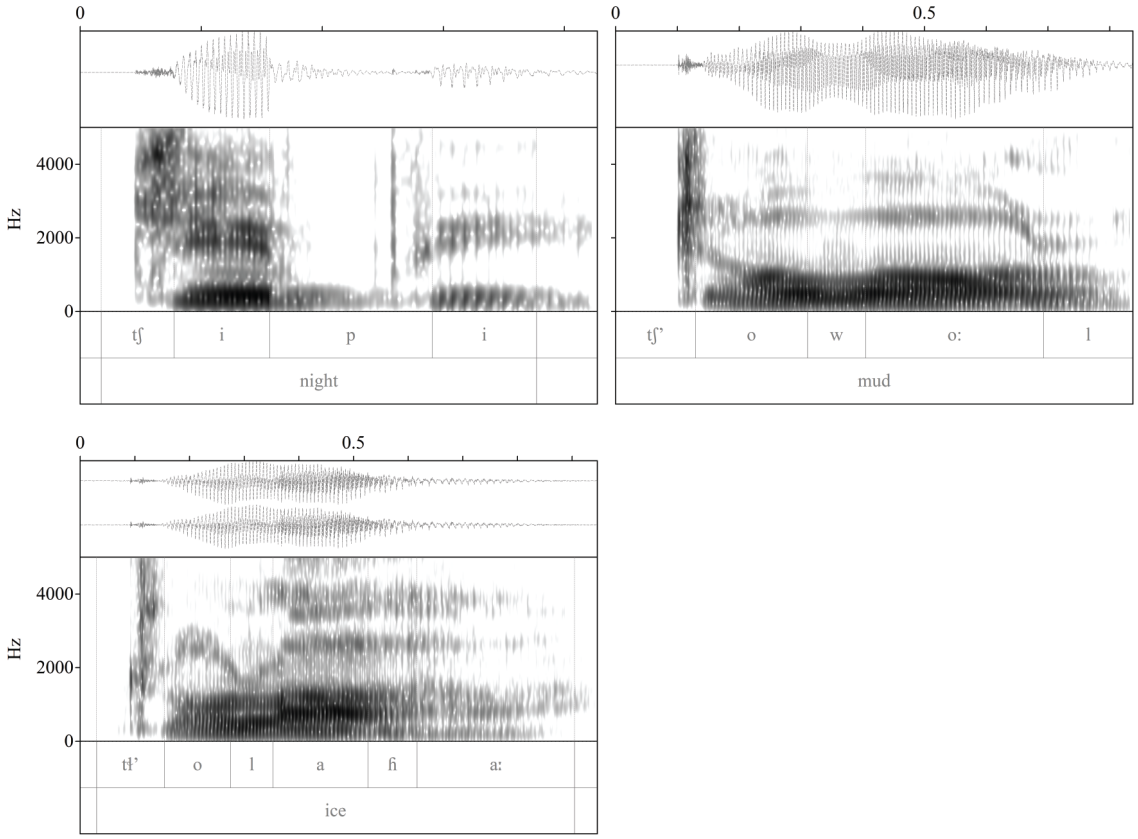


Figure 2.19: Spectrograms and waveforms of Nomlaki affricates. Upper left: [tʃ] in *tʃipi* 'night'; upper right: [tʃ'] in *tʃ'owol* 'mud'; bottom: [tɬ'] in *tɬ'olaha* 'be frozen'.

2.9 Approximants

Nomlaki has one lateral approximant, /l/, and two semivowels, /w/ and /j/. All three are attested in all Wintuan languages and are reconstructed in Proto-Wintun (Shepherd 2005:6). This approximant inventory is universal among California languages, where the lateral /l/ is sometimes substituted for /r/ (though /l/ is more common) (Golla 2011:207). Spectrograms and waveforms for [w] and [l] are shown in Figure 2.22. [j] is shown in Figure 2.23.

2.10 Summary

In this chapter, we have examined Nomlaki vowels and the acoustic correlates of stress, as well as various measurements for describing Nomlaki stops, nasals, fricatives, affricates, and approximants. Nomlaki has at least thirteen stops, distinguished by up to four laryngeal

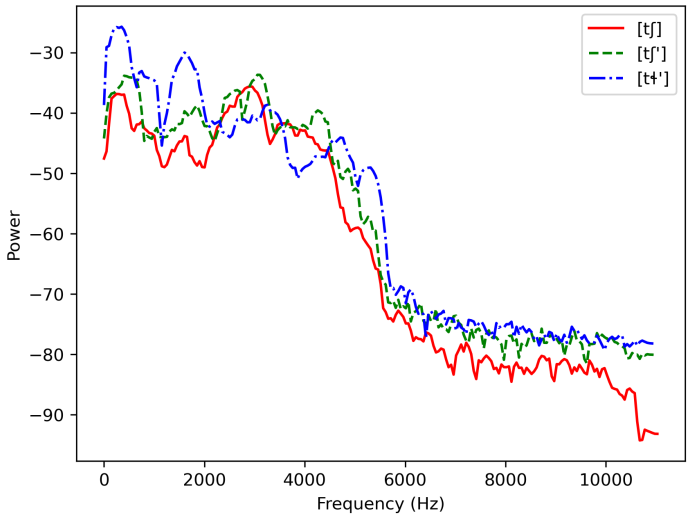


Figure 2.20: Multitaper spectra for Nomlaki affricates: [tʃ] in *tʃo:ɬ* 'mountain' (solid red), [tʃ'] in *tʃ*'o:wol 'mud' (dashed green), and [tɬ'olaha] 'be frozen' (dashed-dotted blue).

states (including ejectives), five fricatives (including one lateral fricative), three affricates (including one lateral affricate), two nasals, and three approximants (including one lateral approximant).

We have found that while Nomlaki participates in the Wintuan system of ten vowels split into five pairs, it is unique in having both quantity and quality play a contrastive role. While quantity always distinguishes pairs, quality (defined as differences in at least either F1 or F2) only distinguishes some pairs. This suggests that Nomlaki was at the time of Freeman (1953) undergoing a shift from a historical system cued by length to a mixed system cued by both length and vowel quality. We also find that primary lexical stress is cued by increased F0, intensity, duration, and extreme F2 articulation. This is similar to Wintu, for which stress is reported to have increased 'tenseness and loudness' (Pitkin 1984:18), and Patwin, where it is associated with increased loudness, pitch, duration (Lawyer 2015:56). Nomlaki stress is distinguished from either Wintu or Patwin stress by its use of F2; i.e. a change in vowel quality.

This chapter also finds that stops that are phonologically voiced are also phonetically voiced, despite several documenters transcribing these stops as their unvoiced counterparts. The VOT for aspirated stops is largest among stop types, followed by unaspirated stops, then voiced; ejective VOT patterns with aspirated VOT. However, even phonologically aspirated stops have half the average VOT reported for Patwin aspirated stops (Lawyer 2021); they are typologically between unaspirated and aspirated stops (Cho and Ladefoged 1999). These relatively small VOT values across all Nomlaki stop types appear to be a distinct phonetic feature of Nomlaki in contrast to Patwin; analogous work has not yet been done for Wintu. Results from locus equations suggest Nomlaki alveolar stops pattern cross-linguistically with

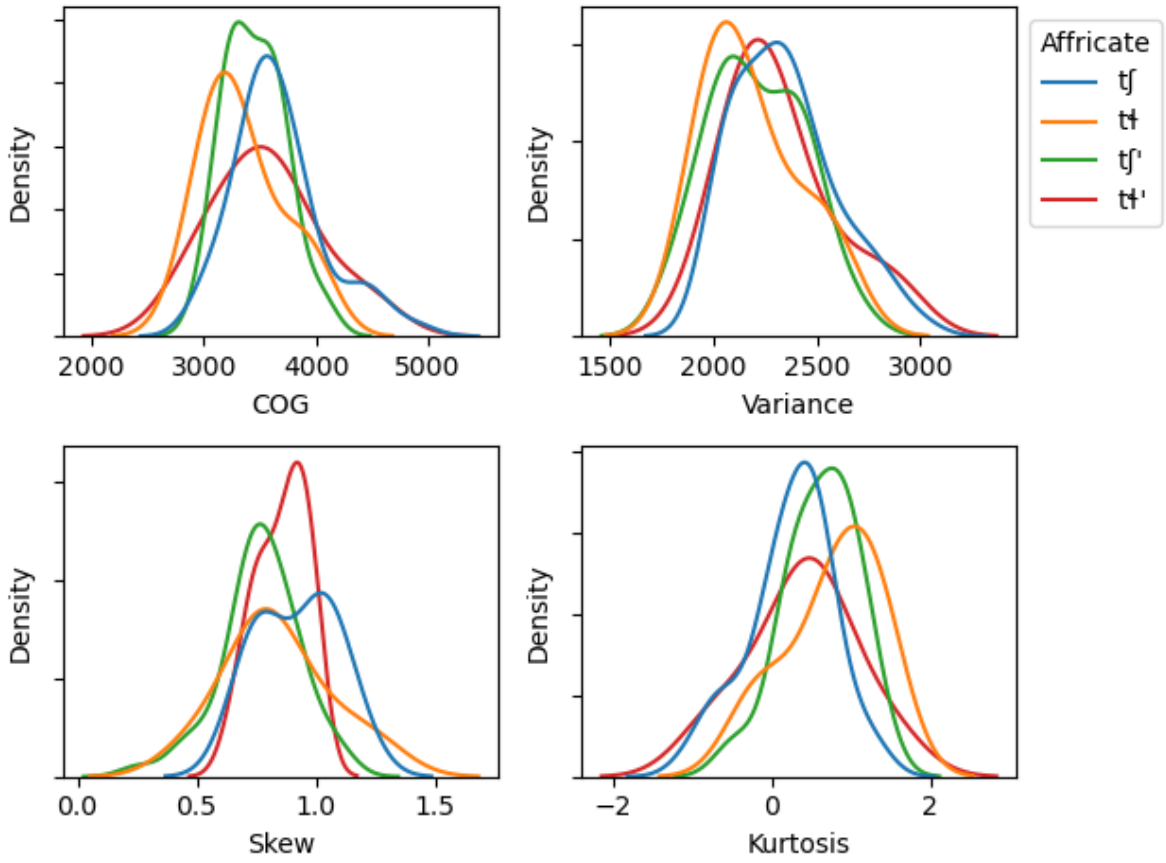


Figure 2.21: Kernel density estimation (KDE) plots for each affricate, across four spectral measurements. Top-to-bottom, left-to-right: center of gravity, variance, skew, and kurtosis. [tɬ] marks tokens whose status as an affricate or fricative were uncertain.

English stops; this further suggests that Nomlaki alveolar stops are not phonetically post-alveolar; however, an examination of multitaper spectra suggests that Nomlaki [s], [tʃ], and [tʃ'] show similar spectral peaks, and thus similar front cavity lengths. Bartlett (1849-1863:520), writing in the mid 19th century, transcribes <sh> where mid-to-late 20th century recordings would write <s>: *shorno* 'nose', *shee* 'teeth', *shem* 'hand' (Powers 1877); cf. *sono*, *si:*, and *sem* (5.6 P6 1953:14). Pitkin (1984:32) additionally notes that older speakers of Wintu pronounce [s] in a post-alveolar manner.

This chapter also used spectral moment measurements (Forrest et al. 1988) to examine Nomlaki fricatives and affricates. We find that glottal fricatives can generally be distinguished from other fricatives using COG, skew, and kurtosis. However, they so not appear to distinguish fricatives closer in place of articulation. COG is higher for alveolar fricatives and lower for glottal fricatives; skew was also much higher (and positive) for glottal frica-

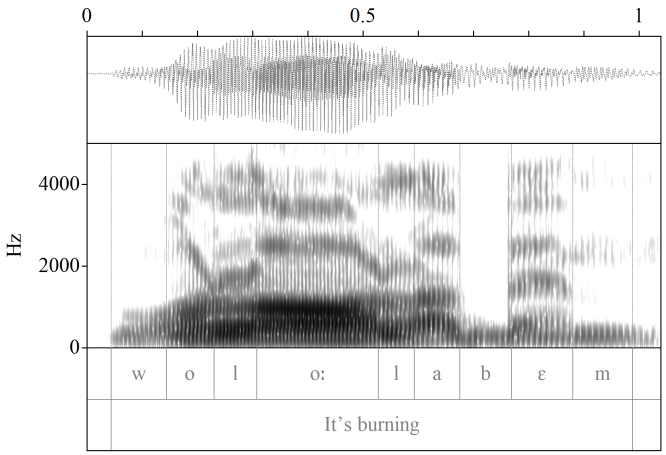


Figure 2.22: Spectrogram and waveform for Nomlaki [w] and [l] in *wolo:la bɛm* 'It's burning'.

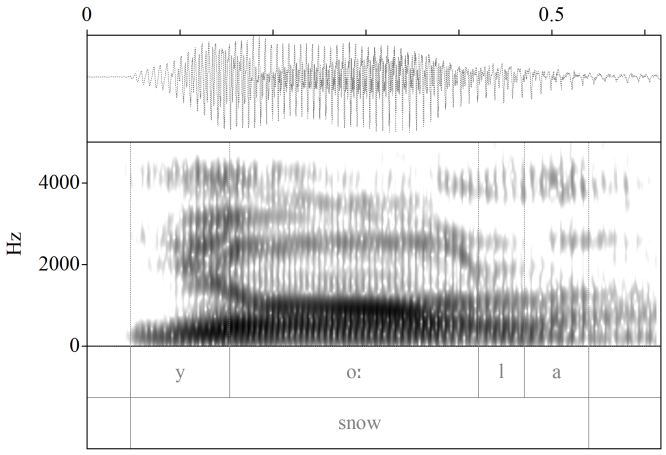


Figure 2.23: Spectrogram and waveform for Nomlaki [j] in *yola* 'snow', transcribed as Americanist [y].

tives, indicating more acoustic energy concentrated below the mean. Kurtosis likewise is generally higher for glottal fricatives, indicating a high number of spectral peaks. None of these measurements are successful in distinguishing affricates. As these measurements are quite sensitive to vowel context, which was not controlled for here due to an overall low volume of data, this is likely a fault of the data. Future work, using the full hour of Freeman (1953), will hopefully bear different fruit.

	z
alveolar/bilabial	-0.99
alveolar/uvular	**-3.13***
bilabial/uvular	-2.05
alveolar/velar	-1.35
bilabial/velar	-0.05
uvular/velar	2.55

Table 2.21: Differences in VOT for aspirated stops between each pair of places of articulation. Results are from a post-hoc Dunn's test following significant Kruskall-Wallace results (p=0.017). Bolded pairs show significantly different VOTs for adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

	z
alveolar/velar	**-2.46***

Table 2.22: Differences in VOT for ejective stops between each pair of places of articulation available in the corpus. Results are from a post-hoc Dunn's test following significant Kruskall-Wallace results (p=0.01). Bolded pairs show significantly different VOTs for adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

	intercept (b)	slope (β)	R^2	n	Place
p'*	–	–	–	0	bilabial
q'*	–	–	–	0	uvular
k'	267	0.882	0.261	20	velar
q^h*	394	0.595	0.893	7	uvular
k^h	462	0.788	0.608	41	velar
b	488	0.561	0.424	53	bilabial
p	492	0.594	0.320	146	bilabial
k	557	0.739	0.788	50	velar
q	560	0.516	0.482	38	uvular
m	738	0.343	0.262	24	bilabial
p^h*	840	0.489	0.497	6	bilabial
t^h	893	0.506	0.285	15	alveolar
t'	900	0.529	0.602	16	alveolar
n	901	0.399	0.498	24	alveolar
d	975	0.403	-0.096	112	alveolar
t	982	0.456	0.535	110	alveolar

Table 2.23: Intercept, slope, R-squared values, and count (n) for each stop, sorted ascending by intercept (F2 onset). Stops marked with (*) have less than ten data points and were excluded from further analysis.

Language	Stop	intercept	slope	Place of articulation
Nomlaki	b	488	0.56	bilabial
Thai	b	228	0.70	bilabial
English	b	106	0.87	bilabial
Swedish	b	487	0.67	bilabial
Arabic	b	206	0.77	bilabial
Urdu	b	172	0.81	bilabial
Nomlaki	d	975	0.40	alveolar
Thai	d	1425	0.30	alveolar
English	d	1073	0.43	alveolar
Swedish	d	1096	0.32	alveolar
Arabic	d	1307	0.25	alveolar
Urdu	d	857	0.50	alveolar

Table 2.24: Cross-linguistic locus equation intercepts and slopes for /b/ and /d/. Non-Nomlaki data is provided by Sussman, Hoemeke, et al. (1993).

	COG	Variance	Skew	Kurtosis	n
s	3632 (403)	2229 (229)	0.70 (0.15)	0.31 (0.50)	98
ɬ	3588 (381)	2377 (258)	0.86 (0.18)	0.30 (0.58)	26
χ	3196 (301)	2310 (182)	1.00 (0.13)	0.67 (0.48)	13
h	2950 (575)	2266 (344)	1.17 (0.27)	1.09 (0.98)	83
ɦ	2582 (300)	2098 (209)	1.34 (0.14)	1.66 (0.56)	21

Table 2.25: Means and standard deviations (in parentheses) for the center of gravity, variance, skew, and kurtosis of each Nomlaki fricative, taken at the midpoint.

	χ-squared	Degrees of freedom
COG	**36.24****	8
Variance	**28.45****	8
Skew	**36.30****	8
Kurtosis	**20.298****	8

Table 2.26: Kruskal-Wallace test results for center of gravity (COG), variance, skew, and kurtosis across fricatives. Bolded pairs show significantly different adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Comparison	Z
h - ɦ	2.548
h - ɬ	**-4.879****
ɦ- ɬ	**-5.859****
h - s	**-7.935****
ɦ- s	**-7.511****
ɬ- s	-0.395
h - x	-0.980
ɦ- x	-1.788
ɬ- x	0.539
s - x	0.676
h - χ	-1.200
ɦ- χ	-2.778
ɬ- χ	2.175
s - χ	2.798
x - χ	0.451

Table 2.27: Results of Dunn's test for the center of gravity of each Nomlaki fricative, following significant Kruskall-Wallace results for $p < 0.05$. Bolded pairs show significantly different adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

.

Comparison	Z
h - ɦ	2.255
h - ɬ	-2.059
ɦ- ɬ	**-3.455****
h - s	0.314
ɦ- s	-2.096
ɬ- s	2.310
h - x	-1.967
ɦ- x	-2.647
ɬ- x	-1.288
s - x	-2.036
h - χ	-1.186
ɦ- χ	-2.563
ɬ- χ	0.321
s - χ	-1.358
x - χ	1.387

Table 2.28: Results of Dunn's test for the variance of each Nomlaki fricative, following significant Kruskall-Wallace results for $p < 0.05$. Bolded pairs show significantly different adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Comparison	Z
h - ɦ	-1.980
h - ɬ	**4.209****
ɦ- ɬ	**4.873****
h - s	**10.169****
ɦ- s	**8.319****
ɬ- s	2.588
h - x	0.947
ɦ- x	1.570
ɬ- x	-0.365
s - x	-1.175
h - χ	1.405
ɦ- χ	2.558
ɬ- χ	-1.551
s - χ	**-3.719****
x - χ	-0.341

Table 2.29: Results of Dunn's test for the skew of each Nomlaki fricative, following significant Kruskall-Wallace results for $p < 0.05$. Bolded pairs show significantly different p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Comparison	Z
h - ɦ	-2.715
h - ɬ	**4.050****
ɦ- ɬ	**5.362****
h - s	**6.079****
ɦ- s	**6.528****
ɬ- s	-0.015
h - x	1.865
ɦ- x	2.700
ɬ- x	0.579
s - x	0.599
h - χ	1.360
ɦ- χ	**3.028***
ɬ- χ	-1.485
s - χ	-1.698
x - χ	-1.223

Table 2.30: Results of Dunn's test for the kurtosis of each Nomlaki fricative, following significant Kruskall-Wallace results for $p < 0.05$. Bolded pairs show significantly different adjusted p-values (Bonferroni correction) for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

	COG	Variance	Skew	Kurtosis	n
tɬ	3348 (362)	2183 (232)	0.92 (0.17)	0.77 (0.59)	9
tʃ	3671 (353)	2325 (231)	0.76 (0.14)	0.26 (0.51)	47
tʃ’	3453 (264)	2207 (226)	0.86 (0.11)	0.62 (0.46)	18

Table 2.31: Means and standard deviations (in parentheses) for the center of gravity, variance, skew, and kurtosis of each Nomlaki affricate, taken at the midpoint.

	χ-squared	Degrees of freedom
COG	9.03	4
Variance	9.23	4
Skew	**10.12***	4
Kurtosis	**11.00***	4

Table 2.32: Kruskal-Wallace test results for center of gravity (COG), variance, skew, and kurtosis across affricates. Bolded pairs show significantly different p-values for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Comparison	Z
tɬ- tɬ’	1.0828114
tɬ- tʃ	2.3622360
tɬ’ - tʃ	0.8645126
tɬ- tʃ’	0.6891997
tɬ’ - tʃ’	-0.5760806
tʃ- tʃ’	-2.0881727

Table 2.33: Results of Dunn’s test for the skew of each Nomlaki affricate, following significant Kruskall-Wallace results for $p > 0.05$. Bolded pairs show significantly different p-values for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Comparison	Z
tɬ- tɬ’	1.4001273
tɬ- tʃ	2.6168601
tɬ’ - tʃ	0.7017182
tɬ- tʃ’	0.6230365
tɬ’ - tʃ’	-1.0025127
tʃ- tʃ’	-2.5218575

Table 2.34: Results of Dunn’s test for the kurtosis of each Nomlaki affricate, following significant Kruskall-Wallace results for $p > 0.05$. Bolded pairs show significantly different p-values for $p < 0.05$ [** $p < 0.01$, * $p < 0.05$].

Chapter 3

Nomlaki phonology

This chapter discusses various aspects of Nomlaki phonology. This includes phoneme distribution and phonotactics, syllable structure, basic phonological processes, the treatment of loanwords, intonational patterns of lexical stress, and patterns of phrasal intonation. As with Chapter 2, all audio examples are taken from Freeman (1953).

Naturally, the limited size of the available corpus limits some of this analysis. Because many sources elicit the same vocabulary domains, the actual amount of unique data is smaller than the amount of materials would suggest. There is a limit to the environments produced by the corpus, which leaves some gaps in our understanding of phonotactical distributions and phonological processes. In some cases, it is unclear whether the negative evidence for a particular pattern is because it is restricted in some way, or simply not present in the limited data. Additionally, the elicitation style adopted in Freeman (1953) is not likely to resemble most natural speech. While Freeman (1953) does record questions and commands, it is not clear if the intonation accompanying these is naturalistic, or is simply the same elicitation style produced in the rest of the recording.

3.1 Phonotactics

The Nomlaki consonant inventory includes thirteen stops, five fricatives, two affricates, two nasals, and three approximants. Tables 3.1 and 3.2 (reproduced from Tables 2.1 and 2.2) summarize the consonant and vowel inventories of Nomlaki respectively.

The four-way Nomlaki stop contrast can be represented by the features [voice], [spread], and [constricted glottis], as summarized in Table 3.3. There is some debate in the phonological literature over whether it is sufficient for phonological features to simply represent all possible contrasts in a given language (the 'abstract' approach), or whether the representations should have some level of phonetic fidelity (the 'realist' approach) (Schwarz 2024). Two systems which produce the same number of contrasts may be encoded differently under these approaches if their phonetic realizations differ. As seen in Chapter 2, Nomlaki voiced stops are phonetically as well as phonologically voiced. They are thus represented in Table

Manner	**Bilabial**	**Alveolar**	**Post-alveolar**	**Palatal**	**Velar**	**Uvular**	**Glottal**
Stop	p, p^h, p', b	t, t^h, t', d			k, (k^h), k'	q, (q^h), q'	ʔ
Fricative		s			x	χ	h, (ɦ)
Lateral fricative		ɬ					
Affricate			tʃ, tʃ'				
Lateral affricate		tɬ'					
Nasal	m	n					
Approximant	w			j			
Lateral approximant		l					

Table 3.1: Nomlaki consonant inventory. Sounds whose phonemic status is uncertain are indicated in parentheses.

Height	**Front**	**Mid**	**Back**
High	i, iː		u, uː
Mid	e, eː		o, oː
Low		a, aː	

Table 3.2: Nomlaki vowel inventory.

3.3 with [voice]. While Nomlaki aspirated stops have cross-linguistically short VOT values (see Chapter 2), they are still twice the average length of Nomlaki unaspirated stops: the distinction between these can be represented with [spread glottis]. This schema is sufficient for velar and uvular places of articulation, but must be expanded for bilabial and alveolar places of articulation, which contain ejectives. These ejectives are voiceless, with a similar VOT to aspirated stops. They therefore cannot be represented using a unique combination of [voice] and [spread glottis] while maintaining phonetic realism. By adding the feature [constricted glottis], we can capture the glottalization that distinguishes ejectives from the other stop categories. [constricted glottis] encompasses stops that are merely glottalized, as well as full ejectives, both of which are realized in free variation in Nomlaki.

In both Wintu (Pitkin 1984:39) and Patwin (Lawyer 2021:59), the minimal syllable shape is CV(C). Because vowel-initial syllables are not permitted, an epenthetic glottal stop is added to underlyingly V(C) syllables. This is not clearly so in Nomlaki. There exist several words in Freeman (1953) which seem to surface vowel-initially. However, textual data often reflects word-initial glottal insertion. Neither Swadesh nor Pitkin record vowel-initial words.

Class	**Representation**	**Phonetic realization**
p	[]	Very short VOT (avg. 27.77 ms)
p^h	[spread]	Longer VOT (avg. 47.42 ms)
p'	[constricted glottis]	Glottalization or glottalic ejective
b	[voice]	Negative VOT (avg. -52.94)

Table 3.3: Phonological features needed to encode the four-way Nomlaki stop contrast, reflecting a realist approach (see Schwarz 2024).

Instead, these words are transcribed with a word-initial glottal stop. This is seen in 5.6 P6 (1953c) in *'aan* 'turtle', *'ila* 'headband', and *'iwaaɬa* 'corn', and in 4.4 N4 (1958:16) in *ʔíw* 'acorn', *ʔílah* 'headstall', and *ʔanáq* 'knee' 4.4 N4 (1958:15). In contrast, word-initial glottal stops are not present in Blankinship and Wenger (1978a). Vowel-initial words are seen, for instance, in *iyu* 'acorn', *ElEt* 'young child', and *elba* 'eat'. It seems most likely that Blankinship and Wenger (1978a) is simply less phonetically accurate than Swadesh and Pitkin.

Table 3.4 shows the distribution of glottal stops and vowels at syllable onset and coda. Glottal stops are sometimes recorded at syllable coda, though there are no minimal pairs for glottal stops in any position and it is not yet clear how phonetically real these glottal stops are. While syllable-initial glottal stop insertion presumably exists to maintain CVC syllable structure, syllable-final glottal stop insertion appears to be in free variation, and does not serve a repair function.

All consonant phonemes may occur syllable-initially, while distribution is more restricted syllable-finally. Syllable-initial consonant distribution is shown in Tables 3.5 and 3.6 (reproduced from Tables 2.3 and 2.4), respectively; syllable-final consonant distribution is shown in Table 3.7. Aspirated stops and ejectives may not occur syllable-finally, a pattern echoed in Wintu (Pitkin 1984:26) and Patwin (Lawyer 2021:58). These stops may, however, occur in a bound lexical root which obligatorily surfaces with a following vowel. For example, the root *yooq'-* 'wash' must surface in spoken form as a stem, e.g. *yooq'a* 'to wash'. In cases like these, the potentially violating segment is reanalyzed as the onset of a second syllable,

Onset		Nucleus		Coda	
***ʻi**-yu*	‘acorn’	***bih**-ta-lat*	‘quail’	*c3-**ci***[3], ***mi’***	‘rope’, ‘you’
ʻeh	‘this’	*e-**lep***[5]	‘redbud’	*la-**de***, ***e’***	‘earthworm’, ‘bite’
***ʻap**-me*	‘quiver’	***cát***	‘pinecone’	*bo-**ya:***, *qa-**ha’***	‘be many’, ‘cloudy’
***ʻol**-kin*	‘hip’	***koɬ***[2]	‘sp. grass’	*la-**ho***[4]	‘sinew’
***ʻu**-sin*	‘year’	***tun***	‘body’	*wi-**du***	‘knife’

Table 3.4: Distribution of vowels and glottal stops in Nomlaki for each vowel quality, grouped in rows. From left to right, the columns show conditions at syllable onset, syllable nucleus, and syllable coda. Note the presence of an epenthetic glottal stop in syllable onset position. Unmarked entries are from 5.6 P6 (1953c); those marked with [2] are from 4.1 N1 (1951); [3] from Blankinship and Wenger (1978a); [4] from Merriam (1919); [5] from Barrett (1908).

where it is permitted.

/m/ and /n/ are distributed syllable-initially and syllable-finally. They appear to be contrastive in both positions, as seen in Table 3.8. Likewise, all four fricatives contrast syllable-initially. They may also appear syllable-finally, though minimal pairs can only be found for *kos* ‘lights’ and *kôɬ* ‘species of edible grass.’ Table 3.9 shows these fricative distributions.

All three affricates appear syllable-initially. Though the documentation does not provide exact minimal pairs, near-minimal pairs such as *c’aawi* ‘sing’ and *tɬ’awi* ‘four’ suggest such a contrast. As with aspirated stops and ejectives, /tʃ/ and /tʃʼ/ are observed syllable-finally only within bound roots which must in practice surface vowel-initially, where they are reanalyzed as the onset of a new syllable. Syllable-final [tɬ] is not attested at all. These patterns are shown in Table 3.10.

Approximants /w/, /j/, and /l/ may appear syllable-initially or syllable-finally. Semivowels /w/ and /j/ may co-occur with either short or long vowels, as in *wak* ‘heron’ vs *waapet* ‘something that is still unripe’, and *yodoh* ‘peppergrass’ vs *yo:la* ‘snow’. Examples of syllable onset and coda distribution for each approximant are shown in Table 3.11.

Plain		Aspirated		Ejective		Voiced	
paqq-	‘hard’	*pʰooq*	‘head’	*p’aq*	‘bone’	*bok*[1]	‘milkweed’
temh-	‘cold’	*tʰam-*	‘turn’	*t’on*[1]	‘tarweed’	*dona*[2]	‘louse’
can-	‘roast’			*c’ansem*	‘five’		
koko	‘basket’	*kʰi:n*	‘someplace’	*k’o-*	‘sick’		
qot-	‘strong’	*qʰos*	‘steam’	*q’oww-*	‘melt’		

Table 3.5: Distribution of syllable-initial stops and affricates in Nomlaki. Laryngeal contrast is arranged by column. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from 4.4 N4 (1958); [2] are from Blankinship and Wenger (1978a).

Lateral	*lol*	'tobacco'	*ɬol wini*	'cook basket'	*tɬ'ol*[2]	'cradlebasket'
Fricative	*son*	'stone'	*xon-*	'away'	*ho:n*	'when'
Nasal	*muq-*[1]	'dizzy'	*nu:q*	'smoke'		

Table 3.6: Distribution of non-obstruent consonants in Nomlaki. Rows are arranged by manner of articulation. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from Blankinship and Wenger (1978a); [2] are from 4.4 N4 (1958).

Plain		Aspirated		Ejective		Voiced	
no:p	'deer'	*'olph-*	'be thick'	*chilleep'*[2]	'seep willow'	*sub-*	'taste'
mat	'ear'	*lith*[1]	'grasshopper'	*sit'*[2]	'pine needle'	*q'od-*[1]	'crawl'
cidik	'trinket basket'	*lakh-*	'play'	*cheek'*[2]	'blue oak'		
daq	'acorn flour'			*yooq'-*	'wash'		

Table 3.7: Distribution of syllable-final oral stops in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] from Blankinship and Wenger (1978a); [2] are from Merriam (1919).

	Bilabial		Alveolar	
Initial	*muq-*[1]	'dizzy'	*nuuq*	'smoke'
Final	*huum*	'fat'	*hon*	'when'

Table 3.8: Distribution of nasal stops in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from Blankinship and Wenger (1978a).

	Alveolar		Alveolar lateral		Velar		Glottal	
Initial	*son*	'stone'	*ɬomi*	'bobcat'	*xon-*	'away'	*hon*	'when'
Final	*kos*[1]	'lights'	*kôɬ*	'sp. grass'	*ɬuxpux*	'creeper'	*k'eh*	'worm'

Table 3.9: Distribution of fricatives in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from 4B (1956).

Nomlaki phonotactic distribution is generally similar to both Wintu and Patwin. All oral stops in Wintu contrast syllable-initially, but only plain stops may occur syllable-finally.

	/tʃ/		/tʃ'/		/tɬ'/	
Onset	*choq*	'stick'	*c'aawi*	'song'	*tɬ'awi*	'four'
Coda	*tapc-*	'break'	*c'ic'-*	'be pointed'		

Table 3.10: Distribution of affricates in Nomlaki. All words are from 5.6 P6 (1953c).

	/w/		/j/		/l/	
Initial	*wolol-*	'burn'	*yola*	'snow'	*lol*	'tobacco'
Final	*haaw*	'fox'	*holóy*[1]	'spirit, white person'	*hulul*[2]	'sp. acorn'

Table 3.11: Distribution of approximants in Nomlaki. Unmarked entries are from 5.6 P6 (1953c); those marked with [1] are from 4.4 N4 (1958); [2] are from N1 (1951).

Wintu /tɬ/ is also noted to occur in free variation with /ɬ/, which may also be the case for Nomlaki (Pitkin 1984:32).

3.2 Syllable structure

The Nomlaki syllable template is CV(:)C. This pattern is the same in Wintu (Pitkin 1984:39) and Patwin (Lawyer 2021:59). It is observed without exception in the written documentation, though with possible exceptions in the audio data (see Chapter 3.3). (20) shows examples all of the basic arrangements of this syllable structure.

(20) a. ba
CV
'food' (4.4 N4 1958:1)

b. mii
CV:
'tree' (5.6 P6 1953:11)

c. mon
CVC
'juniper' (5.6 P6 1953:11)

d. phooq
CV:C
'head' (5.6 P6 1953:13)

Consonant clusters may not occur within a syllable. Many verb roots apparently violate this constraint, as with *t'ipn-* 'know'. Most commonly, seeming violations arise from roots appended with the transitivizing suffix *-c*: *phowc-* 'swell', *'elcupc-* 'kiss', *hiwc-* 'believe' (5.6 P6 1953). However, all Nomlaki roots are bound, and must surface in a vowel-final stem form. The violating consonant is then analyzed as the onset of the second syllable rather than part of a complex coda for the first. Thus *t'ipn-* 'know', surfaces as the indicative stem *t'ipna*, analyzed as CVC-CV. (21) shows additional examples of Nomlaki tolerating adjacent consonants when they are in separate syllables. Syllable boundaries are shown with hyphens, while morpheme boundaries are shown with parentheses. The CC cluster may occur in separate morphemes, as in (21a). It may occur within the same morpheme but across syllables, as a suffixed CVCC root is reanalyzed as CVC-CVC (21b). Finally, the CC cluster may occur across syllables within the same morpheme (21c).

(21) a. (nom)-(laki)
west-speaker
CVC-CVC

'Nomlaki' (BW Ch. 1 1978:1)

b. (neh-qi)t
CVC-CVC
'rich'; cf. *nehq-* 'find' (5.6 P6 1953:29)

c. (toh-qo)
CVC-CV
'flint' (5.6 P6 1953:10)

Some phonological processes cause surface violations of the typical CVC pattern. These are discussed in Chapter 3.3.

3.3 Phonological processes

Word-initial glottal stop insertion

Because Nomlaki rigidly observes a CVC syllable pattern, an epenthetic glottal stop is inserted at the onset of underlyingly vowel-initial syllables. This is not always reflected in the audio evidence, as seen in Figure 3.1. In this spectrogram, we see the word *ik'i:na* 'here' ostensibly beginning with a vowel. There does not appear to be evidence of a stop release burst or laryngealization, suggesting that this word is phonetically vowel-initial. This is also seen in Figure 3.2 with *elewa* 'no'. However, word-initial glottal stops are consistently transcribed by many documenters, most prominently Pitkin and Swadesh.

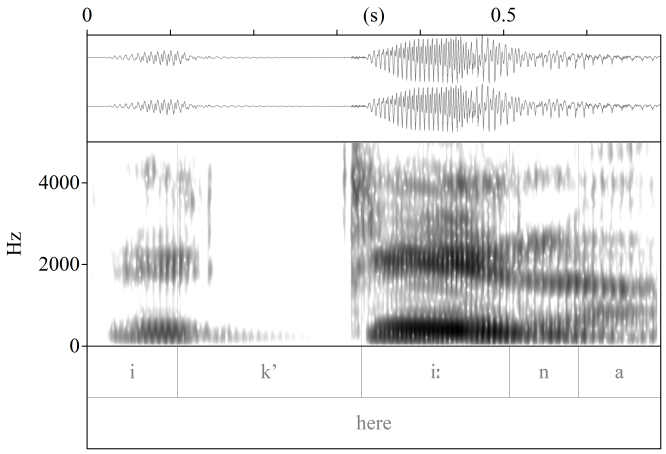


Figure 3.1: Waveform and spectrogram of *ik'ina* 'here', showing a word-initial vowel with no glottal stop.

Examples of word-initial glottal insertion are shown in (22).

(22) a. /ellet/ → [ʔellet]
'child' (5.6 P6 1953:33)

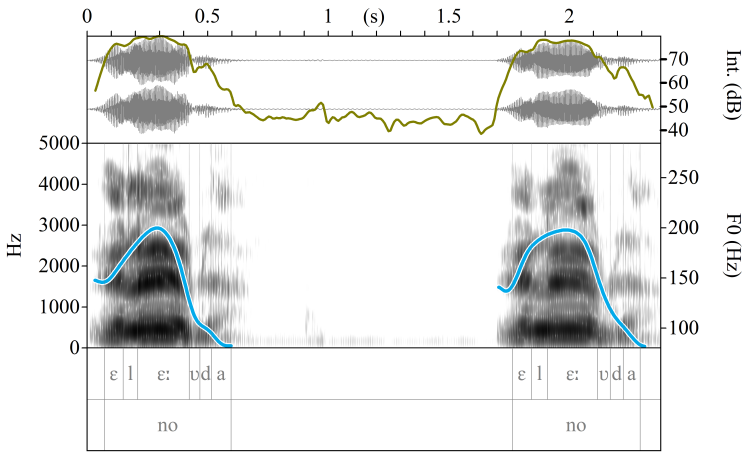


Figure 3.2: Waveform and spectrogram of *elewa* 'no', showing a word-initial vowel with no glottal stop.

b. /oduna/ → [ʔoduna]
'scratch' (5.6 P6 1953:38)
c. /usin/ → [ʔusin]
'year' (5.6 P6 1953:40)

If it is the case that true vowel-initial words are found in the audio data (Freeman 1953), it cannot be the case that the CV(:)C syllable template is always observed. It is possible that the potential exceptions discussed here (and in the rest of the audio) do contain glottalization, which the quality of the audio simply does not clearly show. Because word-initial glottal insertion is reflected in Nomlaki's sister languages, as well as in much of the written Nomlaki documentation, it seems unlikely that this feature never existed in the language. If it is also true that the audio data shows word-initial vowels, this may reflect a new change in the language, and an exception to the typical syllable shape.

Intervocalic /h/-voicing

The voiceless glottal fricative /h/ is voiced intervocalically. This change is not reflected in any written documentation, likely because [ɦ] is neither contrastive in Nomlaki nor in English, the native language of most of the documenting linguists. Intervocalic voicing of [h] is nonetheless visible in spectrograms of Freeman (1953), the voicing bar for which can be seen in Figure 3.3. An unvoiced word-initial /h/ is seen in Figure 3.4 for comparison.

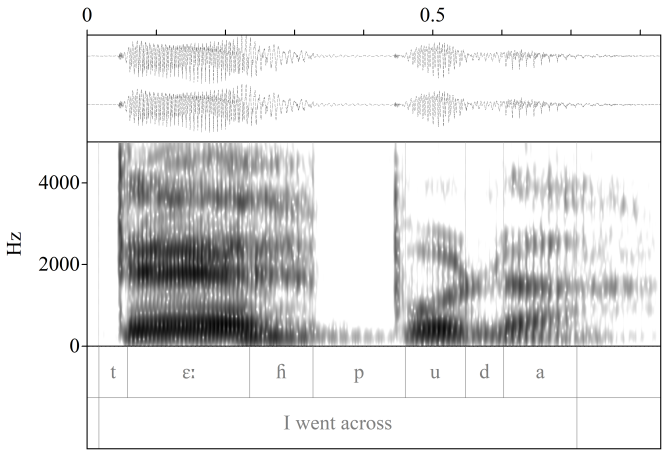


Figure 3.3: Waveform and spectrogram of *tehpuda* 'I went across' as [teɦipuða], showing /h/ voiced as [ɦ]. Note also /d/ surfacing as [ð]: see intervocalic /q/-lenition.

Additional transcriptions (by me) of /h/ undergoing intervocalic voicing in Freeman (1953) are shown in (23).

(23) a. /elhilcu/ → [elɦiilcu]
'help' (Freeman 1953)
b. /tehpuda/ → [teɦipuda]
'I followed' (Freeman 1953)

(24) shows transcribed examples of /h/ not undergoing voicing when not in intervocalic position. All of the examples are word-initial, as there are no examples in Freeman (1953) of /h/ occurring word-finally.

(24) a. /hiʔumina/ → [hiʔumina]
*/hiʔumina/ → [ɦii ʔumina]
'again' (Freeman 1953)

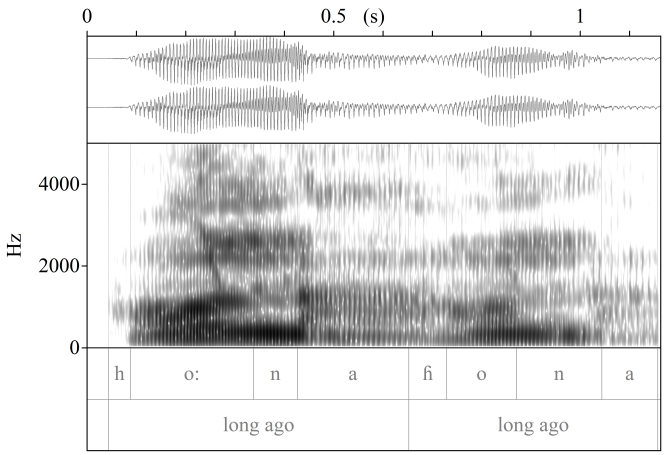


Figure 3.4: Waveform and spectrogram of *hona* 'long ago' as [hona], showing [h] without voicing.

b. /ho/ → [ho]
*/ho/ → [ɦo]
'yes' (Freeman 1953)

Intervocalic /q/-lenition

The uvular stop /q/ is lenited to the fricative [χ] in intervocalic position. As with intervocalic /h/-voicing, where [h] → [ɦ] intervocalically, uvular lenition is not explicitly transcribed in the available text documentation, likely because [χ] is not contrastive in the transcribers' first languages. However, it is observable in spectrograms of Freeman (1953), as seen in Figure 3.5. This example shows two repetitions of the phrase /aqtibɛnin/ 'before', produced first as [aχtibɛnin], and second as [aqtibɛnin]. Unlike /h/-voicing, which is always observed in the audio (Freeman 1953), /q/-lenition is gradient. /q/-lenition may be part of a more general lenition phenomenon, seen by the leniting of /d/ to [ð] in [teɦipuða] 'I follow' (3.3). However, d-lenition is very sparsely seen in the available audio. I leave it here as a note for future work.

(25) shows transcribed examples from Freeman (1953) of uvular lenition.

(25) a. /leaqada/ → [leaχada]
'speak' (Freeman 1953)
b. /aktibenin/ → [aχtibenin]
'before' (Freeman 1953)

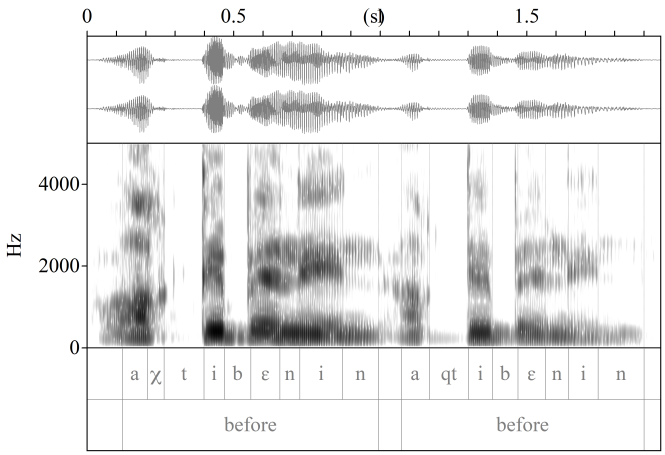


Figure 3.5: Waveform and spectrogram of two repetitions of *aqtibenin* 'before'. The first repetition shows /q/ lenited as [χ], while the second shows it non-lenited as [q].

The lenited examples in (25) are in contrast with those in (26), which show /q/ not leniting to [χ] in word-initial (26a) and word-final (26b) position.

(26) a. /qɛ:len/ → [qɛ:len]
*/qɛ:len/ → [χɛ:len]
'in the house' (Freeman 1953)

b. /holoq/ → [holoq]
*/holoq/ → [holoχ]
'hole' (Freeman 1953)

Stem-final vowel deletion

One of the most common phonological processes in Nomlaki is stem-final vowel deletion. Here, stem-final vowels are deleted when followed and preceded by particular consonantal segments. Thus *wina* 'to see' becomes *winda* 'I see' when the first-person suffix *-da* is attached. This process is most commonly observed when a stem is suffixed by a consonant-initial suffix; this suffix is usually the first-person suffix *-da* (because it is the most attested), but also the reflexive suffix *-na*, causative suffix *-ma*, stative suffix *-ha*, and benefactive suffix *-paq*.

Deletion is triggered when the stem-final vowel is preceded by sonorants [j] (27a), [w] (27b), [n] (27c), and [l] (27d), as well as [b] (27e) and [p] (27f). Deletion does not apply to sonorant [m]: *łoomata* '[I] festered' (5.6 P6 1953:17).

(27) a. /haya-ta/ → [hayØ-ta]

'I go' (5.6 P6 1953:1)

b. /tiwa-ta/ → [tiwØ-ta]
'I looked for it' (5.6 P6 1953:13)

c. /wina-ta/ → [winØ-ta]
'I looked' (5.6 P6 1953:13)

d. /eltila-ta/ → [eltilØ-ta]
'I waited' (5.6 P6 1953:24)

e. /biha-ta/ → [bihØ-da]
'I smoked' (5.6 P6 1953:10)

f. /nupa-ta/ → [nupØ-ta]
'I dove' (5.6 P6 1953:16)

Stem-final vowel deletion does not apply if the stem-final vowel is not [a] (28a), including [a:] (28b). As discussed in Chapter 2.3, Nomlaki [a] is phonetically centralized, well within the vowel space parameters for schwa. It is therefore reasonable to expect that [a], to the exclusion of other vowels, would reduce in this way. Stem-final vowel deletion is also blocked if deleting the vowel would result in an illegal CCC cluster, as in (28c) and (28d). There are also anomalous examples for which it is unclear why the deletion rule did not apply: in (28e) *kiinata* 'I slept' does not become *kiinta*, despite other examples like *wina* 'I see' becoming *winda*. In (28f), *ɬala* 'I pierced it' does not become *ɬalta*, despite examples such as *eltilta* 'I waited.' This may be related to stress or vowel length differences, neither of which are always consistently transcribed.

(28) a. /qeelu-ta/ → [qeelu-ta]
'I live [here]' (5.6 P6 1953:17)

b. /kiwaa-ta/ → [kiwaa-ta]
'I looked for it' (5.6 P6 1953:13)

c. /minalha-ta/ → [minalha-ta]
'[I] put fire out' (5.6 P6 1953:10)

d. /'olel ɬa-ta/ → [olelɬa-ta]
'I got up' (N3 1953:127)

e. /kiina-ta/ → [kiina-ta]
'I sleep' (5.6 P6 1953:17)

f. /ɬala-ta/ → [ɬala-ta]
'I pierced [it]' (5.6 P6 1953:23)

The following section records stem-final deletion as it occurs with different conditioning suffixes. Because of how limited the data is, conditioning segments which are not discussed should be assumed to not be present in the corpus. Stem-final vowel deletion is observed with

all suffixes, with the exception of the generic marker *-s* and particular marker *-t*. Strong conclusions should not be drawn from this, however, as the few extant examples do not match an expected conditioning environment.

(29) shows stem-final deletion when the causative suffix *-ma* attaches to a stem form. This occurs when the stem-final vowel is preceded by sonorants [l] (29a), [n] (29b), and [j] (29c). No examples exist with [w]. Deletion is not conditioned following by non-sonorant [t] (*wootuma* 'be halfway'; 5.6 P6 1953). As observed above, deletion also does not target non-[a] vowels, even if the conditioning environment is otherwise appropriate, e.g. *kellelema* 'be distant' (5.6 P6 1953), *ʔoltamumumita* '[I] rolled it over' (5.6 P6 1953:16)

(29) a. /dila-mo-ta/ → [dilØ-mo-da]
'I lost it' (5.6 P6 1953:13)
b. /wina-ma-ta/ → [winØ-ma-da]
'I showed it' (5.6 P6 1953:13)
c. /haya-mi-ta/ → [hayØ-mi-ta]
'I carried it' (5.6 P6 1953:23)

Stem-final deletion occurs with stative *-ha* when preceded by sonorants [l] (30a) and [m] (30b), with the exception *ƛ'olaha* 'freeze' (4.4 N4 1958:7). This may be because the stem-final vowel in *ƛ'olaha* is long, as the stem is transcribed as *ƛ'olaa* in a later line (4.4 N4 1958:7). Deletion is not triggered by long vowels (*tunaahata* '[I'm] hungry), or non-[a] vowels (*waapeteha* 'be unripe') (5.6 P6 1953:21).

(30) a. /ʔolela-ha/ → [ʔolelØ-ha]
'be tall' (4.4 N4 1958:16)
b. /ƛ'ama-ha/ → [ƛ'amØ-ha]
'count' (4.4 N4 1958:7)

With the reflexive suffix *-na*, deletion is triggered by sonorants [j] (31a) and [m] (31b), as well as uvular stop [q] (31c). Deletion is not triggered by long vowels (e.g. *cinuuna* 'grab') (5.6 P6 1953:22).

(31) a. /c'upayʔ-na-ta/ → [c'upayØ-na-ta]
'lend' (5.6 P6 1953:24)
b. /elnamʔ-na/ → [elnamØ-na]
'taste' (5.6 P6 1953:24)
c. /seymoqʔ-na/ → [seymoqØ-na]
'wriggle' (5.6 P6 1953:5)

Deletion is triggered preceding benefactive *-paq* by sonorants [j] (32a) and [w] (32b). These are the only two environments in the corpus.

(32) a. /haya-paq/ → [hayØ-paq]
'ought to go' (5.6 P6 1953:14)
b. /c'aaw-pak/ → [c'aawØ-paq]
'sing [for your grandson]' (Blankinship and Wenger 1978:3 (henceforth cited as BW Ch. 6))

Only two examples of the dual hortative *-wen* are extant in the corpus: *Lakola-wEn* 'Let's play' and *Elmakcu-wEn* 'Let's smoke' (BW Ch. 6 1978:3). As seen, neither trigger deletion. Although the stem-final vowel in the former is written with [a], this is transcribed literally from the spelling system used by Blankinship and Wenger (1978a), where [a] refers to the long vowel [a:], while <3 >) is used to denote [a] or [ə]. That *Lakola-wEn* does not trigger deletion thus confirms with our expectations for long target vowels.

Deletion is triggered preceding plural hortative *-le* by sonorant [j], for which there are two unique examples (33). It is not triggered when deletion would create an illegal CC cluster, as in *ba-le*. It is also not triggered in *aqtuma-le* 'He can do it' (Freeman 1953).

(33) a. /haya-le/ → [hayØ-le]
'Let's go' (BW Ch. 6 1978:3)
b. /yomoya-le/ → [yomoyØ-le]
'[Can you] tell me?' (5.6 P6 1953:3)

Deletion is triggered preceding the possibility marker *-mena* by sonorants [j] (34a) and [n] (34b). It is not triggered by alveolar affricate [tʃ]: *polc3-mena* 'might shoot' (Blankinship and Wenger 1978:1 (henceforth cited as BW Ch. 5)).

(34) a. /haya-mena/ → [hayØ-mena]
'I might go' (BW Ch. 5 1978:1)
b. /wina-mena/ → [winØ-mena]
'I might see' (Blankinship and Wenger 1978:8 (henceforth cited as BW Ch. 4))

Second-person agreement marker *-ken* triggers deletion with [h] in the one extant unique example: *boh-ken* (4.4 N4 1958:8). Dubitative *-m* is not observed triggering deletion. As *-m* is not observed in -CV form, deletion preceding *-m* would create illegal within-syllable consonant clusters.

Stem-final deletion appears to be at least partially morphologically conditioned, as the target of deletion is the final vowel of the original stem. (35a) and (35b) show the stem-final deletion of [a] in the environment n_da, where the target vowel [a] is the final vowel of the verb stem. (35c) and (35d) show the same environment; however, [a] is now part of the reflexive suffix *-na* rather than the non-suffixed verb stem. Under these conditions, suffixing *-da* does not trigger vowel deletion.

(35) a. /wina-ta/ → [winØ-da]
'I see' (Blankinship and Wenger 1978:7 (henceforth cited as BW Ch. 2))

b. /hena-ta/ → [henØ-ta]
'[I] return' (5.6 P6 1953:6)
c. /nekcu-na-da/ → [nekcu-na-da]
'I cut myself' (Freeman 1953)
d. /tepanuu-na-da/ → [tepanuu-na-da]
'I'm braiding' (5.6 P6 1953:32)

In all of the above examples, the target of deletion is the final vowel of the stem, meaning morphological conditioning may also be involved. For instance, deletion in *c'upaynata* targets the stem *c'upaya* 'borrow', rather than the derived stem *c'upayna* 'lend'. This is despite the fact that n_d is a conditioning environment in other contexts, e.g. *winda* 'I see'. This in turn suggests that stem-final deletion is sensitive to stem boundaries. One exception exists in the corpus: *calumha* 'make it good' (4B 1956:47), where deletion targets the causative marker *-ma*, implying the derived stem *caluma* 'make good' rather than *cala* 'good' (which would produce *calmaha*). It is unclear why this is so. It is notable that the imperative stem *calu* is not a target for stem-final deletion, as the final vowel is not [a]. It is possible that this process operates left-to-right, reanalyzing each successive stem and suffix as a new stem, then targeting the first valid conditioning environment.

Schwa epenthesis

Schwa epenthesis occurs in one documented case: the name for the language itself. In this case, a schwa is inserted between syllables, as in (36).

(36) /nom-laki/ → [nomǝlaki]
west-speaker
'Nomlaki' (Freeman 1953)

Only one other word in the corpus matches the above conditioning environment; however, this word does not show schwa epenthesis (37).

(37) /támlik/ → [támlik]
*/támlik/ → [támǝlik]
'tule mat' (Curtis 1924)

3.4 Loanwords

European contact with Nomlaki speakers was first made by Russians, who in 1812 established a post at Fort Ross (Sonoma County) in order to conduct the fur trade (Golla 2011:23). A limited number of Russian loanwords entered into Nomlaki from neighboring native languages whose contact with the Russians was more direct. The most prominent of these is *suku*

'dog' (from Russian *súka* via Pomo, Pitkin 1985:557), a word which has achieved large-scale diffusion throughout native California. Later waves of Spanish, and then English-speaking American, incursion into Nomlaki territory have contributed more substantially to Nomlaki vocabulary.

Table 3.12 details the observed correspondences between loaned phonemes in their donor language and in Nomlaki. Most commonly, Spanish alveolar trill [r] is loaned into Nomlaki as [l]. As Wintu also contains [r], the fact that Nomlaki maps Spanish [r] to a separate phoneme (which is not a reflex of Proto-Wintun **r*) suggests that by the time of Spanish contact in the early 1800s, Nomlaki had already lost [r]. This is also suggested by the fact that Wintu loans of Spanish words keep [r], as in *friho:lis* 'beans' (Pitkin 1985:130). One exception to this rule in Nomlaki is *foor julay* 'Fourth of July' (38q). It is notable that this exception is clearly an American English loan word, and likely represents the American English /ɹ/ rather than trilled /r/. The rhotic in *foor julay* likely indicates a degree of Nomlaki/English bilingualism in speakers at a later stage of the Nomlaki language, such that speakers were comfortable pronouncing English /ɹ/ without mapping it to an alternate Nomlaki phoneme. In other cases, the English alveolar approximant [ɹ] is typically mapped to [l], except in *Hadi* 'Harry', where it is substituted for [d].

Language	Donor	Nomlaki	Example
Spanish	/r/	/l/	(38b), (38e), (38m), (38n)
Spanish	/ʤ/	/ʧ/	(38k)
English	/f/	/p/	(38f)

Table 3.12: Correspondences between donor language phoneme and loaned phoneme into Nomlaki.

(38) a. peesa-t money-PARTIC
'money' [Sp. *peso*] (5.6 P6 1953:30)

b. solapi
'blanket' [Sp. *serape*] (5.6 P6 1953:28)

c. kamisa
'shirt' [Sp. *camisa*] (5.6 P6 1953:28)

d. pantilun
'pants' [Sp. *pantalón*] (5.6 P6 1953:28)

e. kaleetu
'wagon' [Sp. *careta*] (5.6 P6 1953:30)

f. koope
'coffee' (5.6 P6 1953:31)

g. powta
'gunpowder' (5.6 P6 1953:31)

h. papel
'paper' [Sp. *papel*] (5.6 P6 1953:31)

i. poteeya
'bottle' [Sp. *botella*] (5.6 P6 1953:32)

j. piita
'Peter' (5.6 P6 1953:30)

k. cooci
'George' (5.6 P6 1953:30)

l. hadi, hende
'Harry' (5.6 P6 1953:30)

m. ayliin
'Irene' (5.6 P6 1953:30)

n. loobit
'Robert' (5.6 P6 1953:30)

o. khismis
'Christmas' (5.6 P6 1953:30)

p. nuuyi
'New Year' (5.6 P6 1953:30)

q. foor julay
'Fourth of July' (5.6 P6 1953:30)

Many of the loanwords in (38) do not violate Nomlaki's syllable structure or phoneme inventory, e.g. Spanish *botella* 'bottle' (38i), *papel* 'paper' (38h), *kamisa* 'shirt'(38c). These words are loaned into Nomlaki virtually unchanged. Loanwords that do violate syllable structure are typically repaired through removing the segment (usually the rightmost) causing the illegal consonant cluster. This is seen in *khismis* 'Christmas,' where the English /*kɪ*/ cluster is reduced by deleting /ɪ/ (38o). It is also seen in *foor julay* 'Fourth of July', and *loobit* 'Robert' (38n). The English name George, loaned as *cooci* (38k), shows two repair operations. Following the re-syllabification of George as two syllables ([ʤɔɹ-ʤ]), [i] is inserted into the second syllable to satisfy minimum CV constraints. Although the CVC shape of the first syllable [ʤɔɹ] is licensed in Nomlaki, English [ɹ], leaving the first syllable open.

The behavior of *cooci* in (38k) seems to indicate a general dispreference for English [ɹ]. It is often deleted when the syllable structure would otherwise permit it, provided it were substituted for an acceptable Nomlaki phoneme. This is seen in *powta* 'powder' (38g) and *piita* (38j), whose original syllable structure (CVC-CVC and CV-CVC) would be permitted in

Nomlaki. Many Proto-Wintun words containing [r] are also deleted in their Nomlaki reflexes, though it is still not entirely clear when other reflexes (such as /ɬ/) are used instead).

Vowels do not always show a clear mapping between Spanish/English and Nomlaki. In many cases, vowels from the donor language are changed in Nomlaki, despite the existence of the same phone in Nomlaki. These include *pesat* 'money' (38a), from Spanish *peso*; *kaleetu* 'wagon' (38e) from Spanish *careta*; *solapi* 'blanket' from Spanish *serape*. These may partially reflect differences in either Spanish or Nomlaki vowel quality at the time of loaning. It may also sometimes reflect morphological analogy. As an example, consider *pesat* 'money' from Spanish *peso*. The presence of the particular *-t* suggests that Nomlaki analyzes *pesat* as a nominalized verb root *pesa* and the particular *-t*. While it is true that /o/ is present in both Spanish and Nomlaki, Nominalized verb roots do not take the form Xo. Thus *peso* is transformed to the more common nominalized form *pesa*.

3.5 Lexical stress

Lexical stress in both Wintu (Pitkin 1984:20) and Patwin (Lawyer 2021:66) is assigned based on syllable weight. In both languages, syllables with long vowels preferentially receive stress. These vowels are considered heavy. In Wintu, no more than one syllable per word may be heavy; thus a long vowel is always stressed. This is not true in Patwin, where multiple long vowels may occur in a single prosodic word. In these cases, stress is assigned in free variation.

In addition to long vowels, Patwin short vowels followed by glides are also heavy. Likewise, syllables with short vowels are considered light in both languages (in Patwin, these may either by CV or CVO syllables, where O is an obstruent). However, the two languages diverge in their classification of 'medium-weight' syllables: in Wintu, these are vowels followed by glides; in Patwin, such combinations are considered heavy. Patwin medium-weight syllables take the form of a short vowel followed by a sonorant. Tables 3.13 and 3.14 detail stress assignment for Wintu and Patwin, respectively.

As with its sister languages, the majority of audio evidence from Freeman (1953) points to weight-sensitivity in Nomlaki stress assignment. Stress is almost always applied to long vowels, of which there is typically one per word. However, long vowels within a word are not obligatory. When a word consists only of CV syllables, stress is typically (but not always) assigned to the first syllable. Few examples of diphthongs, consisting of a vowel/glide pair, exist. Results for those which do exist do not show a consistent pattern: stress is assigned to the diphthong *aj* in *oltʃájtʃi* 'island', but not in *hóltoj* 'hill.' Phonetic examination of diphthongs suggest that the stress peak typically aligns with the first segment, rather than the second vowel or glide. This may suggest that diphthongs or vowel/glide syllables are treated as light (CV) for the purposes of stress assignment.

The evidence described above minimally suggests a two-weight system consisting of heavy CV: and light CV syllables, the latter of which may include CVy syllables. Table 3.15 shows stress placement for a variety of syllable configurations. The first two lines of the chart show heavy CV: syllables attracting stress in initial and final position when all other syllables

Syllable	Stress placement	Wintu	English
L	Ĺ	ní	'I'
EH	ÉH	bó:s	'house'
L+L	Ĺ+L	kírim	'cat'
H+L	Ḿ+L	máyum	'feet' (ACC)
EH+L	ÉH + L	p'é:len	'we two'
L+H	L+Ḿ	holówa	'to scare someone'
L+EH	L+ÉH	lilá:	'to accuse'
H+EH	H+ÉH	c'uyé:	'to suck with the lips'
EH+EH	ÉH+EH	bé:le:s	'it could be'
L+L+EH+L	L+L+ÉH+L	wérlebò:sken	'you will have to come'
L+L+L+EH	L+L+L+ÉH	kénehalè:s	'it might be'
EH+L+EH	ÉH+L+EH	tú:nunà:	'haul big things'
L+EH+EH	L+ÉH+EH	ʔolé:lbè:s	'God'

Table 3.13: Chart detailing stress placement for various combinations of syllable weight in Wintu. EH = extra-heavy syllable, H = heavy syllable, L = light syllable. Chart reproduced from Pitkin (1984:20).

in the word are light. The following two lines repeat this pattern with trisyllabic words, where stress is again attracted to the long vowel in both initial and pen-initial position. This evidence suggests that stress is preferentially assigned to CV: syllables, regardless of syllable position. The latter half of the chart shows stress as it is assigned for CVy (where y is a glide) and CV syllables. As seen, stress is not predictable when a word consists solely of either CV or CVy syllable types. This, coupled with pitch track evidence, suggests that both

Syllable	Stress placement	Patwin	English
H+H	Ĥ+H*	‘úytay	‘his nephew’
H+H	H+Ĥ*	‘uytáy	‘his nephew’
H+M	Ĥ+M	no example	no example
H+L	Ĥ+L	ɬó:no	‘bee’
M+H	M+Ĥ	no example	no example
M+M	?	no example	no example
M+L	M̀+L	no example	no example
L+H	L+Ĥ	dokó:	‘flint blade’
L+M	Ĺ+M*	’úlum	‘black basket root’
L+M	L+M̀*	‘ulúm	‘black basket root’
L+L	Ĺ+L	wílak	‘world’

Table 3.14: Chart detailing stress placement for all combinations of syllable weight in Hill Patwin. H = heavy syllable, M = medium syllable, L = light syllable. Examples are taken from Lawyer (2021:66). Note that stress placement for H+H, M+L, and L+M weight combinations (marked with *) are in free variation.

CVy and CV syllables are light. In the absence of a heavy syllable, stress typically appears word-initially; however, exceptions exist. This suggests that while stress is automatically assigned to heavy syllables, it may be lexically conditioned, or even in free variation, for words containing only light syllables.

Chapter 2 found that stress is associated with increased vowel frontness/backness, pitch, duration, and intensity. However, it is not yet clear how these cues precisely interact. As seen in Table 3.15, length is associated with stress, because stress is preferentially attracted to long syllables. However, Chapter 2 finds that stress also increases the duration of vowels which are already underlyingly long. While pitch and intensity both cue stress, they do not interact

in fully understood ways. For instance, Figure 3.14 shows the phrase *tu:ku nomkɛnwanɪn* 'The sun sets [in the west].' This phrase comprises the words *tu:ku* 'sun' and *nomkɛnwanɪn* 'to set in the west'. Based on the pitch trace, lexical stress and phrase accent appear to be placed on syllable *tu* in *tu:ku* and *no:m* in *nomkɛnwanɪn*, with secondary stress for the latter word on *kɛn*. While in this example, pitch seems to consistently track prominence, intensity does not: it is consistently very high and level for most of the utterance, not simply over stressed syllables (for more discussion, see Lehiste 1970). This very common in longer phrases; it can also be seen in Figures 3.15 and 3.16.

Syllable combination	Syllable weight	Stress placement	Nomlaki	English
CV:+CV	H+L	Ḿ+L	t'í:-ba	'spark'
CV+CV:	L+H	L+Ḿ	pa-pí:	'Who is it?'
CV:+CV+CV	H+L+L	Ḿ + L + L	χá:-ta-la	'be wet'
CV+CV:+CV	L+H+L	L+Ḿ + L	ʔɛ-lɛ́:-wa	'No'
CVC+CVy	L+L	Ĺ + L	hól-toj	'hill'
CV+CVy+CV	L+L?+L	L+Ĺ? + L	oltʃájtʃi	'island'
CV+CV	L+L	Ĺ + L	lú-ha	'rain'
CV+CV	L+L	L + Ĺ	ho-lóq	'hole'

Table 3.15: Chart detailing stress placement for all combinations of syllable weight in Nomlaki. H = heavy syllable, L = light syllable. Examples are taken from Freeman (1953).

Within stressed syllables, pitch peaks show a variety of alignments. Figures 3.6, 3.7, and 3.8 show the pitch peak of each stressed syllable aligned at the early, midway, and late into the syllable, with the pitch peak alignment perhaps phonetically conditioned by the syllable initial segment. In contrast to these syllables, where pitch generally remains high even before or after the stressed syllable (which might be considered H* in the style of Pierrehumbert 1980), other stressed syllables show H*L falling pitch patterns. An example is shown with *elewa* 'no' in 3.9.

It is not yet understood whether pitch peak alignment serves a prosodic purpose. There is some evidence that it is not lexically determined, as shown in Figure 3.10. This figure shows the word *yali* 'the last one' repeated three times. Though each repetition is of the same lexical item, the pitch peak is not consistently aligned at the same point in the stressed

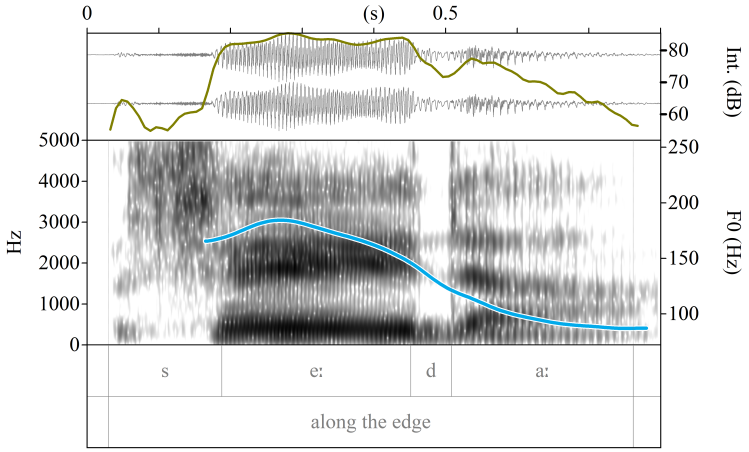


Figure 3.6: Waveform and spectrogram of *se:da* 'edge', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram. Note that the pitch peak aligns to the far left (early) of the stressed syllable.

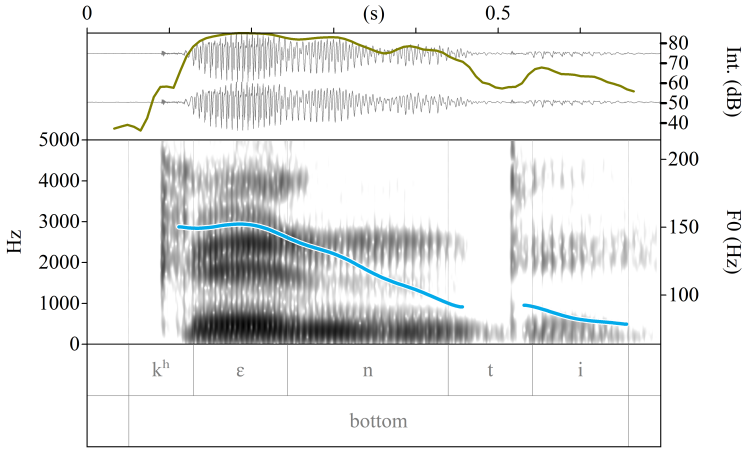


Figure 3.7: Waveform and spectrogram of *kenti* 'below, bottom', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram. Note that the pitch peak aligns neither to the far left or far right of the stressed syllable.

syllable. The first item shows an extremely late pitch peak, whose highest point actually straddles the boundary between the vowel and following liquid [l]. The second repetition shows a pitch peak aligned at the syllable midpoint. To complete the triptych, the third

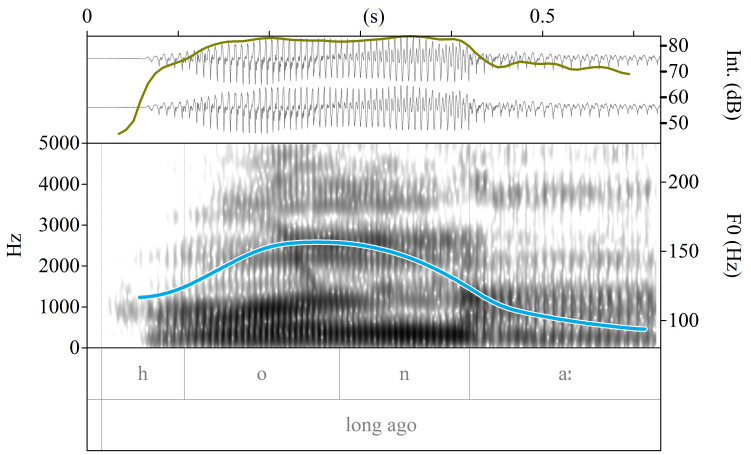


Figure 3.8: Waveform and spectrogram of *hona:* 'long ago', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram. Note that the pitch peak aligns to the far right (late) of the stressed syllable.

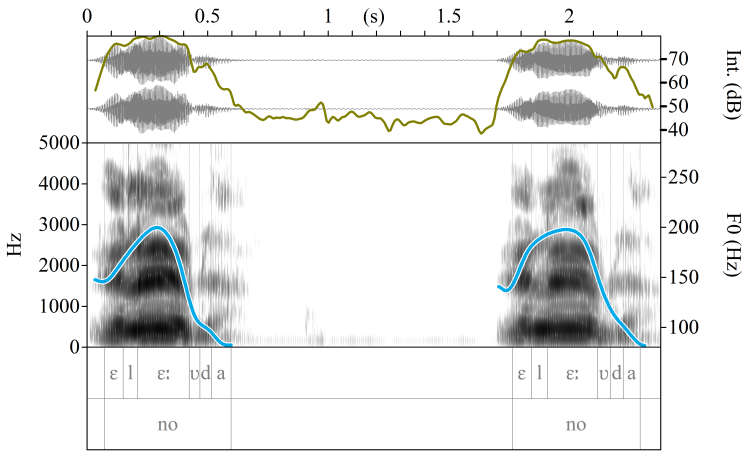


Figure 3.9: Waveform and spectrogram of *elewa* 'no', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram. Note the difference in late (left) and mid (right) stress peak alignment between the two phrases.

repetition shows the pitch peak aligned early in the vowel, with the actual peak partially located in the preceding liquid [j] (represented here with the Americanist *y*). This suggests that pitch alignment is not lexically assigned.

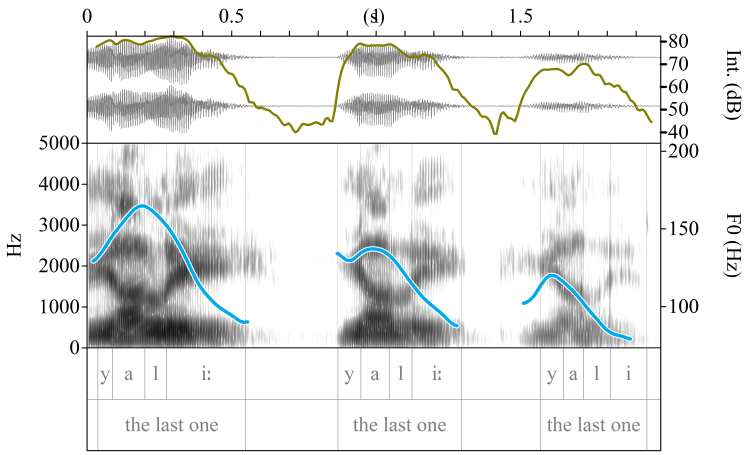


Figure 3.10: Waveforms and spectrograms of *yali* 'the last one' repeated three times, with intensity (dB) overlaid on the waveforms and F0 (Hz) overlaid on the spectrograms. Notice the global pitch declination across the three identical phrases.

Not all long vowels are assigned stress, even when they are the only long vowel in the prosodic word. This is possibly a result of phrasal effects, or else an element of weight assignment that is still not well understood. Figure 3.11 shows *tʃonaɬ* 'moon', which contains a short CV syllable *tʃo* followed by a long CV:C syllable *aɬ*. While we would expect the CV:C syllable *a:ɬ* to receive stress, it is actually the first syllable *tʃo* which does so. This may be a result of phrasal lengthening effects, where the final syllable of a word can be lengthened for prosodic purposes. Another possible example of this is indicated in Figure 3.12, which shows two repetitions of *kelel* 'far, distant.' In the first repetition, the second vowel is long; in the second, the second vowel is short. Despite the presence of a long vowel in the first repetition, stress is not assigned to this syllable. This, in tandem with the fact that this long vowel is not maintained throughout both repetitions, suggests that this lengthening is the result of prosodic processes which occur after stress assignment. This can also be seen in Figure 3.10, where the final vowel in *yali* 'the last one' surfaces twice as long and once as short throughout its three repetitions. In those repetitions where *yali* surfaces as [jali:], stress is not assigned to the second CV: syllable. Rather, it is consistently assigned to the first.

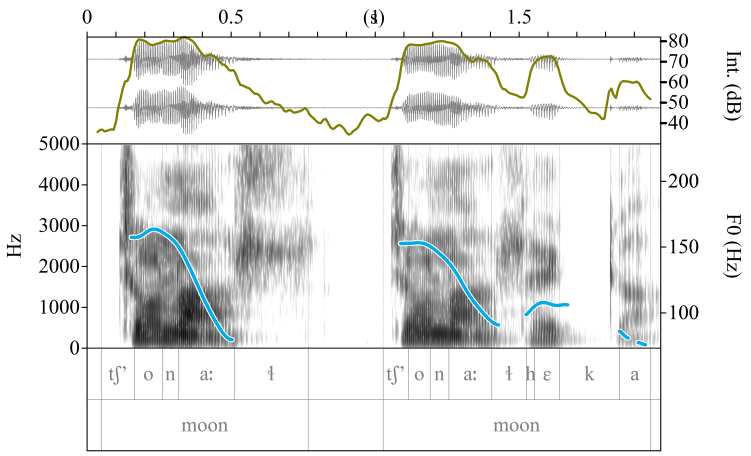


Figure 3.11: Waveforms and spectrograms of *tʃ'onaɬ* 'moon' and *tʃ'onaɬ* 'moon rises', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

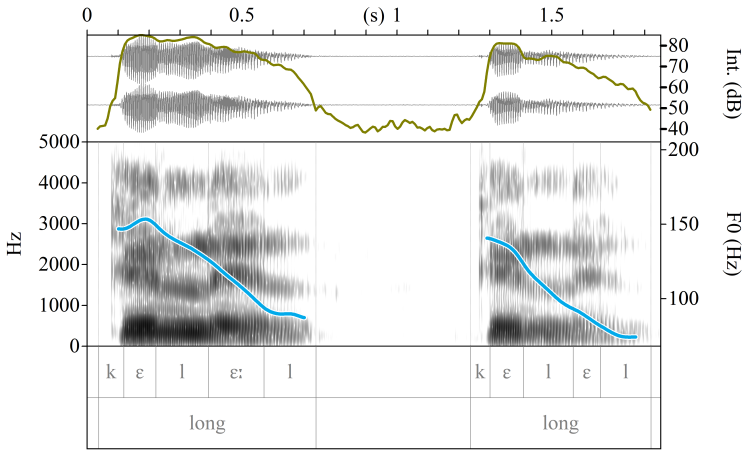


Figure 3.12: Waveforms and spectrograms of *kelel* 'far', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

3.6 Phrasal intonation

Though a fully developed description of Nomlaki prosody is a subject for later exploration, this section touches on prosodic patterns used for various illocutionary acts, considered in a ToBI-like system (Pierrehumbert 1980). See Björklund (2023) for a discussion of intonational contours in Patwin using similar theoretical grounding. Figures in this section are created with a Praat script written by Elvira García (2025).

Almost all phrase types elicited in the Freeman (1953) corpus show a high-low pattern which can be generally captured as H*(L) L-L%. That is, each phrase receives a high tone H* on the first stressed syllable of the phrase, which is the global peak of the phrase. Stress may be realized either by a single high tone H* (as in 3.6), or by a falling tone H*L (3.9); the former is more common. Pitch is then interpolated downwards from the global high of the first stressed syllable and the low phrase-final edge tone L-L%. This produces a generally downward-sloping appearance to most phrases, regardless of the type suggested by their semantic content. This pattern is also the most common in Patwin, for both statements and questions (Lawyer 2021, Björklund 2023). Wintu is also reported to have one syllable within the intonational phrase marked for highest prominence via stress/increased pitch.

Almost all elicited items in Freeman (1953) are single lexical items and short phrases. The context in which they are collected generates a consistent elicitation-style prosodic pattern that is unlikely to be common in natural speech. Examples throughout this chapter, including in Figures 3.6, 3.7, and 3.8, show this common pattern. In it, the prosodic phrase reaches a maximum pitch on the first stressed syllable of the phrase. Stress is either marked with H* (3.6, 3.7, 3.8) or H*L (3.9); the latter is less common. Pitch gradually falls from the stressed syllable to a low boundary tone.

Declarative, interrogative, and imperative sentences all follow the same H*(L) L-L% pattern observed above. Declarative statements *tʃansɛmum qi:sam tɔpi* 'I have five children' (3.13) and *tuku: nomkenwanin* 'The sun sets in the west' (3.14), interrogatives *keonai weyam* 'Why did you come?' (3.15) and *Ho:n pel hayle* 'When shall we go?' (3.16), as well as the imperative *nis ɛlhiltʃu* 'Help me' (3.17) all show this pattern. That such a diverse range of illocutionary acts should have the same prosodic pattern is surprising, and likely reflects more of the artificial elicitation environment than the reality of the intonational contours used in daily life. It is most likely the case that the consistent falling prosodic pattern observed in almost all of Freeman (1953) represents a kind of elicitation or list intonation which is not much altered for the illocutionary force or semantic content of the phrase. In addition, Swadesh (1954) generally conducted their Penutian Language Survey (of which Freeman 1953 is a result) under time pressures that likely motivated them to collect data quickly. Swadesh's brusque manner is evident in the recording; he moves through the elicitation list at a quick clip, even supplying lexical items to Freeman when Freeman seems to have forgotten the word or does not respond with the desired vocabulary item.

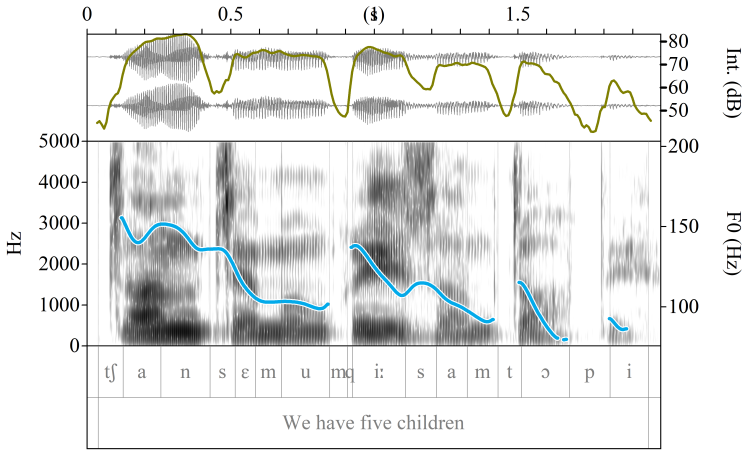


Figure 3.13: Waveforms and spectrograms of the declarative utterance *tʃansɛmum qi:sam tɔpi* 'I have five children', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

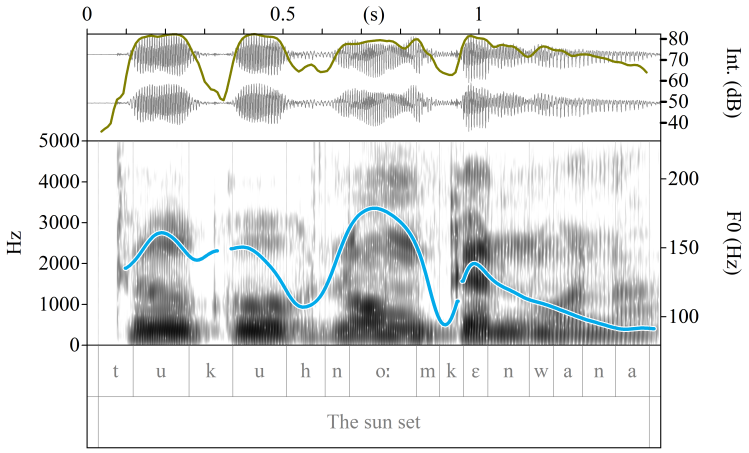


Figure 3.14: Waveforms and spectrograms of the declarative utterance *tu:ku nomkɛnwana* 'The sun sets [in the west]', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

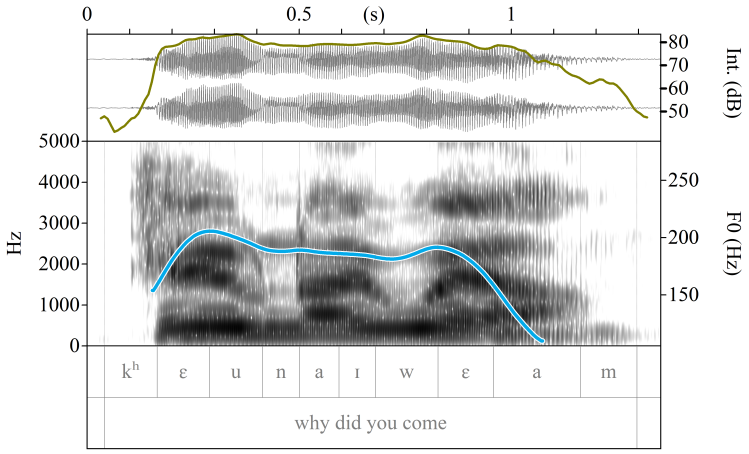


Figure 3.15: Waveforms and spectrograms of the interrogative utterance *keonai weyam* 'Why did you come?', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

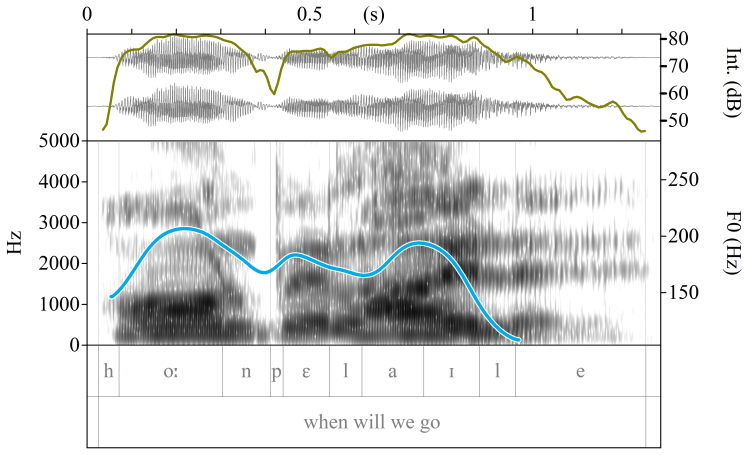


Figure 3.16: Waveforms and spectrograms of the interrogative utterance *ho:n pel hayle* 'When shall we go?', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

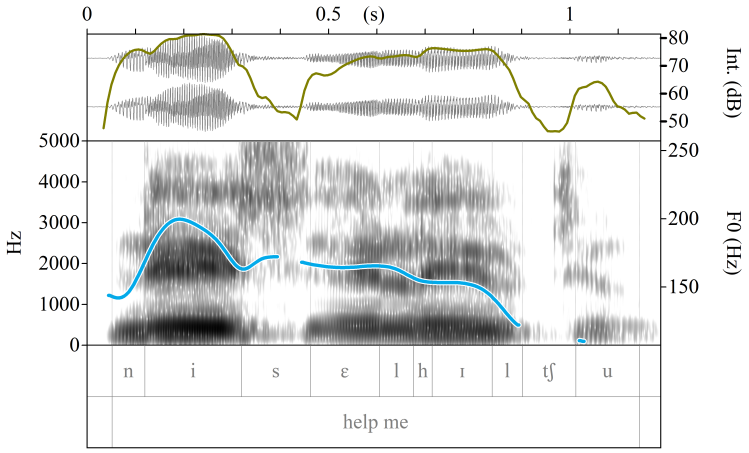


Figure 3.17: Waveforms and spectrograms the imperative utterance *nis ɛlhiltʃu* 'Help me', with intensity (dB) overlaid on the waveform and F0 (Hz) overlaid on the spectrogram.

3.7 Morphophonemics

Like all Wintuan languages, Nomlaki participates in a complex system of stem ablaut (see Chapter 4). The stem ablaut system is extensively seen in the vowel-final alternations of verb stems, which are conditioned both by suffix type and word class. Nomlaki verbs may be inflected for three stem types, called the 'indicative', 'imperative', and 'nominal'. This terminology is based on analogous forms in Wintu (Pitkin 1984). These stem types are conditioned by suffixing morphemes: thus the particular suffix *-t* conditions the nominal stem type, the benefactive *-paq* conditions the imperative, and the first-person agreement marker *-da* conditions the indicative. The surface form of the stem-final vowel is determined by the root's lexical class. Table 3.16 (reproduced from Table 4.5) represents the minimum number of verb classes needed so that every attested verb can be assigned to *at least* one class. However, a particular verb's class can be indeterminate, due to the gaps in the existing data. Table 3.17 shows examples of verbs from each lexical class.

Stem ablaut is the most complex –and well observed– morphophonemic phenomenon in Nomlaki. As far as can be seen (though this is not definitive), only one morphophonological rules is conditioned by phonological environment alone: that of the object case marker *-m*, which surfaces as *-m* after vowels and *-um* after consonants (see Chapter 6.1 for more discussion).

Class	NOMINAL	IMPERATIVE	INDICATIVE
1	Xi	Xu	Xa
2	Xi:	Xu	Xa
3	Xi	Xu	Xi
4	Xi(:)	Xu:	Xu:
5	Xa(:)		Xa(:)
6	Xo(:)		Xa
7	Xu		Xa
8		Xe	Xa
9		Xa(:)?	Xa?
10			Xo?
11		Xo	

Table 3.16: Nomlaki verb classes, reproduced from Table 4.5.

Class	Verbs
1	*c'aaw-* 'sing', *cen-* 'defecate', *bacin-* 'cook', *ɬuyuk-* 'be white', *nekc-* 'cut', *siw-* 'draw', *tede:k-* 'red'
2	*cal-* 'good', *teh-* 'thin', *qot-* 'strong'
3	*elhilc-* 'help'
4	*cin-* 'do, make, catch, grab, choose'
5	*b-* 'eat', *k'iy-* 'to be old (men)', *pot-* 'to be old (women)'
6	*mooq-* 'move', *qom-* 'large'
7	*halhal-* 'think', *munuuq-* 'sweet'
8	*kelel-* 'distant'
9	*pelam-* 'hot' and *tun-* 'hungry'
10	*kenyal-* 'throw down'
11	*ceww-* 'preach'

Table 3.17: Nomlaki verb classes, with example verbs from 5.6 P6 (1953c).

3.8 Summary

Despite a limited corpus, this chapter has examined several phonological phenomena in Nomlaki, basically all described for the first time in the literature. We have seen examined phoneme distribution, phonotactics, and the distinctive features of stops. With the aid of an audio recording (Freeman 1953), we have shed some doubt that Nomlaki strictly conforms to the Wintuan CV(C) syllable structure– or at least, that glottal stops must be inserted syllable-initially. The precise status of these glottal stops, and implications for syllable structure, is a matter for future investigation. We have also examined several phonological rules, both seen from text transcriptions alone (e.g. stem-final vowel deletion) and gleaned only from audio recordings (e.g. intervocalic /h/-voicing; intervocalic /q/-lenition). Examining Nomlaki loanwords also allows us to glean some insight into Nomlaki's historical phonology: for instance, the fact that Spanish [r] is loaned into Nomlaki as [l] (which is not a reflex of Proto-Wintun **r*) suggests that Nomlaki had diverged from Wintu and lost its historical **r* already within the mid-19th century. Looking at stress, we have also found that primary stress may be aligned early, at the middle, or late in the syllable, with as-yet no clear difference in semantic meaning. We also find that most intonational contours –whether they are elicitation items, statements, questions, or commands– exhibit a similar H*(L) L-L%. pattern. This is likely a limitation of the unnatural elicitation environment, though Björklund (2023) also finds similar, remarkably stable intonational patterns in text elicitations for Patwin text elicitation. Finally, we discuss the rich system of stem ablaut which comprises the bulk of morphophonemics observable in the corpus.

As seen, though the Nomlaki corpus is limited, there is still enough data for at least a cursory examination of most major phonological aspects of the language. In most cases, this information was gleaned from documents which were not originally created for the purpose. Instead, we must read between the lines, paying attention to even small clues.

Chapter 4

Nomlaki verbs & verbal morphology

The verb is central to the Nomlaki sentence, and alone may make a complete clause. Because Nomlaki verbs participate in a rich system of derivation and agreement with other morphosyntactic elements, they are covered first in this grammar.

The Nomlaki verb consists of three inflectional stems and eleven conjugational classes. These are illustrated in Table 4.5. These stem types are termed the 'indicative', 'imperative', and 'nominal', after the analogous Wintu terminology (Pitkin 1984:78). Each verb stem is conditioned by a set of suffixes, the exact shape of which is conditioned by the stem's conjugational class. A stem and its suffix(es) may in turn be derived into a new stem to which further suffixation can attach.

Verbal morphemes occur in strict relation to each other. The maximal Nomlaki verb consists of one or more prefixes, a root and any root-deriving suffixes, nominal suffixes, imperative suffixes, and indicative suffixes. These components always occur with respect to each other in this order. Thus the maximal verb takes the following shape: prefix(es) < (root and root-deriving suffixes) < nominal suffixes < imperative suffix(es) < indicative suffix(es).

Table 4.6 shows the morphemes belonging to each position within the verb. Prefixes are a limited class of morphemes relating to direction, location, and manner of motion. One root-deriving suffix is attested: the transitivizing suffix *-c*. Roots may also be extended using reduplication. Conditioning the nominal stem are the generic marker *-s* and particular marker *-t*. The imperative stem is conditioned by the causative *-ma*, stative *-ha*, generic comitative *-ma*, reflexive *-na*, benefactive *-paq*, dual hortative *-wen*, plural hortative *-le*, and the directional hortative *-du*. The indicative stem is conditioned by first-person agreement *-da*, second-person agreement *-ken*, dubitative *-m*, possibility *-mena*, and completive *-k*.

4.1 Wintuan verb comparison

Nomlaki, Wintu, and Patwin verbs all consist of multiple stem types lexically conditioned by conjugational classes. Nomlaki and Wintu both have three stem types, while Patwin has five. Within each language's respective stem types, Nomlaki has (minimally) 11 conjuga-

tional classes, Wintu has 15, and Patwin has three. Tables 4.5, 4.1, and 4.2 summarize the conjugational schema of each language.

As expected from their closer genetic relationship, Nomlaki and Wintu verb classes are most similar to each other. Both languages have three stem classes, for which the nominal, imperative, and indicative most often surface as shapes *Xi*, *Xu*, and *Xa*. This corresponds to verbs of Class 1 in Tables 4.1 and 4.5. Among additional conjugational classes, Wintu and Nomlaki share possible overlap in Nomlaki Class 9 (imperative Xa(:), indicative Xa)/Wintu Class 12 (nominal Xa:, imperative Xa, indicative Xa:). Both also share *Xa* forms within the nominal stem and *Xe* forms within the imperative, though not in the same configuration.

This grammar differs with Pitkin (1984) in how bare stems and verbal suffixes are analyzed. (39) and (40) show how Pitkin (1984) and this grammar analyze the verb phrase *calumha* 'Make it good.' In Pitkin (1984)'s analysis, roots are followed by stem-deriving suffixes: nominal *-i*, imperative *-u* and indicative *-a*. In this grammar's analysis, each stem is conditioned by the following morpheme; this morpheme may be null. Stem-final vowels are not separate suffixes, but rather part of a stem or larger suffix. This analysis has consequences for other verbal suffixation. Because this grammar does not consider stem- or suffix-final vowels to be separate stem-forming morphemes, they are considered conditioned parts of a given suffix. Thus the stative suffix is analyzed as *-ha* in this grammar, but *-h* (followed by indicative *-a*) in Pitkin (1984).

(39) cal-u-m-h-a
good-IMP-CAUS-STAT-INDIC
'Make it good.' (4B 1956:47)

(40) calu-m-ha-∅
good-CAUS-STAT-INDIC
'Make it good.' (4B 1956:47)

The Patwin system of verb inflection is less analogous to Nomlaki. Rather than the Northern Wintun template of three stem types, Patwin has five; rather than 11 (Nomlaki) or 15 (Wintu) verb classes, Patwin has three. Within the Patwin inflectional schema, Class 1 suffixes harmonize with stem-final vowels, and Class 2 suffixes are always of the form *Xa* (or *Xa:*, if the stem-final vowel is long). This is analogous in form with Northern Wintuan indicative *Xa*, but does not seem to match the indicative stem in function. Within Class 3, Patwin nominal and agentive stems take form *Xi*, which appears much closer in function to Northern Wintun. The past, hortative, and participial stems take form *Xu*, similar to the Northern Wintun imperative *Xu*. Like with Wintu and Nomlaki, the name of Patwin stem types in Lawyer (2021) (ultimately taken from Whistler 1980) are formal rather than semantic. Just as not every Wintu/Nomlaki imperative stem conditioning suffix is actually imperative semantically, not every Patwin hortative stem conditioning suffix is actually hortative.

Nomlaki, Wintu, and Patwin (in common with all Penutian languages) are almost entirely suffixing. Tables 4.6, 4.3, and 4.4 illustrate the verb template for each language, along with which suffixes belong to each slot within it.

Nomlaki and Wintu share the same maximal verbal structure of prefixes, followed by a root complex, nominal suffixes, imperative suffixes, and indicative suffixes. Nomlaki and Wintu suffixes are generally concerned with valency changing operations, mood, voice, and person agreement. However, not all cognate suffixes are assigned to the same suffixal complex across languages. Nomlaki also has some suffixation which does not appear cognate to anything in Wintu, such as the directional hortative *-du*. In turn, many Patwin suffixes do not have clear counterparts in either Wintu or Patwin. These include suffixes related to lexical aspect (iterative, semelfactive, etc; the former is achieved through root modification in Wintu) and tense.

4.2 Verbal inflection

Nomlaki consists of three stem types and (minimally) 11 conjugational classes. (41) shows the verb *cal-* 'good' inflected for all three stem types: the nominative (41a), imperative (41b), and indicative (41c).

(41) a. c'aawi-∅
sing-NOM
'song' (Curtis 1924:229)

b. tc'á:wu-∅
sing-IMP
'sing' (Halpern 1936:22)

c. c'aawa-∅
sing-INDIC
'sing' (5.6 P6 1953:39)

Each of the three Nomlaki stem classes is associated with a group of inflectional and/or derivational suffixes that condition that stem. The form of each stem is in turn conditioned by the verb's lexical class. This creates a rich system of stem ablaut that is characteristic not only of Wintuan but of the Penutian grouping as a whole (Dixon and Kroeber 1919).

In this analysis, all stems are conditioned by suffixation, including those which do not appear to surface with any. Thus *cala* 'be good' and *calada* 'I am good' are both conditioned for the indicative stem by suffixation: *cala* by a null indicative morpheme, and *calada* by the first-person agreement marker *-da*. Suffixes may also be re-analyzed as part of a new stem. As part of the process of ablaut, their final vowel may change. However, suffixes are referred to here by the shape they take when they are not followed by further suffixation or reanalysis.

Class	NOMINAL	IMPERATIVE	INDICATIVE
1	Xi	Xu	Xa
2	Xi	Xu	Xa:
3	Xi	Xu	Xe:
4	Xe	Xu	Xe:
5	VHarmony	∅	Xa
6	VHarmony	∅ or Xu	∅ or Xa
7	VHarmony	Xu	Xa
8	VHarmony	∅ or Xu	Xe
9	Xa	∅ or Xu	Xa
10	Xa	Xu	Xa
11	Xa:	Xa	Xa:
12	Xe:	Xe	Xe:
13	Xa	Xe	Xe
14	Xa	Xa	Xa
15	Xa:	Xa:	Xa:

Table 4.1: Wintu verb classes, adapted from Pitkin (1984:76).

Table 4.5 indicates all conjugational classes that are attested. Some are attested for all three stem classes (Classes 1-4); others are attested for only the nominal and indicative (Classes 5-7), the imperative and indicative (Classes 8-9), just the indicative (Class 10), or just the imperative (Class 11). Long and short versions of a stem are listed as separate

Class	NOM	AGT	PST	HORT	PTCP
1	XV:, XV	XV, XV	XV, XV	X, X	X, X
2	Xa:, Xa	Xa:, Xa	Xa:, Xa	Xa:, Xa	Xa:, Xa
3	Xi, Xi	Xi, Xi	Xu, Xu	Xu, Xu	Xu:, Xu

Table 4.2: Patwin verb classes, adapted from Lawyer (2021:231). Pairs within each cell represent the long and short vowel version of each conjugation, respectively. NOM refers to the nominal stem; AGT to the agentive stem; PST to the past stem; HORT to the hortative stem; PTCP to the participial stem.

classes when all items in this class are attested exclusively in one form. A conjugation listed as *XV(:)* indicates that vowel length is not consistent between transcriptions of a particular verb. Vowel length in general is not recorded consistently either between or within sources, and so should be regarded with caution.

Most verbs in the corpus are recorded in the bare indicative stem form; many (if not most) are only recorded once. Across and within several verb classes, stem forms may overlap in shape, as is the case in Wintu (Pitkin 1984:75) and Patwin (Lawyer 2021:231). This makes deducing a verb's class from limited examples particularly challenging, as it is the *unique combination* of forms across stem types which determines a verb's conjugational class. It is thus possible that two verbs appearing identical in the imperative and indicative form, but lacking nominal attestation, would be placed together in Table 4.5. However, these verbs could in actuality belong to separate verb classes if their nominal forms in fact differ. The classes in Table 4.5 therefore represent the minimum number of classes needed so that every attested verb can be assigned to *at least* one class. However, a particular verb's class can be indeterminate. Thus the verb *iwiy-* 'not know' (BW Ch. 5 1978:3), which is only attested once in the corpus, could belong to any class whose indicative stem is of shape *Xa*.

Class 1 is the most attested verb class. Typical members of Class 1 include *c'aaw-* 'sing', *cen-* 'defecate', *bacin-* 'cook', *ɬuyuk-* 'be white', *nekc-* 'cut', *siw-* 'draw', and *tede:k-* 'be red'. Uncertain members include *lih-* 'grind' and *pol-* 'buy, sell'. A typical conjugation is reproduced as (42).

(42) a. c'aawi-∅
sing-NOM
'song' (Curtis 1924:229)

b. tc'á:wu-∅
sing-IMP
'sing' (Halpern 1936:22)

Position	Morphemes
Prefix I	*nom* 'west', *nor* 'south', *pat* 'atop', *po:* 'now', *puy-* 'east', *se-* 'on all sides', *ser-* 'on both sides', *tep-* 'move crosswise', *tu-* 'straight ahead', *way-* 'north', *xun-* 'toward, along', *xal-* 'other, separately', *xan-* 'away, off', *yay-* 'around, encircling', *yel-* 'back', *ʔel* 'in horizontally'
Prefix II	*ken-* 'down', *ʔol* 'above'
Root	
Root-deriving	reduplication, TRANS *-c*, DISTRIBUTIVE *VlVlVh*, REPETITIVE *V:r*, ITERATIVE *V:y*, STATIVE *ʔel*, PRIVATIVE **w*
Imperative I	particular aspect of patient *-t*, particular comitative suffix *-i:l*, generic comitative suffix *-m*
Imperative II	REFL *n*
Imperative III	CAUS *-m*
Imperative IV	RECIP *p'ur*, BEN *-paq*
Imperative V	warning *-ken*, PASS *-here*
Imperative VI	inevitable future *-le*, subordinating potential temporal simultaneity *-n*, 1st person jussive *-n*, hortative *-di*
Imperative VII	negative *-mina*, 1DU-HORT *-e:*, necessary temporal anteriority *-so*, impersonal interrogative *-i:*, 1st-person interrogative *-u*, subordinating temporal simultaneity/anteriority *-ta*, personal object *-:t*
Nominal I	Stative denominal *-h*, intensive denominal *-s*
Indicative I	nonvisual sensory evidential *nt^{h}ere*, hearsay evidential *-kele*, inferential evidential *-re:*, experiential evidential *-ʔel*, subordinating causal anteriority *-r*, approximation *-puke*
Indicative II	1 *-da*, 2 *-ken*, DUB *-m*, COMP *-k*, subordinating temporal anteriority *ʔa*, subordinating unexpected simultaneity *-t'an*

Table 4.3: The Wintu verb template, adapted from Pitkin (1984:99). Terms are taken directly from Pitkin (1984).

Position	Morphemes
Pre-root	reduplication, compounding
Root	
Root-bound suffix	resultative *-či* (HP), contigious *-oho* (RP), delimitative *-to* (RP), iterative *-k^ho* (RP), ASP *-to, -ko* (Rumsey), semelfactive *-t^hi*
Medial suffixes	PASS *-here*, CAUS *-ma*, RECIP *-p'iri*, REFL *-nana*
Pre-final suffixes	FUT *-t'i*, RMT.PST *-ni*, NEG *-mele:*
Final suffix	FIN.DECL *-s, -t^hi, -bus* (Lodoga), *-bes* (Lodoga), PST.DECL *-sa* (HP, RP), Q *-say, sey (HP); -bo, -be (RP)*, Q.PST *-ta, te:*, habitual declarative *-bosa*, 1.EXCL.HORT *-le*, 1DU.EXCL.HORT *-se*, 1.INCL.PL *-bu*, 2.HORT *-t^hi*, 3.HORT *-di*, SUBJ *-mu*, ability *le, les* (HP), might.PST *-mute:* (HP), certainty *-boti, beti* (HP), participle *-taro*, adverbial participle *-ni*, NEG *-muʔu, -mur*, concessive *-ka, -kam*, conditional *-nini* (RP), unknown *-tk$^{\text{ʔ}}$a* (Southern Patwin)

Table 4.4: The Patwin verb template, adapted from Lawyer (2021:99). Terms are taken directly from Lawyer (2021).

c. c'aawa-∅
sing-INDIC
'sing' (5.6 P6 1953:39)

Typical members of Class 2 include *cal-* 'good', *teh-* 'thin', and *qot-* 'strong.' A typical conjugation is shown in (43):

(43) a. calii-t win
be.good-PARTIC man

Class	NOMINAL	IMPERATIVE	INDICATIVE
1	Xi	Xu	Xa
2	Xi:	Xu	Xa
3	Xi	Xu	Xi
4	Xi(:)	Xu:	Xu:
5	Xa(:)		Xa(:)
6	Xo(:)		Xa
7	Xu		Xa
8		Xe	Xa
9		Xa(:)?	Xa?
10			Xo?
11		Xo	

Table 4.5: Nomlaki verb classes. These classes are the minimum needed for every Nomlaki verb to belong to *at least* one class. However, the corpus provides incomplete knowledge of the inflectional system, as seen by the gaps here.

'a good man' (4.4 N4 1958:1)

b. calu-m-ha
be.good-CAUS-STAT
'make it good' (4B 1956:47)

c. cala-∅
be.good-INDIC
'good' (5.6 P6 1953:35)

Members of Class 3 include *elhilc-* 'help.' A typical conjugation is shown in (44). Note here the incorporated transitivizing suffix *-c* (see Chapter 4.3).

(44) a. elhil-ci-∅
help-TRANS-NOM
'help' (BW Ch. 5 1978:3)

b. ni-s elhil-cu-∅
1SG-OBJ help-TRANS-IMP
'Help me' (Freeman 1953)

c. piloq-El Elhil-ci-da
3-DU help-TRANS-1
'I'm helping those two' (BW Ch. 2 1978:7)

Members of Class 4 include *cin-* 'do, make, catch, grab, choose.' A typical conjugation is shown in (45).

(45) a. 'e-w ne cinii-∅ pem
3DG.DEM-GENER 1SG make-NOM ASP
'[I] made it' ['This is my made thing'] (Freeman 1953)

b. chinuu-na
choose-REFL
'grab' (5.6 P6 1953:22)

c. ni-ya 'uka cinii-ta
1SG-EMPH there choose-1
'He wants it [I chose it there]' (5.6 P6 1953:21)

Members of Class 5 include *b-* 'eat', *k'iy-* 'to be old (of men)', and *pot-* 'to be old (of women)'. A typical conjugation is shown in (46). Only the nominal and indicative stem forms have been observed.

(46) a. ba-s
eat-GENERIC
'food' (Johnston 1854)

b. ba:-ta
eat-1
'I'm eating' (Freeman 1953)

Members of Class 6 include *mooq-* 'move' and *qom-* 'large.' A typical conjugation is shown in (47). For attested forms, phonological processes have resulted in the deletion of the imperative-conditioned stem-final vowel.

(47) a. pom moqo-∅
earth move-NOM
'earthquake' (5.6 P6 1953:32)

b. se-moq-na
all.directions-move-REFL
'It stretched' (5.6 P6 1953:5)

c. mooqa-∅
move-INDIC
'move' (5.6 P6 1953:5)

Members of Class 7 include *halhal-* 'think', and *munuuq-* 'sweet'. A typical conjugation is shown in (48). Only the nominal and indicative have been observed.

(48) a. munuuqu-∅
be.sweet-NOM
'molasses' (5.6 P6 1953:29)

b. munuuqa-∅
be.sweet-INDIC
'sweet' (5.6 P6 1953:20)

Members of Class 8 include *kelel-* 'distant'. A typical conjugation is shown in (49). No nominal form is known for this class.

(49) a. kelele-ma
be.distant-CAUS
'long' (5.6 P6 1953:19)

b. kelela-∅
be.distant-INDIC
'far' (Freeman 1953)

Members of Class 9 include *pelam-* 'hot' and *tun-* 'hungry'. A typical conjugation is shown in (50). These verbs' analysis is complicated by the presence of the imperative stativizing suffix *-ha*, and whether it has been incorporated into the verb root or is acting productively. While *pelam-* is recorded both as *pelama* 'hot' and *pelaaha* 'warm' (5.6 P6 1953:40), 'be hungry' is always recorded as *tunaha* (rather than *tuna*).

If *-ha* is productive, we may assume that it conditions the imperative stem of the root *tun-*; *tuna:* would be an imperative stem of shape *Xa* (50a). However, if *-ha* has been incorporated into the verb root (creating *tunah-*), then *tuna:ha* may represent the indicative stem shape *Xa* (50b).

(50) a. tuna:-ha
be.hungry-STAT
'to be hungry' (5.6 P6 1953:17)

b. tuna:ha-∅
be.hungry-INDIC
'to be hungry' (5.6 P6 1953:17)

Members of Class 10 include *kenyal-* 'throw down'. A typical conjugation is shown in (51). Only the indicative form is known.

(51) ken-yaloʔ-∅
down-throw-INDIC
'throw down' (BW Ch. 7 1978:7)

Members of Class 11 include *cewwo-* 'preach'. A typical conjugation is shown in (52). Only the imperative form is known.

(52) pi ceewo-pak
3SG preach-BEN
'Preach to him' (BW Ch. 6 1978:3)

4.3 The verbal prefix and root

The maximal Nomlaki verb contains a series of prefixes, the root and any root-deriving suffixes (together which make the stem), nominal suffixes, imperative suffixes, and indicative suffixes. These groupings strictly occur in this order within the stem. Within each grouping, suffixes are also ordered with respect to each other. This schema is referred to here as a 'template' in keeping with general Americanist tendencies. However, this does not imply that templatic positions are grammatically (i.e. non-semantically) motivated. Rather, the template is a simply a formal device for understanding morpheme ordering. See Good (2011) for a discussion on template typology.

Table 4.6 shows the ordering of the Nomlaki verb template. An 'X' indicates that though an affix belongs to a particular complex (prefixal, nominal, etc.), its ordering is not known with respect to other members of that complex. Of the suffixes shown in Table 4.6, the usage of *-wen* as a dual hortative, directional hortative *-du*, *-le* as a plural hortative, and usage of *-mena* as a marker of possibility appears different than in Wintu. They are likely Nomlaki innovations.

Position	Morphemes
Prefix I	*way-* 'north'
Prefix II	*nom-* 'west'
Prefix III	*ken-* 'down'
Prefix X	other directional & locational prefixes
Root	
Root-deriving	reduplication, TRANS *-c*
Nominal I	GENER *-s*, PARTIC *-t*
Imperative I	CAUS *-ma*
Imperative II	STAT *-ha*
Imperative X	*-ma*, REFL *-na*, dual hortative *-wen*, plural hortative *-le*, DIR.HORT *-du*, BEN *-paq*
Indicative I	1 *-da*, 2 *-ken*, DUB *-m*, POSB *-mena*, COMP *-k*

Table 4.6: The Nomlaki verb template. An 'X' indicates that though an affix belongs to a particular complex, its ordering is not known with respect to other members of that complex.

Prefixes

Nomlaki prefixes are limited to a set of morphemes expressing direction and location. Only a few prefixes are observed to co-occur. (53) shows *nom-* 'west' preceding *ken-* 'down', while (54) shows *wai-* 'north' preceding *nom-* 'west'. This suggests a prefixal order of *wai-* < *nom-* < *ken-*, as shown in Table 4.6.

(53) tuku nom-kɛn-wan-in
sun west-down-go.thus-LOC
'evening' (Freeman 1953)

(54) wai-nôm-su-s
north-west-dwell-GENER
'Trinity Wintu [northwest dwellers]' (4.1 N1 1951:9)

Prefixes whose position are not known with respect to each other include *pui-* 'east' (55), *noi-* 'south' (56), *ʔel-* 'in' (57), *pat-* 'atop' (58), *xal-* 'different, in a strange manner' (59), *se:-* 'on both sides, in all directions' (60), *xon-* 'toward' (61), *tep-* 'behind' (62), *yel-* 'back' (63), *olel-* 'above' (64), *ken-* 'below' (65), and *ɬul-* 'away'. All of these are cognate with Wintu prefixes of the same meaning (Pitkin 1984:82).

(55) puy-ha'-∅
east-go-INDIC
'Go east' (BW Ch. 5 1978:7)

(56) noi-hai-haiya-∅
south-go-go-INDIC
'moves south' (4.1 N1 1951:5)

(57) 'el-tami-t
in-wear.shoes-PARTIC
'socks' (5.6 P6 1953:31)

(58) tu:ku pat-hêna-∅
sun atop-return-INDIC
'sunrise' (4.1 N1 1951:9)

(59) pia hiya xal-tʃina-∅
3SG another another-do-INDIC
'He did it another way' (Freeman 1953)
cf. *qhaaɬ'elewta tipnamina* 'stranger' ['another I don't know'] (5.6 P6 1953:19)

(60) sey-cona-∅
all.sides-jump-INDIC
'It wriggled' (5.6 P6 1953:5)

(61) yɛl-ta xon-hai-da
back-DIR.LOC towards-go-1
'I went back' (Freeman 1953)

(62) tep-hay-ta
behind-go-1
'[I] followed him' (5.6 P6 1953:5)

(63) yel-win-ta pu-ta
back-see-1 3SG-OBJ
'[I] waited for him' (5.6 P6 1953:5)

(64) hii 'olel-ła-ta
again on-sit-1
'[I] got on' (N3 1953:5)

(65) ken-til-ta
down-fall-1
'[I] fell off' (5.6 P6 1953:5)

(66) łul-yalu-ta
away-throw-1
'[I] threw it away' (5.6 P6 1953:23)

The directional prefixes shown above also occurs as independent roots. The directional locative *-ti* may attach to these roots, producing directional modifiers such as *yelti* 'behind' (61). This is further discussed in Chapters 6.5 and 5.4.

The root & root-deriving morphology

The Nomlaki verb root indicates the activity or state of the clause. Verb roots are typically monosyllabic, ending in a consonant. Many roots are themselves derived from a shorter root and the addition of a root-deriving suffix *-c*. This is cognate to the Wintu 'transitive' suffix *-c* (Pitkin 1984:93). Despite its name, Pitkin (1984) states that verbs suffixed by *-c* do not necessarily become transitive. Rather, *-c* indicates a change in valency or voice (Pitkin 1984:93).

Despite the use of the term 'transitive' here, I have not found minimal pairs in the corpus that show how the meaning of a root might change with and without *-c*. It is called a 'transitivizing' suffix here in harmony with Pitkin (1984:93); its use in Nomlaki seems to more often refer to applying some manner of physical force. Many roots suffixed with *-c* involve applying physical force in a violent manner, as in *nekc-* 'to cut', *tapch-* 'to break', *piqch-* 'to punch', *łemc-* 'to hit', and *pukc-* 'to hunt, to shoot'. Other roots involve physical manipulation with the hands, such as *thaqc-* 'to push', *khakc-* 'to open' and *łoc-* 'wash'.

Still others involve violent bodily processes, as with *phowc-* 'swell' and *'oqc-* 'vomit'. A final category does not seem to fit with the above observations, as with *laaqc-* 'tired'. Several common nouns are also derived from transitivized verbs, including *p'ahqci* 'hammer-maul', *'olćayci* 'island', *suhci* 'clay,' *phahcii* 'marrow', *c'oowci* 'steamship', *nekci* 'revolver' (lit. 'cutter'), *'eltekci* 'window, and *kakci* 'key' (5.6 P6 1953).

Verb roots may also be reduplicated. In all attested examples, the root is reduplicated in its entirety, after which it may then be inflected for stem type. Though difficult to precisely determine, reduplication in examples such as (67) appears to indicate an increase in intensity of the verb, as in *hay* 'go' becoming *hayhaya* 'to go (far?)' (67). Others appear to indicate event plurality, as with *hala* 'think' becoming *halhala* 'think (many thoughts?)' (68), or duration, as with *leaqa* 'speak' becoming *leqleqada* 'speak (for a long time?)' (70).

(67) noi-hai-haiya-∅
south-go-go-INDIC
'moves south' (4.1 N1 1951:5)

(68) há:l-hala-∅
think-think-INDIC
'think' (4B 1956:48)

(69) hal-halu-t
think-think-PARTIC
'thought' (BW Ch. 5 1978:3)

(70) lɛq-lɛqa-dah
talk-talk-1
'I'm talking to you' (4B 1956:45)

4.4 The nominal stem

The nominal stem is conditioned by two suffixes: the particular suffix *-t* and the generic suffix *-s*.

Nominal I: Generic *-s* and particular *-t*

The particular/generic noun distinction is typologically unusual and may be unique to the Northern Wintuan branch (Golla 2011). It is concerned with contrasting nouns on the basis of criteria such as aliveness, animacy, personhood, differentiability, and punctuality of action. The semantic space is undoubtedly much richer than the limited documentation can illustrate. A small window into the complexity of this marking in Wintu is shown in Lee (1946). Verbs derived into nominal stems function as nouns. Because of this, nominal suffixes are described more fully with nominals, in Chapter 6.2.

There exists one documented instance of the generic *-s* and stative *-ha* occurring in the same verb. This is shown in (71), where the verb *qomosa* 'big' (see 81) becomes the verb *qomosaha*, also glossed as 'big'.

(71) ʔe-w-á: qomó-sa-ha bohó-m
3SG.DEM.PROX-GENER-? be.big-GENER-STAT ASP-?
'He's a big man' (4.4 N4 1958:15)

4.5 The imperative stem

The imperative stem is conditioned by the causative *-ma*, stative *-ha*, reflexive *-na*, dual hortative *-wen*, directional hortative *-du*, and benefactive *-paq*. There potentially also exists a generic comitative suffix *-ma* (cognate to the same in Wintu), though its existance is difficult to tease apart from the causative *-ma*. As seen, these suffixes are primarily concerned with valency changing operations and mood.

The 'imperative stem' is so-named by Pitkin (1984) because its bare form creates imperative force. In this grammar's analysis, a bare imperative form like *tcá:wu'* 'Sing!' (Halpern 1936:22) is conditioned by a null imperative morpheme. Imperative force is not maintained when other suffixes are added that condition this same stem. For instance, though *'oduna* 'to scratch oneself' (5.6 P6 1953:38) is made up of the imperative stem and the conditioning reflexive suffix *-na*, the word does not retain imperative meaning.

Imperative I: Causative *-ma*

The causative *-ma* conditions the imperative stem. It is cognate to the Wintu causative *-m* (Pitkin 1984:111) and the Patwin causative *-ma* (Lawyer 2021:293). The causative is a valency-increasing operation which introduces a causer to the predicate as a subject. The causee is then demoted from subject to object. The stem conditioned by *-ma* surfaces in the corpus as *Xu(:)*[1] and *Xe*.[2]

Causatives may be formed from both intransitive (72) and transitive (73) verbs. In (72a), the subject of the intransitive verb *di:la* 'fall' is *yó:la* 'snow', and the verb shows third-person agreement with this subject. In (72b), the causitivized verb *di:lma* 'make fall' shows first-person agreement, indicating that the first-person has been promoted to subject. The third-person patient of the verb ('it' in the English gloss) has thus been demoted from subject to object. That the causative form of *dila* 'to fall' becomes *dilma* 'to lose' also implies a loss of volition– as most people do not lose items willingly.

(72) a. yó:la di:lá-∅
snow fall-INDIC
'Snow is falling' (4.4 N4 1958:14)

[1]See *wootuma* 'halfway'; *cf. wota* 'short' (5.6 P6 1953:7).
[2]See *kellelema* 'long'; *cf. kelela* 'distant, far' (5.6 P6 1953:34).

b. dil-mo-da
fall-CAUS-1
'[I] lost it' (5.6 P6 1953:13)

A similar alternation to (72) is shown in (73), illustrating a non-causative/causative alternation of *wina* 'to see.' In (73a), the subject of *wina* 'see' is third-person singular *pi*, and the verb agrees with the subject. In (73b), *wina* is causitivized, resulting in the verb *winma* 'to show' or 'to cause to see.' This causitivized verb introduces the first-person causer as a new subject (as seen by the verbal agreement), while the third-person argument is demoted to object.

(73) a. pi mi-s wIna-∅
3SG 1SG-OBJ see-INDIC
'He sees me' (BW Ch. 2 1978:7)

b. win-ma-ta
see-CAUS-1
'[I] showed it to him' (5.6 P6 1953:13)

A process of phonological deletion (see Chapter 3) has caused the vowel between the root and the causative suffix to be deleted in (72) and (73). In these contexts, we cannot tell what shape stem the causative would have conditioned. A clear example is shown in (74), which shows the stem form alternation between the indicative (74a) and imperative (74b) forms of *cal-* 'be good'.

(74) a. cala-∅
be.good-INDIC
'good' (5.6 P6 1953:35)

b. calu-m-ha
be.good-CAUS-STAT
'Make it good' (4B 1956:47)

A causativized verb may receive additional suffixation. If the additional suffix(es) are indicative, the new verb is reanalyzed as an indicative stem, the shape of which is conditioned by the root's verb class. (75) shows two causativized verbs taking indicative agreement with two different indicative stem forms, conditioned by first-person indicative suffix *-da*: *Xa* (75a) and *Xi* (75b).

(75) a. yalu-ma-ta
close-CAUS-1
'He closed it' (5.6 P6 1953:24)

b. ol-tamu-mi-ta
above-turn-CAUS-STAT
'[I] turned it over' (5.6 P6 1953:23)

Imperative II: Stative *-ha*

The exact semantics of the stative suffix *-ha* are difficult to pinpoint. However, it appears to generally denote ongoing states of being. It is named after its Wintu cognate *-h*, termed the 'stative denominal suffix' (Pitkin 1984:127). The stative conditions nominal stems of shapes *Xa* (See 76b), *Xe* (See 79b), and *Xa:* (See 81b). In many instances, the stem-final vowel is deleted as part of a phonological process (78b).

In Wintu, *-ha* derives verbs from nouns (Pitkin 1984:127). This appears true for Nomlaki also in many cases. In (76), the noun *q'a* 'cloud' is derived into the verb *q'aha* 'be cloudy'; in (77), the noun *t'olaa* 'ice' is derived into the verb *t'olaa-haa* 'be icy'. In these cases, the accompanying translation often does not gloss the stativized verb as a verb, but rather an English noun or adjective. The meaning of the stative is largely surmised from these examples, which tend to be clearer than those where a stativized verb is derived from another verb.

(76) a. q'a
cloud
'cloud' (5.6 P6 1953:9)

b. q'aa-ha
cloud-STAT
'[be] cloud[y]' (5.6 P6 1953:9)

(77) a. t'olaa
ice
'ice' (5.6 P6 1953:9)

b. t'olaa-haa
ice-STAT
'frost' (5.6 P6 1953:9)

The stative suffix may also derive verbs from other verbs, and it is for this reason included here as an imperative stem-conditioning suffix. The clearest evidence for this is (78). That *-ha* is here is suffixing to a verb is clear from its attachment to the root *calum-* 'make good', itself composed of *cal-* 'be good' and the causative suffix *-ma*.

(78) a. cala-∅
good-INDIC
'good' (5.6 P6 1953:35)

b. calu-m-ha
good-CAUS-STAT
'Make it good' (4B 1956:47)

It is frequently difficult to discern the semantic difference between the plain and stativized verbs, whose English glosses may not differ in a marked way. (79), shows the plain verb

waapeya 'unripe' and the stativized verb *waapetehaa* 'still green'; (80) shows *ʔolé:la* 'be tall' and *ʔole:lha*, also glossed as 'tall'; (81) shows *qomosa* 'big' and *qomosaha*, also glossed as 'big.'

(79) a. waapeya-∅
be.unripe-INDIC
'unripe' (5.6 P6 1953:21)

b. waapete-haa
be.unripe-STAT
'still green' (5.6 P6 1953:32)

(80) a. ʔe-w-́a: ʔolé:la-∅ bohó-m
3SG.DEM.PROX-GENER-? tall-INDIC ASP-?
'He is a tall man [That one is tall]' (4.4 N4 1958:15)

b. ʔole:l-ha
be.tall-STAT
'tall' (4.4 N4 1958:16)

(81) a. qomo-sa-∅
be.big-GENER-INDIC
'big' (5.6 P6 1953:19)

b. ʔe-w-á: qomó-sa-ha bohó-m
3SG.DEM.PROX-GENER-? be.big-GENER-STAT ASP-?
'He's a big man' (4.4 N4 1958:15)

There exist several stativized verbs in the corpus with no documented plain forms. These include *pelaaha* 'warm' (5.6 P6 1953:40), *temhaa* 'cold' (5.6 P6 1953:33), *t'unaha* 'hungry' (4.4 N4 1958:13), *łomha* 'boil' (4.4 N4 1958:7), *minalha* 'extinguish' (5.6 P6 1953:10), *ƛ́amha* 'count' (4.4 N4 1958:7), and *koymha* 'kill' (5.6 P6 1953:36).

Imperative X: Reflexive *-na*

The reflexive *-na* conditions the imperative stem, and is cognate with the Wintu reflexive *-n* (Pitkin 1984:110) and Patwin reflexive *-nana* (Lawyer 2021:303). The reflexive operation reduces semantic valency by conflating the agent and patient of the verb (Payne 1997). The reflexive conditions the imperative stem, typically of shape *Xu*, as seen in (82). It may also condition stems of shape *Xu:* (see 85), X∅ (see 87b), and *Xa* (see 89b). Although there is evidence that *-na* conditions the imperative stem, it is not clear in what order it occurs with respect to other imperative suffixes; for this reason, its position within the imperative complex is marked with 'X'.

(82) a. si:wa-∅
write-INDIC
'write' (4.4 N4 1958:12)

b. siiwu-na
write-REFL
'paint [on oneself]' (5.6 P6 1953:29)

An example of typical reflexive behavior is shown in (83). In (83a), the non-reflexive verb *nekcu* 'cut' has two arguments: a first-person agent (seen by the verbal agreement marking) and a third-person patient. In (83b), the agent and patient of the reflexive verb *nekcuna* 'to cut oneself' are the same first-person referent.

(83) a. ko-m nekcu-ta
all-GENER cut-1
'[I] cut it [all] off' (5.6 P6 1953:22)

b. nekcu-na-da
cut-REFL-1
'I cut myself' (Freeman 1953)

A similar pattern to (83) is shown in with the verb *pukca* 'to hunt, to shoot' in (84). The non-reflexive verb *pukca* is used in (84a) to refer to the act of hunting animals. The first-person agent and third-person patient are thus not the same. In the reflexive form shown in (84b), the agent and patient are both the second-person referent, and the verb receives second-person subject agreement.

(84) a. ho:na ni po:ke:-ba p'uk-ca-∅ hah-∅ ʔiya:-∅
long.ago 1SG boy-HUMAN.PL hunt-TRANS-INDIC go-INDIC do.prox-INDIC
'When I was a boy, I used to go hunting with my grandfather.' (4.4 N4 1958:4)

b. pok-cu-na-ken
shoot-TRANS-REFL-2
'[Careful], you might shoot yourself' (4.4 N4 1958:11)

Though difficult to clearly discern, the reflexive appears to apply to both volitional (85) and non-volitional (86) actions. (86) 'You might shoot yourself' is clearly an involuntary reflexive action, while examples such as painting (82b), shaving (85),lending (87b), and selling (88b) appear to show voluntary reflexive actions.

(85) c'ipuu-na
shave-REFL
'shave' (5.6 P6 1953:31)

(86) pok-cu-na-ken
shoot-TRANS-REFL-2
'[Careful], you might shoot yourself' (4.4 N4 1958:11)

The reflexive also appears in several verb pairs describing the same event with different argument structures, such as buy/sell (88) or borrow/lend (87). In (87), the reflexive appears to mark the verb where the speaker is the recipient/goal of the action ('lend' vs. 'borrow'). (88) depicts a plain/reflexive pair showing the verbs 'buy' and 'sell'. 'Sell' receives reflexive marking. The pattern observed in (87) may hold in (88) if the speaker is understood to be the recipient of buying in *poluuna* 'sell'.

(87) a. pu-ta c'ubay-ta
3SG-OBJ borrow-1
'I borrowed it from him' (5.6 P6 1953:24)

b. pu-ta c'upay-na-ta
3SG-OBJ borrow-REFL-1
'He lent it to me' (5.6 P6 1953:24)

(88) a. p'oluu-ta
buy-1
'I bought [a horse]' (5.6 P6 1953:24)

b. p'oluu-na-ta
buy-REFL-1
'[I] sold it' (5.6 P6 1953:24)

The reflexive also occurs in verbs of emotional state. An example is illustrated by the non-reflexive/reflexive pair shown in (89).

(89) a. cepa-∅
be.bad-INDIC
'bad' (BW Ch. 7 1978:10)

b. ceehpa-na-ta
be.bad-REFL-1
'[I] hated it' (5.6 P6 1953:24)

As seen, the verb *ceehpana* (89b) appears to be the reflexive form of the verb *cepa* 'be bad' (89a). This may reflect similar behavior as the Wintu reflexive, which is described as marking 'consequences of the verbal action [that] revert to, affect, involve, or are for the sake of the subject' (Pitkin 1984:110). This includes several verbs of emotional state, such as *qerumena:* 'to suffer' (cf. *qEr* 'to groan, moan, suffer'; Pitkin 1985:487) Under this understanding, verbs of emotion may be marked by the reflexive because they are understood to originate from and primarily affect the self.

Imperative X: Benefactive *-paq*

The benefactive *-paq* is cognate to Wintu benefactive *-paq* (Pitkin 1984:113), and Patwin applicative *-pa* (Lawyer 2021:296). The benefactive is a valency-increasing operation, and is often considered a subset of the applicative (Payne 1997). In these constructions, the benefactor of the action is promoted from an adjunct to a direct object. Because of stem-final vowel deletion, it is difficult discern the kind of stem that *-paq* conditions. Wintu *-paq* conditions the imperative stem. On this comparative evidence, it is included here as an imperative stem-conditioning suffix. The benefactive conditions stems of shape *Xa* (see 91), *Xo* (see 92), and *X∅* (see 93). Although there is evidence that *-paq* conditions the imperative stem, it is not clear in what order it occurs with respect to other imperative suffixes; for this reason, its position within the imperative complex is marked with 'X'.

The benefactive argument does not receive case marking, though our sample size is limited. This behavior is seen in (90), which illustrates a non-benefactive and benefactive use of *c'aaw-* 'sing.' Although the grandson receives the benefit of the singing action in (90b), *macet* 'your grandson' does not receive case marking. Within the Nomlaki corpus, the benefactive is only observed applying to intransitive verbs. These include *c'aaw-* 'sing' (90), *hay-* 'go' (93), *leaq-* 'speak' (91) and *ceew-* 'preach' (92) (BW Ch. 6 1978:3).

(90) a. c'aawa-∅
sing-INDIC
'sing' (5.6 P6 1953:38)

b. ma-cet c'aww-pak
2POSS.KIN-grandson sing-BEN
'Sing for your grandson' (BW Ch. 6 1978:3)

Other examples of benefactive verbs are shown in (91) and (92). Note that these examples use the subject form of the third-person pronoun *pi*, while the English gloss uses the object form 'him.' This presents some ambiguity: is this a mistranslation of the Nomlaki? For example, is (91) better understood as 'He speaks [to/for someone else]'? Nomlaki permits objects to be dropped, so this is likely grammatical. Alternatively, is *pi* really the object of the benefactive in both examples? If this is the case, it suggests that our observation that the kinship object of the benefactive does not take case marking (90b) extends to pronouns– or, as *pi* rather than *putun* would suggest, that they even take subject case.

(91) pi leaqa-pak
3SG speak-BEN
'Speak to him.' (BW Ch. 6 1978:3)

(92) pi ceewo-pak
3SG preach-BEN
'Preach to him.' (BW Ch. 6 1978:3)

The benefactive construction may also be used to express deontic modality, as in (93) 'ought' and (94) 'had to'. In both examples, the benefactive verb *haypaq* reflects the speaker's desire, or perhaps social obligation, to leave some place or event. Notice that first-person agreement marking does not co-occur with *-paq* in (93).

(93) nii hay-paq-i
1SG go-BEN-?
'I ought to go' (N3 1953:14)

(94) hah-paq-ay bet'aan haay-ta
go-BEN-? ? go-1
'I had to go' (N3 1953:5)

Imperative X: Dual hortative *-wen*

The dual hortative *-wen* is possibly cognate to the Wintu future intentional suffix *-wEr* (Pitkin 1984:187) and the subsequent morpheme *-wen*, which is described by Pitkin (1985:692) only as 'Shall I? I will. I'm going to.' In other words, *-wen* appears to describe first-person volitional actions. Its usage as a dual hortative marker appears to be a Nomlaki innovation. This suffix only occurs only twice in the corpus, both times in BW Ch. 6 (1978f:3). It conditions the stem shape *Xu* (see 95b) and *Xa* (see 96b). Although there is evidence that *-wen* conditions the imperative stem, it is not clear in what order it occurs with respect to other imperative suffixes; for this reason, its position within the imperative complex is marked with 'X'.

As the name implies, the dual hortative serves to encourage an addressee to take part in an action alongside the speaker. It is distinguished from the plural hortative *-le* by including one and only one addressee, for a total of two verbal participants.

(95) a. elmakce-∅
smoke-INDIC
'puff, smoke' (BW Ch. 6 1978:3)

b. we'-∅, elmakcu-wen
give-IMP, smoke-DU.HORT
'Give [me the pipe], we'll smoke [it together]' (BW Ch. 6 1978:3)

(96) a. Lakha
play
'play' (Blankinship and Wenger 1978)

b. Lakola-wEn
play-DU.HORT
'Let's play' (BW Ch. 6 1978:3)

It is hard to classify the stem that *-wen* conditions with only two extant examples. It is included here with the imperative suffixes because the conditioned stem shape *Xu* (95b) is more typical of imperatives. The Wintu hortative *-di* (possibly cognate to the directional hortative *-du*) and the 'inevitable future' suffix *-le* (cognate to Nomlaki plural hortative *-le*) also condition the imperative stem (Pitkin 1984:69). If semantics play any role in which suffixes condition a stem, it seems most likely on this evidence that the hortative *-wen* would condition the imperative.

Imperative X: Plural hortative *-le*

The plural hortative *-le* is used to encourage more than one addressee to do an action. It may also be used to express deontic modality as well as ability. It is cognate to the Wintu 'inevitable future suffix' *-le* (Pitkin 1984:117) and the Patwin suffix of ability *-le* (Lawyer 2021:275). According to Pitkin (1984), the Wintu 'inevitable future' suffix 'indicates natural and inevitable necessity, futurity, causality, potentiality, and probability which may or must be later in the sequence of events; thus it indicates ability or likelihood'; *-le* additionally 'does not describe an intentional or volitional act' (Pitkin 1984:117). As shown below, this behavior is not totally analogous to Nomlaki, where *-le* can function to encourage an action (97) and express future volitional events (98, 99). *-le* produces stems of shape Xa:[3], *X∅* (see 97 and 99), and *Xa* (see 100). It is not clear in what order *-le* occurs with respect to other imperative suffixes; for this reason, its position within the imperative complex is marked with 'X'.

As with the dual hortative *-wen*, it is not clear from the Nomlaki evidence alone which stem *-le* conditions, because stem-final vowels are elided in most examples. Like the dual hortative *-wen* and directional hortative *-du*, *-le* is included here as an imperative suffix because of the stem type that the hortative *-di* and cognate 'inevitable future' suffix *-le* condition in Wintu (Pitkin 1984:69). First-person subjects co-occurring with *-le* do not trigger agreement marking. This could suggest that *-le* occupies the same templatic position as (indicative) person agreement. It is also possible that person marking does not co-occur with hortatives for semantic reasons (as it is not included for commands).

The plural hortative may be used for to encourage a group of addressees to partake in an action, as in (97):

(97) p'uk-ca-∅ hay-le coɬ pomsin
shoot-TRANS-INDIC go-PL.HORT mountain winter
'Let's go hunting in the mountains this winter' (4B 1956:17)

-le may also be used to express future volitional events, as in (98).

(98) ho:n p-e:l hay-le
when 3-DU go-PL.HORT

[3]See *baale* 'Let's eat' (BW Ch. 6 1978:3).

'When shall we go?' (Freeman 1953)

-le is frequently translated as *can*, which in English is ambiguous with respect to epistemic, deontic, and dynamic possibility. In the examples below, (99) likely indicates deontic possibility (e.g. whether the addressee has the social permission to tell the speaker some piece of information), while (100) likely indicates ability. The latter behavior follows the behavior of Wintu *-le*, which may be used to express ability. In cases where *-le* expresses future volition and ability (rather than encouragement), it does not appear that the subject must be plural (or involve any particular number of persons).

(99) ni-s mi yomoy-le
1-OBJ 2SG tell-PL.HORT
'Can you tell me?' (5.6 P6 1953:3)

(100) ni-ya aqtu-ma-le pu-ta
1SG-EMPH do.thus-CAUS-PL.HORT 3SG-OBJ
'[I] can do it' (5.6 P6 1953:21)

Imperative X: Directional hortative *-du*

The directional hortative *-du* is possibly cognate to the Wintu hortative *-di* (Pitkin 1984:120) and the Patwin third-person hortative *-di* (Lawyer 2021:268). If this is so, the Nomlaki usage appears to be a semantic innovation. *-du* is only attested with one verb, *olko* 'get up', and thus remains mostly mysterious. BW Ch. 6 (1978f:3) describe it as occurring 'with certain directional verbs'. As 'directional verb' is not otherwise a syntactic category, it is unclear if this refers to verbs whose semantic content refers to motion in a specific direction. *-du* conditions stems of shape *Xo*, as seen in (101). It is here grouped as an imperative suffix to place it with the dual (*-wen*) and plural (*-le*) hortatives. It is not clear in what order *-du* occurs with respect to other imperative suffixes; for this reason, its position within the imperative complex is marked with 'X'.

(101) olko-du
rise-DIR.HORT
'Get up!' (BW Ch. 6 1978:3)

4.6 The indicative stem

The indicative stem is conditioned by the first-person agreement marker *-da*, second-person agreement marker *-ken*, dubitative marker *-m*, possibility marker *-mena*, and completive *-k*. Indicative suffixes include person markers and markers of mood. As with the imperative stem, the suffixes which condition the 'indicative' stem do not necessarily retain indicative meaning unless conditioned by the null indicative morpheme. The stem conditioned by the null indicative suffix, typically of form *Xa*, is the most commonly elicited form.

Indicative I: First person *-da*

First person *-da* is cognate with Wintu *-da* (Pitkin 1984:136). It marks first-person subjects regardless of number, as seen in (102) and (103). First person agreement conditions stems of very diverse shapes. This is likely because verbs inflected for first person are the most commonly elicited in the corpus, inviting a variety of transcription errors. The majority of stems following *-da* are of shape *Xa.*[4]. Other shapes include *Xu*[5], *Xu:*[6], *Xo*[7], *Xi*[8], and *X∅*.[9]

(102) hay-ta
go-1
'I'm going' (5.6 P6 1953:1)

(103) n-e:l palé-t wín-dah
1-DU two-PARTIC see-1
'We two saw them two' (4.4 N4 1958:9)

As seen above, *-da* may express singular (102) and dual (103) number. Though no examples of *-da* expressing the first person plural are attested, it is almost certain that *-da* expresses first person generally.

Indicative I: Second person *-ken*

Second person agreement marker *-ken* is cognate to Wintu *-sken* (Pitkin 1984:139). *-ken* has been seen co-occurring with the second person singular (104) and second person dual (105). In these examples, *-ken* co-occurs with the aspectual auxiliary *boh*. As with first-person agreement marker *-da*, *-ken* likely applies to all second-person subjects, regardless of number. *-ken* conditions stems of shape *X∅* (see 105) and *Xa* (see 106).

(104) mí-ya t'ípna-∅ boh-ken
2SG-EMPH know-INDIC ASP-2
'You know it.' (4.4 N4 1958:8)

(105) [m]-el-et wina boh-ken pale-t
2-DU-PARTIC see ASP-2 two-PARTIC
'You two see [them] two.' (4.4 N4 1958:8)

One example exists of *-ken* attaching to a main verb, seen in (106).

[4]See *olelɬata* 'I got on' (5.6 P6 1953:5)
[5]See *tipluta* 'I died (5.6 P6 1953:6).
[6]See *'qiduuda* 'I forgot' (5.6 P6 1953).
[7]See *dilmoda* 'I lost it', cf. *tila* 'fall' (5.6 P6 1953:13).
[8]See *oltumamita* 'I turned it over' (5.6 P6 1953:23).
[9]See *hayta* 'I'm going' (5.6 P6 1953:1).

(106) pok-cu-na-ken
shoot-TRANS-REFL-2
'[Careful], you might shoot yourself' (4.4 N4 1958:11)

Indicative I: Dubitative *-m*

Dubitative *-m* is cognate with Wintu dubitative *-m* (Pitkin 1984:142). It may also be cognate with various Patwin markers of inference (Lawyer 2021:xxxiii). At the time of recording, Pitkin (1984:142) noted that the Wintu dubitative had begun taking an 'almost paradigmatic contrast' with extant person agreement marking. Pitkin thus believed that the Wintu dubitative had begun to mark third-person agreement in contrast with first-person *-da* and second-person *-ken*. This behavior is not clearly seen in the Nomlaki data; some examples show second-person subjects and dubitative *-m* co-occurring (107). The dubitative creates stems of forms *Xa(:)* (see 107 and 108), *Xu*[10], and possibly *Xo*.[11] The latter is more likely a transcription error, due to the documented *Xa* forms for this verb within the same source.

The dubitative *-m* creates interrogative verbs, as shown in (107) and (108). In both examples, the verb does not receive second-person agreement marking despite the second-person subject.

(107) mi ba-m
2SG eat-DUB
'Are you eating?' (Halpern 1936:21)
cf. *baa* 'eat' (5.6 P6 1953:34)

(108) khew-nay we'aa-m
WH-? come-DUB
'Why did you come?' (N3 1953:7)
cf. *wéyya* 'come' (5.6 P6 1953:1)

Other examples of the dubitative are shown below, in (109)-(115). In addition to attaching to main verbs, the dubitative may attach to aspectual auxiliaries, seen in (109), (110), and (111). As with the negative auxiliary *elewa*, person-agreement markers and the dubitative *-m* all preferentially attach to the auxiliary verb when one is present.

(109) khiin poha-m
here ASP-DUB
'Where is he?' (5.6 P6 1953:6)

[10]See *cinum* (BW Ch. 6 1978:2).
[11]See *lihipom* (4B 1956:8).

(110) k'aysa-∅ pooho-m
be.alive-INDIC ASP-DUB
'Are you well?' (5.6 P6 1953:1)

(111) q'ayyaa-∅ peya-m
be.alive-INDIC ASP-DUB
'Are you still about?' (5.6 P6 1953:2)

(112) qiisa toppa-m
children have.children-DUB
'Have you any children?' (5.6 P6 1953:2)

(113) peh 'unu-m
what want-DUB
'What do you want?' (5.6 P6 1953:1)

(114) 'eh peh yeca-m
3SG.DEM.PROX what call-DUB
'What is this called?' (5.6 P6 1953:4)

(115) mem li:hipo-m
water thirst-DUB
'Are you thirsty?' (4.4 N4 1958:8)

Indicative I: Possibility *-mena*

When used alone, *-mena* expresses epistemtic modality, indicating that an action is possible but not certain. *-mena* is also used in other constructions. When used with the negative auxiliary *elewa*, *-mena* participates in verbal negation. When used with the particle *-i*, it participates in negative commands. *-mena* is cognate to the Wintu negative suffix *-mina* (Pitkin 1984:121). Evidence from Wintu and Nomlaki both suggest that *-mena* is historically a negative suffix. Thus, the use of this suffix to indicate possibility appears to be a Nomlaki innovation. *-mena* conditions stems of type *Xa*[12], *Xa:* (see 116), and X∅ (see 117).

Examples of *-mena* being used to express possibility are shown in (116), (117), (118), (119), (120), and (121). Though the subject of (116) and (117) are both first-person, first-person agreement marking does not surface. This suggests that *-mena* and *-da* (and likely *-ken*) occupy the same position in the verb.

(116) ni baa-mena
1SG eat-POSB
'I might eat' (BW Ch. 4 1978:8)
cf. *baata* '[I] ate' (5.6 P6 1953:17)

[12]See *poLcunamena* 'might shoot' (BW Ch. 4 1978:8).

(117) ni c'aww-mena
1SG sing-POSB
'I might sing' (BW Ch. 4 1978:8)
cf. *c'aawoda* 'I sing' (Blankinship and Wenger 1978)

(118) pi mi-s poL-ca-mena
1SG 2SG-OBJ shoot-TRANS-POSB
'He might shoot you' (BW Ch. 4 1978:8)

(119) moh-to suku-t wIn-mena
2SG-POSS dog-PARTIC see-POSB
'I might see your dog' (BW Ch. 4 1978:8)

(120) pi nom-ti-pom dEkna-mena
3SG west-DIR-place walk-POSB
'I might go to Nomtipom [Covelo]' (BW Ch. 5 1978:1)

(121) ni c'aik-c'aik-um mut-mena
1SG bluejay-bluejay-OBJ hear-POSB
'I might hear bluejays.' (BW Ch. 5 1978:2)

Indicative I: Completive *-k*

Completive *-k* is cognate to the Wintu completive *-k* (Pitkin 1984:143). The completive only occurs in a few examples in the texts. Because of this, its meaning is mostly deduced from the usage of its Wintu cognate. It does not co-occur with first person marking in sentences containing first person subjects, suggesting it occupies the same verbal position as first-person *-da* (also likely *-ken*) and possibility *-mena* (123). The completive is observed creating stems of shape *Xi* (see 122 and 123) and *Xa* (see 126).

In the existing documentation, *-k* is only observed attaching to auxiliary verbs. It is seen attaching to the reportative verb *ʔuni* in (122).

(122) no:p boya:-∅ ʔuni-k ho:nʔa
deer be.many-INDIC RPT-COMPL long.ago
'They say there were plenty of deer in olden times' (4B 1956:17)

The completive also attaches to the auxiliary verb ʔiya: 'to do proximally', as in (123).

(123) no:p henma-∅ ʔiya:-k ni ʔuni
deer bring.home-INDIC do.thus-COMP 1SG RPT
'They used to bring home deer then, they say.' (4.4 N4 1958:17)

Other examples of the completive are shown below in (124)-(126).

(124) lé:nen winíh-NOM iya-k ni
yesterday see-NOM? do.prox-COMP 1SG
'I saw you, yesterday.' (4.4 N4 1958:6)

(125) ho:na ni po:ke:-ba p'uk-ca-∅ hah-∅ ʔiya:-∅
long.ago 1SG boy-HUMAN.PL hunt-TRANS-INDIC go-INDIC do.prox-INDIC
'When I was a boy, I used to go hunting with my grandfather.' (4.4 N4 1958:4)

(126) lé:nen winíh-∅ iyá-k ni le:nen ni-s winá-∅ boh-ken
yesterday see-NOM? do.prox-COMP 1SG yesterday 1SG-OBJ see-INDIC ASP-2
'I saw you, yesterday; I saw you, yesterday.' (4.4 N4 1958:6)

Chapter 5

Nomlaki word classes

This chapter discusses the word classes of Nomlaki, which comprise nouns (including common nouns, kinship nouns, and pronouns) demonstratives, numerals, postpositions, verbs (including auxiliary verbs), adverbs, interrogatives, conjunctions, and clitics. I do not consider Nomlaki to have true adjectives; instead, noun description and qualification is achieved through verbs and verbally derived nouns. To facilitate comparability between Nomlaki and sister language Wintu, most of the specialized terminology used in this and the following chapters is taken from Pitkin (1984)'s Wintu grammar. This is not to imply that the structures referred to by a common term are always completely analogous between the two languages, nor that I always agree with Pitkin's analysis.

5.1 Nouns

Nomlaki nouns may be divided into three categories: common nouns (which include nominalized verbs), kinship terms, and pronouns. Common nouns may function syntactically as subjects as well as objects. Objects are often (but not obligatorily) marked for object case. Nouns acting as both subject and object can be seen in (127), which shows the subject noun *sEdE* 'coyote' and object noun *no:p* 'deer (object)', marked with the object case marker *-(u)m*.

(127) sEdE-t ElEwa nop-um baa-mena
coyote-PARTIC NEG deer-OBJ eat-NEG
'The coyote didn't eat the deer.' (BW Ch. 5 1978:2)

Common nouns may also be direct objects of ditransitive verbs. In (128), *thakim* 'hat (object)' is the direct object of the ditransitive verb *do'* 'give'. As with (127), *thakim* receives the object case marker *-m*. The indirect object, first-person singular pronoun *ni*, takes the object form *nis*. There are no examples in the corpus of common nouns (rather than pronouns) used as indirect objects. However, indirect and direct object pronouns both take the same object form, suggesting the same behavior for common nouns.

(128) ni-s thaki-m do'-∅
1SG-OBJ hat-OBJ give-IMP
'Give me the hat.' (BW Ch. 6 1978:3)

In addition to serving as subjects and objects, Nomlaki nouns can serve as complements to a prepositional head. Noun complements occur to the left of the prepositional head. This behavior is seen in (129) and (130).

(129) qeel pan-ti
house atop-DIR
'above the house' (5.6 P6 1953:6)

(130) qeel ken-ti
house atop-DIR
'below the house' (5.6 P6 1953:6)

Nouns may also serve as the subject of existential utterances. In (131), *putun qél* 'his house' is linked to the predicative expression *nompom-in* 'in the woods.' Note that *béya* is an aspect marker rather than a copula, as there is no clear evidence for copulas in Nomlaki (see Chapter 7.2 for further discussion on the status of copulas and aspectual auxiliaries in Nomlaki).

(131) put-un qél nóm-póm-in béya
3SG-POSS house west-place-LOC ASP
'His house is in the woods' (4.4 N4 1958:11)

Nomlaki nouns do not distinguish animacy. This is like Wintu (Pitkin 1984) and unlike Patwin (Lawyer 2021:84). No Wintuan language has nouns which distinguish number, with some possible exceptions. In both Wintu and Patwin, the suffix *-ba* indicates plural human nouns; Patwin refines this further with additional marking for the dual. This system is not directly observed in Nomlaki, though the word *loyba* 'girl(s)' (5.6 P6 1953:18) and *pokeba* 'boy(s)' (4.4 N4 1958) suggests a human plural marker that is or was active in the language.

Unlike common nouns, kinship nouns are inalienably possessed. Kinship nouns take a unique set of possessive kinship prefixes, distinct from non-kinship possessives. Kinship nouns include common family relations, such as parents, as seen in (132). Kinship nouns are bound lexical items, and cannot occur without an associated kinship prefix. As they may occur without possession, body parts are not inalienably possessed (133).

(132) mát-tán
1POSS.KIN-father
'your father' (cf. non-kinship possessive *mohto*) (BW Ch. 2 1978:6)

(133) se-m taw
hand-GENER flatland
'palm (of hand)' (5.6 P6 1953:14)

There exist family members, typically outside of the core parent/sibling unit, which sometimes surface without a possessive kinship prefix; compare (134) and (135). This may suggest that morphosyntactic kinship terms (i.e., those which are required to take a kinship possessor) are a small class within the semantic class of kinship terms. It may also suggest diachronic change away from obligatory kinship marking, possibly as a result of contact with English.

(134) né-tomkíya
1POSS.KIN-uncle
'uncle' (Curtis 1924)

(135) t'omkiya
uncle
'uncle' (5.6 P6 1953:25)

Nomlaki pronominals are marked for person (1, 2, 3,), number (singular, dual, plural), clusivity (inclusive and exclusive), particular/generic status, and three syntactic cases (unmarked subjective, objective, possessive). Third-person singular pronouns are derived from, and functionally remain, demonstratives. Pronominals are discussed in more detail in Chapter 6.6.

Pronominals also include a series of interrogative pronouns: *papi:* 'who' (5.6 P6 1953:40), *peh* 'what' (5.6 P6 1953:40), *ho:n* 'when' (5.6 P6 1953:40), *keh* 'where' (Simmons 1975), *khewnay* 'why' (N3 1953:7), *kewsin, kemha* 'how' (5.6 P6 1953:35), and *hesse* 'how many, how much' (BW Ch. 6 1978:1). The element *keh*, as seen in *keh* 'where', *khewnay* 'why', *kewsin*, 'how', and *kemha* 'how', appears to be an interrogative pronominal root. Interrogative pronouns may function as the subject of an existential predicates, as in (136). As with (131), *bɛa* is an aspect marker, rather than a copula. The interrogative pronoun *papi:* 'who' may also serve as an assertive existential quantifier: 'some, something, someone'. Quantifiers are further discussed in Chapter 6.4.

(136) hɛsɛ-m bɛa
how.much-GENER ASP
'How much is there?' (Freeman 1953)

5.2 Noun modifiers

Nomlaki demonstratives may occur alone as pronouns, or as noun modifiers[1]. Two demonstratives are seen in the corpus: the distal demonstrative *pi*, and the proximal demonstrative *ʔew*. Both demonstratives may be used alone as pronouns, as seen in (137) and (138).

[1]I am aware that the use of 'noun modifier' to describe demonstratives implies an NP rather than DP analysis, but this is out of descriptive convenience rather than rigorous syntactic analysis. The discussion of whether the resultant phrase is best described a noun or determiner phrase is left to future work.

(137) ʔe-w-á: c'épa-∅ bohóm
3SG.DEM.PROX-GENER-? be.bad-INDIC ASP
'He's a bad man' (4.4 N4 1958:15)

(138) t'epa pi weh-∅ ko
tomorrow 3SG.DEM.DIST come-? DES
'Tomorrow he will come' (BW Ch. 4 1978:5)

Demonstratives may also modify nouns (139). In the corpus, this is only attested with the distal pronoun *pi*. However, it likely applies to the proximal pronoun *ʔew* as well.

(139) pi win kahala-∅ haiya-∅
3SG.DEM.DIST man be.crazy-INDIC go-INDIC
'That crazy man goes' (BW Ch. 4 1978:1)

Numerals may also modify nouns. Like nouns, numerals may also receive generic and particular case marking (see Chapter 6.2). This is shown in (140), where the numeral *kete* 'one' receives the generic marker *-m*. When numerals receive case marking within a numeral/noun phrase, the noun does not receive case.

(140) siiwi kete-m
write one-GENER
'a line' (5.6 P6 1953:7)

Nouns may also modify other nouns. In these cases, the noun adjunct precedes the head noun. The attested noun adjuncts in the Nomlaki corpus are shown in (141) and (142).

(141) holól baʔ
day food
'dinner' (4.4 N4 1958:13)

(142) t'eppay bah
morning food
'breakfast' (4B 1956:13)

5.3 (A lack of) Adjectives

I do not consider Nomlaki to have a true adjective class. Rather, noun modification which describes, qualifies, restricts, or distinguishes a noun is achieved through verbs and verbally derived nouns (see Chapter 6.4 for more discussion). How a verb surfaces in these constructions is conditioned on whether it modifies a noun attributively or as a predicate. (143) and (144) show a minimal pair of a verb being used attributively and predicatively with *cal-* 'be good'. When the verb occurs before the modified noun, it is inflected for the nominal stem

of the verb, usually taking the form *Xi*. This is seen in (143). When the verb occurs after a modified noun, it is inflected for the indicative stem, usually taking the form *Xa*. This is seen in (144).

(143) cali-∅ se-m
good-NOM hand-GENER
'good/right hand' [cf. *cala* 'be good'] (BW Ch. 7 1978:9)

(144) bah calla?-∅
food good-INDIC
'It tastes good' (4.4 N4 1958:1)

It is generally held that all languages have verbs and nouns. It is more contested whether adjectives hold a similar status. Dixon (2004) argues that adjectives are as basic a linguistic category as nouns and verbs, and therefore present in all languages. A more precise analysis of the status of the potential Nomlaki adjective is the subject for a later study, but the purposes of this grammar, 'adjective' is not considered a Nomlaki word class. This modification is considered a property of verbs.

5.4 Postpositions

Nomlaki adpositions are postpositional. Many postpositions are based on directional morphemes which may be used either as a verbal prefix or as a verb root. (145) shows the directional morpheme *yel* 'behind' used both as a verbal prefix (145a) and a root (145b). In (145a), *yel-* is prefixed to the verb *wina* 'see' to form *yelwinda* 'I waited [looked back]'. In (145b), *yel* is analyzed as a root suffixed with the directional locative *-ti* 'behind'. The resultant form *yelti* is used as a postposition to modify the noun *qel* 'house': *qel yelti* 'behind the house' (145b). Several other prepositions are formed in this way, including *panti* 'atop', *kenti* 'below', and *potin* 'beside'. It is probable that these directional prefixes were historically free morphemes (DeLancey and Golla 1997), as seen in their ability to act as both prefixes and roots.

(145) a. yel-win-ta pu-ta
behind-see-1 3SG.OBJ
'[I] waited for him' (5.6 P6 1953:5)

b. qeel yel-ti
house behind-DIR.LOC
'behind the house' (5.6 P6 1953:6)

Nearly all recorded postpositions record spatial relationships. It is unknown how they may be used temporally. Attested postpositions are shown in Table 5.1.

Postposition	English	Example
panti	'atop'	(146)
kenti	'below'	(147)
ɪlin	'inside'	(148)
yeltin	'behind'	(149)
potin	'beside, along'	(150)
winem	'in the middle'	(151)
winemen	'between'	(152)
mai	'with'	(153)

Table 5.1: Nomlaki postpositions, from Freeman (1953).

(146) qeel pan-ti
house atop-DIR.LOC
'on top of the house' (N3 1953:20)

(147) qeel ken-ti
house down-DIR.LOC
'below the house' (N3 1953:20)

(148) qɛlɛn ɪl-in
house-LOC inside-LOC?
'inside the house' (Freeman 1953)

(149) qeel yel-ti
house behind-DIR.LOC
'behind the house' (5.6 P6 1953:6)

(150) mɛm-pom po-tɪn
water-along? beside-DIR.LOC
'beside the river' (Freeman 1953)

(151) mii palle-t wenem pi poo-ta
tree two-PARTIC middle 3SG ASP-1
'[I am] between two trees' (5.6 P6 1953:6)

(152) mii wɛnɛm-ɛn
tree between-LOC
'in between two trees' (Freeman 1953)

(153) ni-s may
1-OBJ with
'with me' (5.6 P6 1953:40)

Postpositional phrases may be used as verbal adjuncts. (154) and (155) show the postpositional phrase *mem khinti* 'below the water' modifying the verbs *hay-* 'go' and *tipl-* 'die', respectively. (156) shows the postpositional phrase *mem panti* 'atop the water' modifying the verb *q'ay-* 'float'.

(154) mem khin-ti hay-ta
water down-DIR.LOC go-1
'[I] sank down.' ['I went below the water.'] (5.6 P6 1953:5)

(155) mem khin-ti tiplu-ta
water down-DIR.LOC die-1
'[I] drowned.' ['I died below the water.'] (5.6 P6 1953:6)

(156) dalah mem pan-ti q'ayá:-∅
leaf water atop-DIR.LOC float-INDIC
'The leaves are floating on the water' (4.4 N4 1958:3)

5.5 Verbs

As discussed in Chapter 4, Nomlaki word order is SOV. The minimal Nomlaki verb consists of a root and a conditioning suffix, which may be null. There exist three stem types: the indicative (most commonly of the form *Xa*), the imperative (most commonly of the form *Xu*), and the nominal (most commonly of the form *Xi*). Each verb suffix conditions one of these three stems.

A Nomlaki sentence may minimally consist of a single verb, as in (157). As seen, Nomlaki is a pronoun-dropping language where neither subject nor object must obligatorily surface.

(157) muta-∅
hear-INDIC
'He heard it' (5.6 P6 1953:1)

Relative clauses are possibly attested in constructions where verbs act as noun modifiers. These constructions are typically glossed with adjectives. Just as verbs in main clauses, verbs within these (possibly) relative clauses are in SOV order. (158) and (159) show an example of verb order in a main and (possibly) relative clause. In (159), the subject *son kuta* consists of the noun *son* 'rock' modified by the verb *kuta* 'is black.' It is possible that this is a relative clause: 'rock that is black.' In Patwin, many nouns are also modified by verbs in this way: they are what Lawyer (2021:182) calls 'adnominal adjectives.' However, Lawyer (2021) believes that these constructions are separate from relative clauses, as they show morphosyntactic restrictions that relative clauses do not. For instance, Patwin adnominal adjectives are never marked for objective case. In the Nomlaki corpus, these constructions are not observed, and so it is difficult to implement similar tests for Nomlaki.

(158) ni-a leeqha-ta
1SG-EMPH speak-1
'I speak' (N3 1953:15)

(159) son kuta-∅ we'-∅
rock be.black-INDIC give-IMP
'Give me the black rock' (BW Ch. 4 1978:2)

Nomlaki verbal suffixes are extensive, and include morphemes marking valency-changing operations (causative *-ma*, reflexive *-na*, benefactive *-paq*), mood (dual hortative *-wen*, plural hortative *-le*, directional hortative *-du*, dubitative *-m*, possibility *-mena*), aspect (completive *-k*), and person (first person *-da*, second person *-ken*). Only person marking is obligatory. Number is not an inflectional category.

In addition to main verbs, Nomlaki has several auxiliary verbs. The most attested is the negative auxiliary *elewa*; when used as a main verb, *elewa* serves as a negative existential. When used as an auxiliary, *elewa* serves to negate the main verb in the clause. When an auxiliary verb is present, agreement marking attaches to it rather than the main verb. This serves as a general diagnostic for a verb's auxiliary status. The auxiliary *elewa* always precedes the verb it modifies. Aspectual auxiliaries *be* and *boh*, as well as the desiderative auxiliary *ko*, typically occur clause-finally.

5.6 Adverbs

Verbs may be modified by a variety of adverbs. Locational adverbs are nearly always observed preceding the verb they modify, aligning with typological observations for SOV languages (Greenberg 1963). Temporal adverbs have been observed preceding (169) and following (166) the verbs they modify. Known adverbs of location, along with examples from the corpus, are given in Table 5.2. The locational adverb *'ukha* 'there' is used in its literal locational sense in (161), and abstractly in (162) *uhka t'ipnata* 'I learned it'.

Locational adverb	English	Example
’iin	‘here’	(160)
’ukha	‘there’	(161), 162)
hini	‘near’	(163)
kelel(a)	‘far’	(164)

Table 5.2: Nomlaki locational adverbs and examples.

(160) iin qelu-ta
here be.housed-1
‘[I] live here’ (5.6 P6 1953:17)

(161) hoo ’ukha hay-ta
through there go-1
‘[I] passed through’ (5.6 P6 1953:5)

(162) ’ukha tipna-ta
through there-1
‘[I] learned it’ (5.6 P6 1953:18)

(163) hIni bEm nEhto qEl
near ASP 1SG.POSS house
‘My home is nearby’ (BW Ch. 5 1978:8)

(164) kellel ɬul-ha–∅
far away-go-INDIC
‘far away’ (5.6 P6 1953:5)

Directional modifications to verbs are typically accomplished through a set of prefixes, rather than independent adverbs (see Chapter 4.3). These limited directional prefixes are mirrored in Wintu (Pitkin 1984:82) and Patwin (Lawyer 2021:217). They include the four directions (*wai-* ‘north’, *noi-* ‘south’, *pui-* ‘east’, *nom-* ‘west’) and general spatial relations (*ʔel-* ‘in’, *pat-* ‘atop’, *xon-* ‘toward’, *tep-* ‘behind’, *yel-* ‘back’, *olel-* ‘above’, *ken-* ‘below’, and *ɬul-* ‘away’). Additional prefixes describe manner: *se:-* ‘on both sides, in all directions’ and *xal-* ‘different, in a strange manner’. Postpositions may also modify verbs (see Chapter 5.4).

Documented Nomlaki adverbs describe temporal frequency and position. Known temporal adverbs are given in Table 5.3. When these adverbs modify a whole clause, they tend to appear phrase-initially, as in (169), (170), and (171); however, they are also documented occurring after the verb (166).

Temporal adverb	English	Example
poo'a	'now'	(165)
pene	'before'	(166)
hi'uni	'after that'	(167)
poholol	'today'	(168)
leyanin	'yesterday'	(169)
t'epay	'tomorrow'	(170)
ho:na	'long ago'	(171)
'unnun	'always'	(172)
pum	'— times'	(173), (174)
ɦioloqtai	'soon'	(175)
ɦiɛliuta	'often'	(176)

Table 5.3: Nomlaki locational adverbs and examples.

(165) poo'a
now
'now' (5.6 P6 1953:7)

(166) khumaa-∅ pene
be.dark-INDIC before
'before dark' (5.6 P6 1953:9)

(167) hi'uni
after
'after that' (5.6 P6 1953:7)

(168) poholol
today
'today' (BW Ch. 7 1978:7)

(169) lé:nen mí-s wín-dah
yesterday 2SG-OBJ see-1
'I saw you, yesterday' (4.4 N4 1958:6)

(170) t'Epa nih-tak c'aawi-∅ ko
yesterday 1-PL song-NOM DES
'We will sing tomorrow' (BW Ch. 4 1978:5)

(171) ho:na ni po:ke:-ba p'uk-ca-∅ hah-∅ ʔiya:-∅
long.ago 1SG boy-HUMAN.PL hunt-TRANS-INDIC go-INDIC do.prox-INDIC
'When I was a boy, I used to go hunting with my grandfather.' (4.4 N4 1958:4)

(172) 'unnun
always
'always' (5.6 P6 1953:8)

(173) cán-sem peehen
half-hand MULT
'five times' (5.6 P6 1953:7)

(174) kettā pum
one MULT
'once' (Merriam 1919:42)

(175) ɦioloqtai
soon
'soon' (Freeman 1953)

(176) ɛliuta
often
'often' (Freeman 1953)

Adverbs of motion include *leweq* 'in a circle, around' (177).

(177) leweq hay-ta
around go-1
'[I] went around in a circle' (5.6 P6 1953:4)

5.7 Other elements

A single interjection is recorded in the corpus (178). It appears to indicate surprise or acknowledgment.

(178) o boham
INTERJ ASP
'[Ah], there you are' (Freeman 1953)

A single conjunction is also recorded in the corpus (179):

(179) wiLca
also
'also' (BW Ch. 7 1978:1)

A mysterious morpheme *-i* occurs in negative imperative constructions. This morpheme does not appear to have a cognate in either Wintu or Nomlaki. It is included here as a particle (180).

(180) witila-mena i
run-NEG PARTIC
'Don't run.' (BW Ch. 6 1978:3)

Chapter 6

Nomlaki nouns & nominal morphology

Nomlaki nouns can be divided into three categories: common nouns (including nominalized verbs), kinship terms, and pronouns. As described in Chapter 5, Nomlaki nouns may act as subjects, objects (of single and ditransitive verbs), prepositional complements, subjects of locative copular constructions, and modifiers to other nouns (as adjuncts). Nomlaki nouns overtly mark five syntactic cases, along with particular/generic membership. A suffix *-ba*, which appears on a small amount of nouns referring to people, may be a historical human plural suffix. Kinship terms take a unique set of possessive pronouns.

6.1 Case

Dixon and Kroeber (1913) note 'seven (and probably never more than seven) true cases' among the Penutian languages: the objective, possessive, instrumental, locative, ablative, terminative, and comitative. Within California Penutian, Berman (1958) reconstructs six cases: the subject, object, genitive, instrumental, and two locatives. The presence of such formal case marking was regarded as areally unusual by Dixon and Kroeber (1919), who used it as a major criterion for classifying languages as Penutian.

Pitkin (1984) analyzes Wintu as having five marked syntactic cases (the objective, genitive, agentive, instrumental, and locative) in addition to the 'generic' and 'particular' case, which are unique to Northern Wintuan and are semantic (rather than syntactic). Lawyer (2021) analyzes Patwin as having seven marked cases (objective, possessive, comitative, instrumental, allative, ablative, and prolative). In all Wintuan languages, subjective case is unmarked.

Five marked cases appear in the Nomlaki corpus: the objective, possessive (only observed in pronominals), instrumental, locative, and ablative. A closed set of directional words may take a set of unique cases. For the purposes of this description, 'syntactic case' is understood to cover the (unmarked) subjective, objective, and possessive; that is, cases which mark a noun's syntactic relation to a verb. The instrumental, locative, and ablative are classified as 'semantic', following similar organization by Lawyer (2021). The particular and generic

markers (referred to by Pitkin 1984 as 'noun aspect') are discussed in Chapter 6.2. Particular and generic suffixes are generally not referred to as case in this grammar (unless quoting a source which refers to them in this manner).

Subjective case

Nomlaki shows nominative-absolutive alignment. (181), (182), and (183) show the first-person singular pronoun used as the subject of an intransitive verb (181), subject of a transitive verb (182), and as the object of a transitive verb (183). As expected from nominative-absolutive alignment, the subject of both the transitive and intransitive verb surface with the form *ni*, for which case is not marked overtly. The object of the transitive verb is marked with the first-person object pronoun *nis*. The null subject-marking morpheme is nominal case, and the suffix *-s* (*-m* for non-pronominal nouns) marking the object is accusative case. This grammar uses the terms 'subjective' and 'objective' case in order to align with the terminology used in Pitkin (1984) and Lawyer (2021).

(181) ni baa-mena
1SG eat-POSB
'I might eat' (BW Ch. 4 1978:8)

(182) ni mi-s yomoy-ta
1SG 2SG-OBJ tell-1
'I told thee' (5.6 P6 1953:3)

(183) mi ni-s wina-∅
2SG 1SG-OBJ see-INDIC
'You see me' (BW Ch. 2 1978:7)

Subjective case is unmarked. (184) and (185) illustrate the noun *dahki* 'woman' and *no:p* 'deer' used as subjects.

(184) dahki-∅ boiya-∅ wea'-∅
woman-SUBJ be.many-INDIC come-INDIC
'Many women come' (BW Ch. 4 1978:2)

(185) no:p-∅ boya:-∅ ʔuni-k ho:nʔaʔ
deer-SUBJ be.many-INDIC RPT-COMPL long.ago
'They say there were plenty of deer in olden times.' (4.4 N4 1958:10)

Objective case

Objects are marked with the objective case marker *-m*. This marker is cognate with the Wintu object case *-um* (Pitkin 1984:216) and Patwin animate object case *-ma* (Lawyer

2021:94). *-m* can mark both direct and indirect objects (188). Because of this, it is referred to as an 'objective' case marker rather than an accusative or dative marker. This also follows the naming conventions in Wintu (Pitkin 1984:216) and Patwin (Lawyer 2021:94). Before vowels, the objective case marker surfaces as *-m* (186). Before consonants, it surfaces as *-um* (187). One exception is attested, in (188). Here, the noun *patkEli* 'rabbit' surfaces with objective case as *patkElium*, rather than the expected *patKelim*.

(186) sEdE-m
coyote-OBJ
'coyote (object)' (Blankinship and Wenger 1978:1 (henceforth cited as BW Ch. 3))

(187) nop-um
deer-OBJ
'deer (object)' (BW Ch. 3 1978:1)

(188) nEh-to patkEli-um pu-t do'-∅
1SG-POSS rabbit-OBJ 3SG-OBJ give-IMP
'Give him my rabbit' (BW Ch. 2 1978:9)

(189a) and (189b) show *no:p* 'deer' acting as subject and direct object, respectively. Acting as a subject of the verb *bo:ya* 'be many' (189a), *no:p* is not overtly marked. Acting as a direct object of the verb *poLca* 'shoot', *no:p* receives objective marking, surfacing as *no:pum*.

(189) a. no:p-∅ boya:-∅ ʔuni-k ho:nʔaʔ
deer-SUBJ be.many-INDIC REPRT-COMPL long.ago
'They say there were plenty of deer in olden times.' (4B 1956)

b. pi no:p-um poL-ca-mena
3SG deer-OBJ shoot-TRANS-POSB
'He might shoot the deer.' (BW Ch. 5 1978:2)

The indirect object is often dropped in ditransitive constructions. This is seen in *nis thakim do'* 'Give me the hat' (190). In fact, the corpus does not have examples of common nouns acting as indirect objects. One example of a pronoun surfacing as the indirect object is attested: *nEhto patkElium put do'* 'Give him my rabbit (192), where *patkelium* 'rabbit (obj)' is the direct object, and the third-person singular accusative *put* is the indirect object.

The third-person singular pronoun surfaces as *put* both when it acts as a direct (191) and indirect (192) object. This behavior, along with that documented for Wintu and Patin, also suggests the objective case applies to both direct and indirect objects.

(190) ni-s thaki-m do'-∅
1SG-OBJ hat-OBJ give-IMP
'Give me the hat.' (BW Ch. 6 1978:3)

(191) ElEw-da pu-t mut-mena
NEG-1 3SG-OBJ hear-NEG
'I don't hear him.' (BW Ch. 5 1978:2)

(192) nEh-to patkEli-um pu-t do'-∅
1SG-POSS rabbit-OBJ 3SG-OBJ give-IMP
'Give him my rabbit.' (BW Ch. 2 1978:9)

It is not obligatory for common nouns to overtly mark objective case. (193) shows two instances of a noun acting as the direct recipient of the verb. In (193a), this noun receives overt case-marking, whereas it does not in (193b).

(193) a. suku-m wina-∅ ko-da
dog-OBJ see-INDIC DES-1
'I want to see your dog.' (BW Ch. 4 1978:9)
b. nEh-to kawaiy3-∅ muta-∅
1SG-POSS horse-OBJ hear-INDIC
'You hear my horse.' (BW Ch. 2 1978:8)
cf. *k3way3m* 'horse (object)' (BW Ch. 3 1978:1)

Possessive case

There are no examples of possessive case surfacing on common nouns. Possessive ('genitive') case is marked in Wintu by the suffix *-un* (Pitkin 1984:216) and in Patwin by the suffix *-no* (inanimate)/*-nomin* (animate) (Lawyer 2021:96). Though pronominal case is observed for pronouns, pronominal case uses a separate system. For a discussion of pronominal case marking, see Chapter 6.6.

Instrumental case

Instrumental case marks nominals as the means by which the agent accomplishes an action. It does not appear cognate with the Wintu instrumental *-r* (Pitkin 1984:219), but does appear cognate with Patwin instrumental *-tin* (animate nouns)/*-in* (inanimate nouns) (Lawyer 2021:107). The instrumental appears in the shape *-in* in all documented cases, with only one exception: *k'ok-tin hapu-da* 'I am digging with a stick' (Freeman 1953).

The instrumental may mark tools used for a particular task, as in (194), (195) and (196).

(194) cala:-∅ son-i:n ɬe:t k'oym-ha cala:-∅
be.good-INDIC rock-INS snake kill-STAT be.good-INDIC
'It is good to kill a rattlesnake with a rock.' (4.4 N4 1958:2)

(195) phoocaq-in el-petu-ta
club-INS in-club-1
'[I] clubbed it.' (5.6 P6 1953:22)

(196) mem-in c'ulaa-mi-ta
water-INS pour-CAUS-1
'[I] splashed it.' (5.6 P6 1953:23)

The instrumental may also mark a body part used to carry out a task, as in (197) and (198).

(197) neh-tu sem-in ha-mi-ta
1SG-POSS hand-INS go-CAUS-1
'[I] carried it with hand.' (N3 1953:23)

(198) senn-in ni hahpu-ta
hand-INS 1SG gather-1
'[I] dug with [my hand].' (N3 1953:21)

In Patwin (though not Wintu), instrumental case is conditioned by the animacy of the noun. Though there are few examples, this appears not to be the case in Nomlaki. Of the clear examples of instrumental case, all but one clearly mark inanimate objects such as stones (194), clubs (195), and water (196). An exception may be (197), where the speaker's hand is marked with the instrumental. Even so, all examples receive the marking *-in*. In addition, hands may not be considered animate; in Patwin (Lawyer 2021:109), body parts are marked with inanimate possessive case.

Locative case

The locative marker *-in* is cognate to Wintu *-in* (Pitkin 1984:217) and Patwin *-tin* (Lawyer 2021:110). It surfaces in the corpus as either *-in* or *-en*. Many examples in the corpus contain only the locative phrase without a predicate, as seen in (199), (200), (201), and (202). (203) contains a full sentence.

(199) tʃan-sɛm pom-ɪn
five-hand place-LOC
'in five places' (Freeman 1953)

(200) qɛ:l-ɛ:n ɪl-ɪn
house-LOC inside-LOC?
'in the house' (5.6 P6 1953:6)

(201) mɛmpom pot-ɪn
river along-LOC
'along the river' (5.6 P6 1953:6)

(202) mi: wɛnɛm-ɛn
tree middle-LOC
'in between two trees' (Freeman 1953)

(203) put-un qél nóm-póm-in béya
3SG-POSS house west-place-LOC ASP
'His house is in the woods' (4.4 N4 1958:11)

In one example, the locative is used to express a target of motion. In (204), *nomtipom-En* 'to Covelo' is the target of the verb phrase *ha ko* 'want to go'. This is more typical of lative case, and suggests that *-en* may more properly be understood as a 'local' case encompassing locative and lative properties. However, it is difficult to draw such extreme conclusions based on one data point. *-en* is referred to as 'locative' case in this grammar also to maintain consistency with Wintu and Patwin terminology.

(204) nom-ti-pom-En hah ko
west-DIR.LOC-place-LOC go DES
'You want to go to Covelo' (BW Ch. 4 1978:8)

Locative case may also be used with nominals expressing time to create temporal adjuncts, as in (205) and (206).

(205) tuku nom-ken-wan-in
sun west-down-end-LOC
'[in the] evening' (Freeman 1953)

(206) hon'o-pom-en
long.ago-place-LOC
'long time' (5.6 P6 1953:8)

Ablative case

The ablative case marks a semantic source: the noun from which an action originates. Pitkin (1984) does not discuss an ablative case for Wintu, and it does not appear cognate with Patwin ablative *-ti* (Lawyer 2021:114) or the reconstructed cases of Penutian (Dixon and Kroeber 1919). The ablative always surfaces as *-wa*, with no known allomorphs. The status of *-wa* as a case marker, rather than a postposition, is largely based on stress: it does not appear to receive independent stress marking in the audio source (Freeman 1953), thus suggesting it is not independent of the noun it marks. Swadesh transcribes *-wa* as suffixed to the noun in (209) and (211), but not (207) or (208). More prosodic and syntactic investigation is ideally needed to confirm *-wa*'s status, if possible; however, there are only four extant examples.

All unique examples of the ablative case in the corpus are included here. The ablative may attach to common nouns such as *qel* 'house' (207), deictic nouns such as *uka* 'there' (208), and directional nouns such as *way* 'north' (209) and *nuy* 'south' (210).

(207) uka χɛl-wa we-da
there house-ABL come-1
'I came from the house' (Freeman 1953)

(208) 'ukhaa-wa wey-ta yel-to-qon
there-ABL come-1 behind-DIR.LOC-?
'[I] came from [behind] the house' (N3 1953:29)

(209) way-wa ƛeeha
north-ABL wind
'north wind' (5.6 P6 1953:32)

(210) nuy-wa ƛeeha
south-ABL wind
'south wind' (5.6 P6 1953:32)

6.2 Particular and generic marking

Possibly unique to the Northern Wintuan languages are markers which delineate objects that are unified, animate, and/or particular from those which are dispersed, inanimate, and/or generic. In Wintu, these markers are referred to as 'noun aspect' (Pitkin 1984:212). When suffixed to a noun stem, Wintu particular and generic suffixes can change a noun's meaning. Often these represent familiar typological poles, such as between finger (particular) and hand (generic). Others are less common, such as eye (particular) and face (generic). The semantics of the particular/generic distinction partially overlap, but are not coextensive with, animacy, mass noun, and collective noun marking.

Lee (1944:367) discusses how the noun *no:p* 'deer, deer meat' can vary semantically depending on whether the particular or generic suffix is attached in Wintu. When a hunter slings a dead deer from his shoulder to take it home, *no:p* is marked with the particular (despite the animal being dead), because it is carried whole by the hunter. When a woman carries the hunted deer cut up into pieces, the deer is marked with the generic because it is no longer a discrete, individual animal form. When a deer is skinned, it is referred to in the particular; when its fat is boiled, it is generic. When a speaker describes how hunters carried home many dead deer, *no:p* is marked in the particular because each deer is still a whole, entire animal; when the speaker says they shall eat deer, *no:p* is now marked in the generic, as no particular or entire animal is referred to.

Table 6.1 illustrates the difference in meaning between Wintu noun stems suffixed with either the particular or generic morpheme. As a rule, the particular suffix delineates nouns

which are animate, personified, human, or somehow more differentiated. In contrast, the generic marks nouns which are inanimate (or dead), non-personified, non-human, and less differentiated. However, this is just a general rule of thumb, and the semantic mapping can be much richer and more subtle. For instance, Lee (1944) cites a Wintu text where a personified bird is placing weapons into a bag. Both a woman and a man tell this story to Lee. The man cites the weapons in the particular, while the woman cites them in the generic: to the man, these weapons are well understood tools he personally uses, while to the woman, they are tools belonging to a different social role (Lee 1944:368–369).

Table 6.1 illustrates how the addition of a particular/generic marker changes the semantics of a noun root in Wintu. Some of these, like 'toe'/'foot' and 'finger'/'hand', are typologically familiar (Huber and APiCS Consortium 2013). Others appear to reflect animacy, like 'live salmon'/'dead salmon as food', 'live suckerfish'/'dead fish as food', 'bad person'/'bad thing', 'live mussel'/'mussel shell'. Still others reflect personification, such as 'Coyote' (story figure)/'coyote' (general animal) and 'otter'/'swimmer.'

Root	Particular	Generic
sede	Coyote (figure)	coyote (animal)
tu	eye	face
ma	toe	foot
se	finger	hand
nur	live salmon	dead salmon, used as food
ci:r	live suckerfish	any fish as food
t^{h}uli	otter	swimmer
c'epkal	bad person	bad thing
ƛ'al	live mussel	shell

Table 6.1: Generic and particular semantic derivations, adapted from Pitkin (1984:212).

Nomlaki does not seem to adhere to the Wintu distinctions shown in Table 6.1. Nouns

expressed as particular/generic pairs in Wintu are separate lexical items in Nomlaki, such as *łuwi* 'eye' (BW Ch. 7 1978:2)/*q'aba* 'face' (5.6 P6 1953:13), *topme* 'toe' (5.6 P6 1953:14)/*koli* 'foot' (BW Ch. 7 1978:3), *kay* (BW Ch. 7 1978:3) or *sem kaae* (5.6 P6 1953:14)/*sem* 'hand' (BW Ch. 7 1978:3), *cii* 'fish' (BW Ch. 7 1978:3)/*webala* 'suckerfish' (4.4 N4 1958:14), and *cháit* 'mussel' (possibly *chai plus particular -t*) (Curtis 1924)/*mempaq* 'shell' (Curtis 1924). Within the Nomlaki corpus, there do not exist examples of the particular or generic suffix deriving different lexical items from a given noun root. Rather, the suffixes appear to refine the context in which a given noun appears.

The Nomlaki particular marker is cognate with the Wintu (referred to as 'particular aspect') *-t*. Pitkin (1984:210) describes the particular aspect as a marker which 'specifies a live, animate, personified, or whole (entire) individual, a group considered as a unit contrasting with an undifferentiated mass, or an action which is punctual rather than durative; in short, a particular individuated from the mass or general type'. Though several examples exist in the Nomlaki corpus, they are often single words elicited without context. Most of the suffix's semantic information is thus inferred from the morpheme's behavior in Wintu.

The particular suffix always surfaces as *-t*, with the exception of *-h* in the third-person proximal demonstrative *ʔeh* (cf. generic *ʔew*). This allomorphy is likely conditioned by lexical class, as it is in Wintu (Pitkin 1984:213). The particular suffix may mark non-derived common nouns like *łomi* 'bobcat' (211), and nominalized verbs like *neehqi* 'one who finds', from *naaχo* 'find' (BW Ch. 7 1978:3) (212):

(211) łomi-t
bobcat-PARTIC
'bobcat' (5.6 P6 1953:26)

(212) neehqi-t
rich-PARTIC
'rich man [one who finds]' (5.6 P6 1953:29)
cf. *nehqoda* 'I found it' (5.6 P6 1953:13)

The particular (and generic) suffixes are often attached to numbers. The suffixation does not appear to derive different lexical items. Instead, it likely modifies the kind of noun to which the number refers. (212) and (213) provide a minimal pair with *kete saq* 'twenty' (lit. 'one twenty'). These examples are not elicited with further context.

(213) kete-tt cak
one-PARTIC twenty
'twenty' (Barrett 1908[86])

(214) k'ete-m saq
one-GENER twenty
'twenty' (4.4 N4 1958:6)

In elicitation contexts, animals, plants, and their products are most often elicited with the particular aspect, as in (215).

(215) a. koocaa-t
pig-PARTIC
'pig' (5.6 P6 1953:31)

b. mintuli-t
beaver-PARTIC
'beaver' (5.6 P6 1953:32)

c. quule-t
elk-PARTIC
'elk' (5.6 P6 1953:25)

d. sede-t
coyote-PARTIC
'coyote' (5.6 P6 1953:25)

e. solaa-t
trout-PARTIC
'trout' (5.6 P6 1953:26)

f. c'iqniine-t
hummingbird-PARTIC
'hummingbird' (5.6 P6 1953:26)

g. c'ebee-t
spruce-PARTIC
'spruce' (5.6 P6 1953:32)

h. p^{h}a:qa-t
manzanita-PARTIC
'manzanita' (5.6 P6 1953:12)

The particular is not limited to plants, animals, and their products. It may also be applied to people, as in (216). In most of these examples, the particular suffix attaches to the nominal stem of a verb. That particular *-t* may attach both to non-derived nouns, as well as the nominal stems of verbs, is a key argument that nominalized verbs function as nouns.

(216) a. qeel-qa-t
house-other-PARTIC
'guest' (5.6 P6 1953:29)

b. neehqi-t
rich-PARTIC

'rich man [one who finds]' (5.6 P6 1953:29)

cf. *nehqoda* 'I found it' (5.6 P6 1953:13)

c. pomankoe-t
poor-PARTIC
'poor man' (5.6 P6 1953:29)

d. holoowi-t
white.man-PARTIC
'white man, Mexican' (5.6 P6 1953:30)

e. ciihpi holoowi-t
night white.man-PARTIC
'policeman' (5.6 P6 1953:30)

The particular suffix may also be applied to tools and items of human manufacture, as in (217). This also applies to loanwords, as in *peesat* 'money (particular)', from Spanish *peso* 'unit of currency, pound' (217b), and *paniitut* 'handkerchief (particular)', from Spanish *pañuelo* 'handkerchief.'

(217) a. tuheelu-t
chisel-PARTIC
'chisel' (5.6 P6 1953:27)

b. peesa-t
money-PARTIC
'money' (5.6 P6 1953:30)

c. 'el-tami-t
in-shoe-PARTIC
'sock' (5.6 P6 1953:31)

d. paniitu-t
handkerchief-PARTIC
'handkerchief' (5.6 P6 1953:31)

e. yiwi-t
soup-PARTIC
'acorn soup' (4.4 N4 1958:14)

The particular suffix may also be applied to nouns which are derived from verbs, as seen above in (216b) (216c), (216d), (216e), (217a), (217b), (217c), and (217d). These nouns are derived from verbs inflected for the nominal stem. The most common form of the nominal stem is *Xi* (see Chapter 4.5). Along with shape *Xi* (218), particular *-t* has also been observed conditioning nominal stems of shape *Xu* (219) and *Xe* (216c). (218) and (219) show further examples of nominalized verbs receiving particular marking.

(218) tucuúqi-t
green-PARTIC
'green' (4.4 N4 1958:13)
cf. *tucú:qi* 'green [one]' 4.4 N4 1958:13 and *tucuuka* '[to be] green' (5.6 P6 1953:35)

(219) hal-halu-t
think-think-PARTIC
'think [thought]' (BW Ch. 7 1978:10)
cf. *hala:* 'think' (5.6 P6 1953:39) and *hálha:la* 'think' (4B 1956:48)

The Nomlaki generic suffix is cognate to Wintu generic *-s* (Pitkin 1984:214). Pitkin (1984:210) describes the generic case as marking 'a mass in general, a continuum, a group, a plurality, or simply an unspecified, not particularized, individual, class, or genus'. Without more detailed context, this grammar assumes the behavior of the Nomlaki generic marker mirrors that of the Wintu. The Nomlaki generic may surface as either *-s* (220a, 220b), *-m* (220c,220d), and perhaps *-w* (220e). As with the particular case, generic allomorphy appears conditioned by lexical class.

(220) a. qho-s
steam-GENER
'steam' (5.6 P6 1953:9)

b. ćuu-s
tree-GENER
'branch limb' (5.6 P6 1953:12)

c. łuyu-m
egg-GENER
'egg' (4.4 N4 1958:7)

d. palé-m
two-GENER
'two' (4B 1956:4)

e. ʔe-w
3SG.DEM.PROX-GENER
'this one' (4.4 N4 1958:15)

As with the particular *-t*, generic *-s* may attach to either non-derived common nouns or nominalized verbs. When the generic suffix attaches to nominalized verbs, it conditions the nominal stem. This stem has been observed in shape *Xi* (*tumit* 'fog'), *Xii* (*qhotiis* 'muscle'), *Xaa* (*potaas* 'old woman'), *Xo* (*qhos* 'steam') (5.6 P6 1953:9), and *Xu* (*waynomsus* 'northwest dwellers' (4.1 N1 1951).

The noun created from a generic marker suffixed to the nominal stem of a verb may be reanalyzed as a new verb root. This is only attested a few times in the documentation.

(221) shows the nominalized verb *k'iyaas* 'old man' (221a) reanalyzed as an indicative stem *k'iyaasa* 'be an old man' (221b). (222) shows the nominalized verb *qomos* 'big one' (cf. Wintu *qomo* 'big, long, adult'; Pitkin 1984:489) reanalyzed as the stem *qomosa* 'be big' (222a). This root is then further expanded to *qomosaha* 'be big' (221b).

(221) a. k'iyaa-s
be.old.man-GENER
'old man' (5.6 P6 1953:19)

b. k'iyaa-sa-da
be.old.man-GENER-1
'I'm getting old' (4B 1956:46)

(222) a. qomo-sa-∅
be.big-GENER-INDIC
'big' (5.6 P6 1953:22)

b. qomó-sa-ha
be.big-GENER-STAT
'He's a big man' (4.4 N4 1958:15)

As seen in (221b) and (222b), a verb stem with generic suffixation may be reanalyzed as a new root to which additional suffixation may attach. The shape of this generic root is conditioned by the attaching suffix. The generic stem appears in the shape *Xa* in both the indicative (221b), (222a), and imperative form (222b). This is true of all observed forms, suggesting that the generic forms stems of Class 9 (see Chapter 4.5). This reanalyzing phenomenon has not been observed for the particular suffix, though this is more likely a gap in the data than a grammatical restriction.

The generic suffix may also attach to quantifiers and demonstratives. (223), (224), (225), and (226) all show the generic suffix in form *-m* attaching to the universal quantifier *ko:* 'all.' Quantifiers are further discussed in Chapter 6.4.

(223) ko-m ken-tekala-∅
all-GENER down-shine-INDIC
'bright' ['shine down on everything'] (5.6 P6 1953:21)

(224) ko-m nek-cu-ta
all-GENER cut-TRANS-1
'[I] cut it all up' (5.6 P6 1953:22)

(225) ko-m liihu-ta
all-GENER grind-1
'[I] ground it all up' (5.6 P6 1953:23)

(226) ko-m pow-ca-∅
all-GENER cut-TRANS-INDIC
'It swelled up' (5.6 P6 1953:24)

As mentioned in (220e), particular and generic suffixes may also attach to demonstratives. (227), (228), (229), and (230) demonstrate the third-person singular proximal demonstrative *ʔeh* without suffixation (227), with particular suffixation (228), and with generic suffixation (229). (230) also shows this demonstrative receiving both generic suffixation and a final vowel *-a*. It is unclear how this form differs from (228). The demonstrative in (228) is used pronominally, to refer to a man. This reflects the diachronic origins of third person pronominals as demonstratives.

(227) 'eh peh yeca-m
3SG.DEM what be.called-DUB
'What is this called?' (5.6 P6 1953:4)

(228) ʔé:-t múhuta-∅ bohu-dah
3SG.DEM.PROX-PARTIC hear-INDIC ASP-1
'I hear him now' (4.4 N4 1958:15)

(229) ʔe-w doh-cu-ma
3SG.DEM.PROX-GENER roast-TRANS-CAUS
'Roasting this' (4.4 N4 1958:15)

(230) ʔe-w-á c'épaʔ-∅ boh-́om
3SG.DEM.PROX-GENER-? be.bad-INDIC ASP-?
'He's a bad man' (4.4 N4 1958:15)

6.3 Numerals

Numerals may surface in plain form. More typically, they take generic or particular marking. (231) shows the numeral *k'ette* 'one' surfacing without marking. (232) and (233) show the same numeral taking generic and particular marking, respectively. As discussed in Chapter 6.2, the addition of a generic or particular suffix to a numeral does not appear to derive a new lexical item, but rather to specify semantic information about the noun referent.

(231) k'ette chonaɬ
one moon
'one moon' (5.6 P6 1953:9)

(232) kette-t
one-PARTIC
'one' (5.6 P6 1953:1)

(233) k'eté-m
one-GENER
'one' (4.4 N4 1958:6)

Numerals may also modify nouns, either by preceding (234a) or following (234b) them. Within the corpus, it is more common for the numeral to precede the modifying noun, as in (234a).

(234) a. kɛtɛ:-m not
one-GENER arrow
'a hundred' ['one arrow']' (Freeman 1953)
b. siiwi kete-m
write one-GENER
'a line' (5.6 P6 1953:7)

When numerals and verbs are used together to modify a noun, BW Ch. 4 (1978d:1) report the order as numeral-noun-adjective (BW Ch. 4 1978:1). This analysis is unfortunately not accompanied by examples. Blankinship and Wenger (1978a) consider adjectives to be a Nomlaki word class, while I consider these constructions to be fundamentally verbal. As discussed in Chapter 6.4, Nomlaki verbs may modify a noun attributively or predicatively. When the modifying verb precedes the noun, the verb's nominal stem is selected; when it follows the noun, the verb's indicative stem is selected instead. The description of 'numeral-noun-adjective' word order in Blankinship and Wenger (1978a) appears to describe predicative modifiers. This word order does not require additional stipulation if modifiers are actually verbs, as verbs (except perhaps for reasons of information structure) appear phrase-finally. It is unclear what word order should occur when a modifying verb and demonstrative both precede the modified noun.

Multiplicative numbers are achieved by following the number with *pum* (235) or *peehen* (236). The exact meaning is unknown for either multiplier, though *pum* is perhaps *pom* 'earth, place.'

(235) kettā pum
one MULT
'once' (Merriam 1919:42)

(236) cán-sem peehen
half-hand MULT
'five times' (5.6 P6 1953:7)

Central to the Nomlaki number system are the units *can* 'half', *sem* 'hand (referring to both hands, i.e. 10)', *saq* 'twenty', *not* 'arrow, 100', and *win* 'person, 100'. Numbers 1-5 are unique, with *c'ansem* 'five', literally 'half hand', referring to half of the fingers on both hands. Numbers six, eight, and nine make reference to various arithmetic calculations

involving both hands. *cumeɬ* 'seven' is an exception to this pattern, and is of unknown origin. Its Wintu counterpart, *lolo:qit* (Pitkin 1985:279), refers to the act of pointing.

Numbers following 10 are achieved following a mixture of addition and multiplication based on the units ten and twenty. Thus, 'forty' is expressed as *palsaq* 'two twenties', and 'fifty' is expressed as *palsaq sema* 'two twenties ten'. Table 6.2 illustrates common numerals, as well as their literal and arithmetic meanings.

Number	Nomlaki	Literal meaning	Arithmetic meaning
1	kêtêt	one	1
2	pale	two	2
3	panoł	three	3
4	ławi	four	4
5	c'ansem	half hand	10/2
6	sepanoł	(both) hands three	2×3
7	cumeł	?	7
8	seławi	(both) hands four	2×4
9	canławi	half (both hands) four	(10/2) + 4
10	sema	both hands	10
15	panołcansem	three five	15
20	kêtêt saq	one twenty	1×20
30	panołsema	three both hands	3×10
100	kêtê witat	one man	1×100
100	kêtêm not	one arrow	1×100
1000	sema not	both hands arrow	10×100

Table 6.2: Nomlaki numeral system, as described by Goldschmidt (1951b:388).

6.4 Noun modification

Nomlaki noun modifiers include numerals, demonstratives, other nouns, and verbs. The behavior of numerals is examined in more detail in Chapter 6.3, while demonstratives and adjunct nouns are described in Chapter 5. This present section focuses on noun modification that qualifies, describes, specifies, or limits a noun: that is, noun modification often achieved cross-linguistically with adjectives. I do not consider Nomlaki to have a separate adjective class; instead, this kind of noun modification is achieved by verbs and verbally derived nouns.

'Adjective-like' noun-modification in Nomlaki can be achieved either attributively (preceding the noun it modifies) or predicatively (following the noun it modifies). When used attributively, Nomlaki verbs take the nominal stem and occur before the modified noun. When used predicatively, verbs take the indicative form and appear after the noun. The latter behavior is probably not a special feature of this construction, but because verbs appear phrase-finally.

It is possible that attributive noun modification is achieved through relative clauses. In Patwin, verbal modification of nouns and relative clauses are morphosyntactically distinct despite their shared origins (Lawyer 2021:182). This claim is difficult to examine further with the existing Nomlaki data. Subordinate clauses are discussed in Chapter 7.4.

The example pairs in (237), (238), and (239) show the stem alternation that occurs when a verb is used to modify a noun as an attributive (237a), (238a), (239a) or predicative (237b), (238b), (239b) expression. Once again, note that attributive expressions take verbs of the indicative stem type, while predicative take verbs of the nominal type.

(237) a. calí-∅ nó:p
be.good-NOM meat
'good meet; deer meat' (4.4 N4 1958:2)

b. bah calla?-∅
food be.good-INDIC
'It tastes good [The food is good]' (4.4 N4 1958:2)

(238) a. ʔe-w-á: wó:ti-t dahki bohóm
3SG.DEM.PROX-GENER-? be.short-PARTIC woman ASP
'She's a little woman' (4.4 N4 1958:15)

b. wota'-∅
short-INDIC
'short' (BW Ch. 7 1978:6)

(239) a. ɬuyuqi-∅ mii
be.white-NOM tree
'white oak' (5.6 P6 1953:11)

b. ƛ'oyuuqa-∅
be.white-INDIC

'white' (5.6 P6 1953:40)

Nominalized verbs used as noun modifiers are documented occurring after the modified noun in Blankinship and Wenger (1978a). This word order does not appear in other sources.

(240) pi cii-t inisti-t Elba-∅
3SG fish-PARTIC be.small-PARTIC eat-INDIC
'He is eating a small fish.' (BW Ch. 4 1978:2)

As seen in (237), (238), and (239), noun modification can occur before or after the noun to be modified. When it occurs before the modified noun, the verb is inflected for the nominal stem. This nominal stem may receive particular suffixation just as other nominal stems. This behavior is shown in (241) and (242). (241) shows the derived nominal form of *cal-* 'be good' receiving the particular suffix *-t*. (242) shows the derived nominal form of *ne:hq-* 'find' also receiving the particular suffix, to become 'one who finds things [a rich person].' While *cal-* 'be good' is often cross-linguistically an adjective, 'to find' is unambiguously a verb. That *cal-* patterns morphologically with this verb suggests that it is also a verb.

(241) calii-t win
be.good-PARTIC man
'He's a good man.' (4.4 N4 1958:15)

(242) neehqi-t
find-PARTIC
'rich [one who finds things]' (5.6 P6 1953:29)

Quantifiers

Documented Nomlaki quantifiers include the universal quantifier *ko:* 'all' and the assertive existential *papi:* 'someone, somebody'.

Universal *ko:* 'every, all'

The indefinite pronoun *ko:* may be used as a universal quantifier. It is typically accompanied by a particular or generic suffix. When referring to places, *ko:* may be glossed as 'everywhere' (243). (243),(244), (245), and (246) show *ko:* taking the generic marker *-m*, patterning with nouns, determiners, and numerals.

(243) ko-m ken-tekala-∅
all-GENER down-shine-INDIC
'bright' [shine down everywhere']' (5.6 P6 1953:21)

ko: may also indicate non-locational nouns, as in (244), (245), and (246). The quantificational meaning (e.g. 'all') is typically not present in the English translation.

(244) ko-m nekcu-ta
all-GENER cut-1
'[I] cut it [all] off' (5.6 P6 1953:22)

(245) ko-m liihu-ta
all-GENER grind-1
'[I] ground it [all]' (5.6 P6 1953:23)

(246) kom phow-ca-∅
all-GENER swell-TRANS-INDIC
'It [all] swelled up' (5.6 P6 1953:24)

Assertive existential *papi*

The assertive existential *papi* refers to an unspecified number of people or things. Used alone, *papi* typically refers to people ('someone, somebody'), as in (247) and (248).

(247) papí wéa-∅
someone come-INDIC
'someone coming' (Halpern 1936:21)

(248) papí ba-∅
some eat-INDIC
'somebody eating?' (Halpern 1936:21)

papi may also indicate an unspecified plural number of objects. This may be achieved with the word *qat* (249), of uncertain meaning. It is possibly cognate to Wintu *qat* 'referential dependent non-possessed noun, with equivocating force; as for, apparently, perhaps, in respect to, rather' (Pitkin 1984:482). *pia:ni* may also be used for this purpose, also with an unknown precise meaning (250).

(249) papi qat
some REF
'some of them' (5.6 P6 1953:39)

(250) pia:ni papi
? some
'some of them' (Freeman 1953)

6.5 Directional morphemes

A subset of morphemes with directional meanings may occur as both prefixes and roots. DeLancey and Golla (1997) posit that these morphemes are diachronically roots which were

later incorporated as prefixes (see Chapter 4.3 for a discussion of these morphemes as verbal prefixes).

As roots, directional morphemes may take the directional locative *-ti*. *-ti* is cognate with the Wintu 'locative directional suffix' *-ti* (Pitkin 1984:594). This construction may modify nouns as a postposition, as in (256), (257), (258); the resultant postpositional phrase may then be used as a verbal adjunct, as in (259). Directional locatives may also modify verbs and nouns directly. (260) shows *'olti* 'over, above' modifying the verb *palta* 'I rolled'; (261) shows *pelti* 'in the east' modifying the noun *pom* 'place, earth.' When used as a postposition, the directional locative follows the modified noun.

In some cases, *-ti* may surface as *-tin*. This does not appear to be lexically conditioned, as *-ti*/*-tin* pairs occur for the same lexical item. This is seen in pairs consisting of (251) and (252), where *panti* and *pantin* both surface for 'atop, above'; it is also seen in (253) and (254), where *yelti* and *yeltin* both surface for 'behind.' *-tin* also surfaces in *potin* 'along' (255); *poti* is not attested.

(251) qeel pan-ti
house atop-DIR.LOC
'On the house' (5.6 P6 1953:6)

(252) son pan-tin ken-la
rock atop-DIR.LOC down-sit
'Sit on the rock' (BW Ch. 5 1978:8)

(253) qeel yel-ti
house behind-DIR.LOC
'behind the house' (5.6 P6 1953:6)

(254) yel-tin poo-ta
behind-DIR.LOC ASP-1
'[I] stayed behind' (5.6 P6 1953:5)

(255) mɛmpom po-tɪn
river beside-DIR.LOC
'beside the river' (Freeman 1953)

Directional morphemes to which *-ti* may attach include *nom* 'west' (66), *ʔel* 'at, in' (199), *pat* (as *pan*) 'atop' (203), *yel* 'behind' (205), *ol* 'above' (260), and *ken* 'down' (259). These are also observed acting as verbal prefixes. Additional morphemes taking directional locative *-ti* include *pel* 'far east' (207) and *ć'an* 'edge', possibly related to *c'an* 'half' (209). These latter roots are not attested as verbal prefixes.

(256) qeel 'el-ti
house in-DIR.LOC
'at, in the corner' (5.6 P6 1953:6)

(257) qeel pan-ti
house atop-DIR.LOC
'on the house' (5.6 P6 1953:6)

(258) qeel yel-ti
house behind-DIR.LOC
'behind the house' (5.6 P6 1953:6)

(259) mem khin-ti hay-ta
water down-DIR.LOC go-1
'[I] sank down' (5.6 P6 1953:5)

(260) 'ol-ti pal-ta
above-DIR.LOC roll-1
'[I] rolled over' (5.6 P6 1953:16)

(261) pe:l-ti pom
far.east-DIR.LOC land
'east' (4.4 N4 1958:10)

(262) ćan-ti
edge-DIR.LOC
'at the edge (5.6 P6 1953:6)

The directional words *nom* 'west' and *puy* 'east' may also receive the suffix *-da*, which appears unrelated to the first-person agreement marker *-da* (see Chapter 4.6 for discussion of the first-person marker). Directional *-da* appears cognate with Wintu *-da*, described as meaning 'very, [an] intensifier; from, of; suffixed also to directional and temporal adverbs' (Pitkin 1985:107). The latter two Wintu definitions seem most plausible for Nomlaki. Only three examples of directional *-da* have been observed in the corpus, shown in (263), (264), and (265).

(263) nom-da
west-DIR.ABL
'[on] this side' (Freeman 1953)

(264) pui-da
east-DIR.ABL
'[on] the other side' (Freeman 1953)

(265) se-da
both.sides-DIR.ABL
'along the edge' (Freeman 1953)

6.6 Pronominals & kinship terms

Nomlaki pronominals are marked for person (1, 2, 3,), number (singular, dual, plural), clusivity (inclusive and exclusive), noun aspect (particular, generic), and three syntactic cases (unmarked subjective, objective, possessive). Non-kinship and kinship nouns are marked with separate possessive pronoun sets. Third-person singular pronouns are derived from, and may still be used as, demonstratives.

Shepherd (2005:42) claims an animacy distinction between non-kinship possessives in Nomlaki. This distinction exists in Patwin (Lawyer 2021:375), but not Wintu. Shepherd (2005) claims that several alternations in the corpus are inanimate/animate possessive pairs. These include first-person singular *nehto/nehtum*, second-person singular *mohto/mohtum*, and third-person singular *putun/putum*. The animate possessive suffix appears in this analysis to be *-m*.

The claim that Nomlaki pronouns have an animacy distinction is difficult to verify because most possessed nouns in the corpus are kinship terms, which take a different set of possession markers than those for the common nouns in question. However, the claim is mostly not contradicted by the available data. This is exemplified by the difference in possessive marking between the animate *'elet* 'child' (266) and inanimate *qel* 'house' (267).

(266) moo-tum 'ellet
2SG-POSS.AN? child
'thy child' (5.6 P6 1953:3)

(267) ke-beya moh-to qEl
WH-ASP 2SG-POSS.INAN? house
'Where is your house?' (BW Ch. 6 1978:2)

However, there are exceptions to this pattern. (268) shows the noun *suku* 'dog' taking the possessive marker *mohto*, Shepherd (2005) hypothesizes as being inanimate. However, it is not the case cross-linguistically that non-human living beings are always grammatically animate (Swart and Hoop 2018).

(268) moh-to suku-t wIn-mena
2-POSS-INAN? dog-PARTIC see-POSB
'We might see your dog' (BW Ch. 4 1978:8)

Possessives ending in the possibly animate form *-m* do not occur in the Blankinship and Wenger (1978a) material at all.[1] The bulk of possessed examples (e.g. 5.6 P6 1953, 4.4 N4 1958, 4B 1956) were collected twenty years before Blankinship and Wenger (1978a). The absence of animate possessors in Blankinship and Wenger (1978a) may represent a language change, difference in language variety, or simply oversight. Because Shepherd's

[1]The one exception is 3SG.POSS *putuna*.

hypothesized distinction is not clear-cut in the available data, it is not included in the pronominal paradigms found in Chapter 6.6.

One potential pronoun is attested only a few times in the corpus. It is not generally listed in pronominal paradigm charts, like those in Shepherd (2005) or Blankinship and Wenger (1978a). This pronoun seems to be the same as the third-person demonstrative *ʔew*, in contrast with third-person distal demonstrative (and general third-person pronoun) *pi*. This is particularly suggested by Merriam (1919)'s examples shown in (269) and (270), which position *ʔew* and *pi* as contrastive third-person pronouns: *ʔew* is marked as the 'present' pronoun and *pi* is marked as the 'absent.' This is suggestive of a proximal/distal pronominal distinction.

(269) A-oo
3SG.DEM.PROX-GENER
'He (him, she, or her) (present)' (Merriam 1919:56)

(270) pe'
3SG.DEM.DIST
'He (him, she, or her) (absent)' (Merriam 1919:56)

pi is most attested in the corpus as a third-person singular pronoun, as in (271). However, *pi* may also be used to modify nouns as a demonstrative (272).

(271) pí múhuta-∅ (ni-s) bohá
3SG hear-INDIC 1SG-OBJ ASP
'He is listening to me now' (4.4 N4 1958:11)

(272) pi win kahala-∅ haiya-∅
3SG.DEM.DIST man be.crazy-INDIC go-INDIC
'That crazy man goes' (BW Ch. 4 1978:1)

Likewise, *ʔew* may be used pronominally (273) as well as demonstratively (274).

(273) ʔe-w łomu-meh ko no:p
3SG.DEM.PROX-GENER boil-CAUS DES deer.meat
'[That woman] will boil that deer meat' (4.4 N4 1958:15)

(274) ʔe-w-á wó:ti-t wit^{h}u:n
3SG.DEM.PROX-GENER-? be.short-PARTIC man
'He's a short man' (4.4 N4 1958:15)

There exists one attestation of *ʔew* participating in pronominal plural marking (275), a modest piece of evidence towards its inclusion in the pronominal paradigm. This form is likewise reported in Shepherd (2005)'s Nomlaki pronominal analysis.

(275) Ā-tok
3SG.PROX-PL
'They or them' (Merriam 1919:56)

Kinship terms

Kinship terms are distinguished from common nouns in that they take a unique set of possessive markers. In contrast with non-kinship possessive markers, which distinguish person and number, kinship possessive markers only distinguish person. The kinship possessive paradigm is shown in Table 6.3.

1	2	3
ne-*, net-***, nen-***	ma-*	le-*, puy-**

Table 6.3: Nomlaki kinship possessive pronominal paradigm. Forms marked with * are from Blankinship and Wenger (1978a); ** are from 4B (1956); *** are from 5.6 P6 (1953c).

The first-person kinship possessive surfaces as *net-* and *nen-*. *net-* is the most common form in the corpus. It surfaces in *netkuy* 'my daughter', *netp'okan* 'my wife', *netwi* 'my husband,' *netsomon/netɬen* 'my brother in law', *netceh* 'my brother', and *netc'uun* 'my elder sister' (5.6 P6 1953:25). It surfaces as *ne-* in *nennin* 'my mother', (5.6 P6 1953:24) and *nent'et* 'my aunt' (5.6 P6 1953:25). It surfaces as *ne-* in Blankinship and Wenger (1978a), though this may be a misinterpretation of *nen-*. It is not clear whether this alternation is phonologically or lexically conditioned.

Kinship terms are inalienably possessed, and must surface with an accompanying possessive marker. Body parts are not inalienably possessed. This is shown in (276), where *sennin* 'hand (instrumental)' surfaces without a possessor. The possessor that does surface (277) is the common first-person singular possessor *nehtu*, rather than the inalienable possessor *ne-*. Because kinship terms are the only nouns seen to participate in this behavior, these possessives are here simply called 'kinship possessives'.

(276) senn-in ni hahpu-ta
hand-INS 1SG gather-1
'[I gathered with my hands]' (5.6 P6 1953:4)

(277) nehtu sem-in ha-mi-ta
1SG.POSS hand-INS go-CAUS-1
'[I] carried it with hand' (5.6 P6 1953:23)

The unique status of kinship possessives can be seen in the contrasting expression of the first person singular possessive in (278) and (279). In (278), the possessed noun is the kinship term *nin* 'mother', and receives the first-person kinship possessive *nen-*; in (279) the possessed noun is the body part *des* 'back', which receives the non-kinship possessive *nehtum*.

(278) nen-nin
1POSS.KIN-mother
'my mother' (5.6 P6 1953:24)

(279) neht-um des
1SG-POSS back
'my back' (Whistler 1976:111)

In one instance in the corpus, a kinship term is doubly marked with both non-kinship and kinship possession (280). As this construction occurs only once, it is probable that this is idiolectal. It may represent a more recent change in the language, possibly due to a reanalysis of the possessed kinship term as the root kinship term (the most likely cause of which is prolonged language community contact with English). Note also that the non-kinship possessive used in (280) is *mohto*, which Shepherd (2005:42) hypothesizes is inanimate.

(280) moh-to ma-ni:n
2SG-POSS 2POSS.KIN-mother
'mother' (4B 1956:4)

In some instances, kinship terms are elicited alone, without a corresponding possessor, as in (281) and (282).

(281) camán
grandmother
'grandmother' (4.4 N4 1958:2)

(282) belúh
mother-in-law
'mother-in-law' (4.4 N4 1958:2)

The behavior seen in (281) and (282) is somewhat anomalous. Most kinship terms in the corpus are elicited with kinship possessors, even when glossed without them, suggesting that they are obligatory. Examples of this are shown in (283), (284), and (285). In their Nomlaki pedagogical textbook, BW Ch. 3 (1978c:5) also explicitly state that kinship terms cannot occur alone. It is possible that not all terms which refer to kinship semantically are kinship terms grammatically. It is also possible that this reflects a linguistic change in progress at the time of recording.

(283) ne-tcé:
1POSS.KIN-grandchild
'[my] grandson, granddaughter' (4.4 N4 1958:9)

(284) net-kuy
1POSS.KIN-son
'[my] son' (5.6 P6 1953:25)

(285) net-p'oqan
1POSS.KIN-wife
'[my] wife' (5.6 P6 1953:25)

Pronominal paradigms

Tables 6.4-6.7 show pronominal paradigms for each grammatical person: first-person exclusive (Table 6.4), first-person inclusive (Table 6.5), second person (Table 6.6), third-person proximal (Table 6.8), and third-person distal (Table 6.7). As seen, there exist many unknown forms for each person.

Each existing form is marked (via superscript) for a source containing it: 1 (5.6 P6 1953), 2 (Barrett 1908), 3 (4B 1956), 4 (4.4 N4 1958), 5 (Blankinship and Wenger 1978), 6 (Freeman 1953), 7 (Merriam 1919), 8 (Shepherd 2005), 9 (4.2 N2 1953). This should not imply that these pronouns occur exclusively in the above sources, but rather that at least one example occurs in them.

	SUBJ	OBJ	POSS	POSS.KIN
1SG	ni[1]	nis[1]	nehto[1], nehtum[1]	ne-[5]/net-[3]/nen-[3]
1SG.EMPH	niya[1]			ne-[5]
1DU	nEl[1] /nEla[1]			ne-[5]
1DU.PARTIC	nelet[4]		nelletun[1]	ne-[5]
1PL	nihtak[5]	nihtak[5]	nihtak3m [5]	ne-[5]

Table 6.4: Nomlaki first-person exclusive proniminal paradigm.

	SUBJ	OBJ	POSS	POSS.KIN
1SG				
1SG.EMPH				
1-DU	p'el[6]		pellā'toon[7]	ne-[5]
1DU.PARTIC	p'-el-et[3]		nelletun[1]	ne-[5]
1PL	p'eehtak[1]		pellā'toon[8]	ne-[5]

Table 6.5: Nomlaki first-person inclusive proniminal paradigm.

	SUBJ	OBJ	POSS	POSS.KIN
2SG	mi[1]	mis[1]	mohto[5], mootum[1]	ma- [5]
2SG.EMPH	miya[3]			ma- [5]
2DU	mEl[6], millooqe[1], me:l-palel[8]		mel-pahlatoon[8]	ma- [5]
2DU.PARTIC				ma- [5]
2PL	mihtak[5]	mihtak[5]	mihtak3m[5], matoktoon[7]	ma- [5]

Table 6.6: Nomlaki second-person proniminal paradigm.

	SUBJ	OBJ	POSS	POSS.KIN
3SG	pi[1]	puta[1], put[5]	putuna[5], putun[1], putum[8]	putuna[8], le-[5]
3SG.EMPH	piya[1]			le-[5]
3DU	piloqEl[5]	piloqEl[5]	piloq3m[5]	le-[5]
3DU.PARTIC				le-[5]
3PL	pihtak[5]	pihtak[5]	pitak3m[5], pe'tawktoon[7]	le-[8]
3PL.EMPH	piitaqa[9]			le-[5]

Table 6.7: Nomlaki third-person (distal) proniminal paradigm.

	SUBJ	OBJ	POSS	POSS.KIN
3SG.PROX	aoo[7]		ātō[7], ātum[7]	
3SG.EMPH PROX				
3DU.PROX	ā'oo pahlel'			
3DU.PARTIC PROX				
3PL.PROX	ātok[7]			

Table 6.8: Nomlaki third-person (proximal) pronominal paradigm.

Chapter 7

Nomlaki syntax

This chapter discusses the main points of Nomlaki syntax, including word order, argument optionality, auxiliary verbs (including aspectual, proximal, desiderative, and negative auxiliaries), particles, subordinate clauses, and illocutionary acts. The auxiliaries *be* and *bo* occur in many constructions glossed with the English copula *be*. In this chapter, I present evidence that Nomlaki does not have copulas at all, and that these verb instead encode verbal aspect. *be* and *bo* are cognate with Wintu 'imperfective' and 'durative' auxiliaries *bEy* and *bOh* (Pitkin 1984:181–185). There is some evidence that *be* and *bo* respectively mark imperfective and perfective aspect, though it is not conclusive.

7.1 Word order and argument optionality

Nomlaki is SOV, and nominative-absolutive in alignment (see Chapter 6.1). Nouns are marked for five syntactic cases: objective, possessive, instrumental, locative, and ablative. Subjects are not overtly marked, and objective case appears to be optional. The marking of formal grammatical case is a reported feature of Penutian, and a distinguishing feature of these languages in comparison to others in California. Adpositions are realized postpositionally, in line with cross-linguistic tendencies discussed in Greenberg (1963). Like other hypothesized members of the Penutian language phylum, Nomlaki is a primarily suffixing language that marks more formal grammatical categories (such as person, aspect, and mood) than is typical for a California language. Nomlaki verbs are inflected for three stems, the exact shape of which is determined by a verb root's membership in one of (at least) 11 conjugational classes. Each stem is conditioned by a collection of suffixes which occur in a fixed order with respect to each other and the verb root. Stems and their associated suffixes may be reanalyzed as a new root to which new suffixation may attach, allowing for a high degree of possible agglutination.

A typical example of Nomlaki word order is shown in (286).

(286) n-e:l pal-ét wín-dah
1-DU two-PARTIC see-1

'We two saw them two.' (4.4 N4 1958:9)

SOV word order applies to embedded verb phrases as well as matrix clauses. If the noun modification shown in (287) is taken to be an embedded clause, then this clause's word order is still verb-final. Adpositional phrases like *qeel kenti* 'below the house' (288) are also head-final (288).

(287) son kuta-∅ we'-∅
rock be.black-INDIC give-IMP
'Give me the black rock' (BW Ch. 4 1978:2)

(288) qeel kenti
house down-DIR.LOC
'below the house' (5.6 P6 1953:6)

When an auxiliary verb is present, person-marking attaches to the auxiliary rather than the main verb. This is illustrated in (289) and (290), whose subject is both first-person. In (289), where there is no auxiliary verb, first-person agreement attaches to the main verb *bala* 'to lie'. This contrasts with (290), where both the main verb *bala* 'to lie' and the negative auxiliary verb *elewa* are present. In this example, agreement marking attaches to the auxiliary rather than the main verb. This is a diagnostic for auxiliary verb membership that I use throughout the grammar.

(289) leanin mi-s bala-da
yesterday 2SG-OBJ lie-1
'Yesterday I lied to you.' (BW Ch. 5 1978:5)

(290) ElEo-da bala-mena
NEG-1 lie-NEG
'I'm not lying.' (BW Ch. 5 1978:5)

In transitive constructions, it is most common for the subject to be dropped, while the object remains overtly expressed (291). It is also possible to drop the subject in intransitive constructions (291), as well as both the subject and object in transitive constructions (293, 294). As subject agreement does not mark number, and object agreement does not exist at all, it is not possible in some circumstances to fully reconstruct the subject and object pronoun if either are dropped.

(291) piloq-El Elhilci-da
3-DU help-1
'I'm helping those two.' (BW Ch. 2 1978:7)

(292) wahcu-ta
cry-1
'[I] wept.' (5.6 P6 1953:13)

(293) muta-∅
hear-INDIC
'He heard it.' (5.6 P6 1953:13)

(294) ken-c'uulu-ta
down-pour-1
'[I] poured it.' (5.6 P6 1953:23)

When a non-pronominal noun is expressed, its grammatical role is usually inferred from word order or context. Subject case is always unmarked, while objective case is not marked consistently (perhaps reflecting changes in usage at the time of the materials' recording; see Chapter 6.1 for more discussion). Only the first-, second-, and third-person singular pronouns have distinct recorded subject and object forms.

Auxiliary verbs are typically clause-final, as with the aspectual auxiliary *bo* in (295).

(295) mí-ya t'ípna-∅ boh-ken
2SG-EMPH know-INDIC ASP-2
'You know it.' (4.4 N4 1958:8)

The negative auxiliary *elewa* may co-occur with aspectual auxiliaries, as in (296). In such cases, verbal agreement attaches to the negative auxiliary. As seen in (290), the negative auxiliary *elewa* typically occurs before the verb phrase it negates.

(296) 'elee-ta poh-mina 'ikina
NEG-1 ASP-NEG here
'[I] am not here.' (5.6 P6 1953:4)

Verbal adjuncts may include modifiers of time (as with 297 and 298), direction (299), and postpositional phrases (300). Adjuncts commonly occur at the beginning (297) or end of the clause (299); when they occur elsewhere, they typically precede the verb (298).

(297) leyanin mi' ni-s Elhilcu'-∅
yesterday 2SG 1SG-OBJ help-INDIC
'You helped me yesterday.' (BW Ch. 4 1978:5)

(298) pih-tak leyanin hEna'-∅
3-PL yesterday return.home-INDIC
'They returned yesterday.' (BW Ch. 4 1978:6)

(299) hay-ta 'uhkuuk
go-1 that.way
'He went that way.' (5.6 P6 1953:4)

(300) mem khin-ti hay-ta
water down-DIR.LOC go-1
'[I] sank down.' ['I went into the water.'] (5.6 P6 1953:5)

7.2 Auxiliary verbs

The status of copulas

The verbs *be* and *bo* frequently occur in sentences expressing identification, existence, or locative linking; that is, in functions typical of copula-type constructions. Many assert that copular constructions can only express identification ('A is B') (Freeze 1992). This work adopts an expanded definition. In addition to verbs that link predicates to predicative expressions of identification, classification, specification, or characterization, this grammar will also consider existential copulas ('There is X') and locative copulas ('X is in Y').

The candidate Nomlaki copulas *be* and *bo* are cognate to the Wintu 'imperfective auxiliary' *bEy* and 'durative attributive auxiliary' *boh* (Pitkin 1984:181–184), as well as the Patwin inanimate/animate stative auxiliaries *be:* and *boh* (Lawyer 2021:336). *be* and *bo* both frequently occur in sentences that are translated with only a noun phrase, as in (301). These sentences are assumed to be identificational and/or classificational. Thus, (301a) expresses that the time under discussion is during the winter season, and (301b) expresses that the first-person subjects are two in number (text in brackets reflect this presumed meaning).

(301) a. pomsin pea
winter ASP
'[It is] winter' (5.6 P6 1953:9)

b. palɛl bo-da
two ASP-1
'We [are] two' (Freeman 1953)

More complex examples showing *be* and *bo* expressing identification/characterization are shown in (302). In (302a), the speaker expresses an equivalence between an indicated object and an item he has made. In (302b), the speaker characterizes an indicated person as tall.

(302) a. 'e-w ne cinii-∅ pe-m
3SG.DEM.PROX-GENER 1SG make-NOM ASP-?
'[I] made this [This is a thing I have made]'. (5.6 P6 1953:23)

b. ʔe-w-ʹa: ʔolé:la-∅ bohó-m
3SG.DEM.PROX-GENER-? tall-INDIC ASP-?
'He is a tall man [That one is tall]' (4.4 N4 1958:15)

Both *be* and *bo* can also occur in locative predications, as in (303). Note that in (303b), there is apparent disagreement between the third-person subject and first-person verbal agreement here. I think the most likely solution is simply a mishearing of first-person pronoun *ni* as third-person *pi*.

(303) a. pu-tun qél nóm-póm-in béya
3SG-POSS house west-place-LOC ASP

'His house is in the woods" (4.4 N4 1958:11)

b. mii palle-t wenem pi poo-ta
tree two-PARTIC between 3SG ASP-1
'[I am] between two trees' (5.6 P6 1953:6)

Thus far, we have seen evidence that *be* and *bo* can express identification, classification, and location. However, there also exists some indication that copulas of any sort are not required in Nomlaki, as shown in (304) and (305).

(304) e-o moh-to suku-t
3SG.DEM.PROX-GENER 2SG-POSS dog-PARTIC
'Is this your dog?' (BW Ch. 6 1978:2)

(305) ʔe-w-á wó:tit wit^{h}u:n
3SG.DEM.PROX-GENER-? be.short-PARTIC man
'He's a short man' (4.4 N4 1958:15)

As seen, (304) and (305) are identificational 'A is B' constructions. If copulas were obligatory, we would expect one in these sentences. However, neither *be* nor *bo* (nor any other auxiliary verb) are present. If *be* and *bo* are not required in copular constructions, it is possible that they are not copulas at all. Their syntactic behavior (e.g. taking verbal person agreement) indicates that they are auxiliary verbs of some kind. The Wintu and Patwin cognates to *be* and *bo* seem to serve an aspectual purpose, so it is likely *be* and *bo* do as well. However, narrowing down these verbs' precise function is challenging.

Auxiliary verb *be*

As seen above, *be* may appear in constructions that link subjects to predications of identification (301, 302) or location (303). *be* is cognate to Wintu *bEy*, which 'participates in predications which are generally, reliably, and continuingly true' (Pitkin 1984:181). Wintu *bEy* is classified as an imperfective marker with origins in the evidential system, ultimately from the verb *bEy* 'lie down.' Wintu *bEy* is noted to be in 'nearly complementary distribution' with the 'durative auxiliary' *bOh*, suggesting an imperfective/perfective pair.

In addition to Wintu *bEy*, Nomlaki *be* is also cognate with the Patwin inanimate stative auxiliary *be:* (Lawyer 2021:336). It is not true that all subjects taking Nomlaki *be* are inanimate, as (310) and (311) involve asking the subject about their personal state ('to be about', 'to be well'). Nomlaki *be* often occurs as *bem*, cognate to Wintu *bem* 'own, possess, have, belong', from aspect marker *bEy* and the generic comitative *-m* (Pitkin 1985:15). The existence of the generic comitative in Nomlaki is difficult to demonstrate, and so it is not included in this grammar. It is not fully understood how Nomlaki *bem* differs from *be*.

There exists some evidence that Nomlaki *be* may function as an imperfective marker, defined here as where Eventuality Time (ET) includes Topic Time (TT): $TT \subset ET$ (Klein

1994, Cover and Tonhauser 2015). Assessing these elements in Nomlaki, particularly with regard for TT, is difficult when little context is generally given. Within examples with *be*, no TTs are explicitly mentioned, and I will assume (in some cases, likely wrongly) that they refer to the Utterance Time: that is, the current moment for the speaker. Examples (306), (307), (308), (309), (310), (311) are shown below, with this presumed topic time in brackets. In all of these examples, the ET is the time at which the statement holds: for (306), being winter; for (307), being in five places; for (308), being in the woods; for (309), being in the west, for (310), being about, and for (311), being well. In all of these examples, the respective Eventuality Times is assumed to include the Topic Time of the current moment, making an imperfective reading possible.

(306) pomsin pea
winter ASP
'[It is currently] winter.' (5.6 P6 1953:9)

(307) cámsem bee
five ASP
'[currently] in five places' (5.6 P6 1953:6)

(308) put-un qél nóm-pòm-in béya
3SG-POSS house west-place-LOC ASP
'His house is [currently] in the woods' (4.4 N4 1958:11)

(309) nEh-to qEl way-e bea
1SG-POSS house west-DIR.LOC ASP
'My house is [currently] in the west' (BW Ch. 5 1978:8)

(310) q'ayyaa-∅ peya-m
be.alive-INDIC ASP-DUB
'Are you [currently] about?' (5.6 P6 1953:2)

(311) cala-∅ be-m
be.good-INDIC ASP-?
'I'm [currently] well' (Freeman 1953)

An imperfective reading is less clear for (312): 'What time is it?' Here, the ET is the current time; the use of *hessem* 'how many' seems to imply a particular hour of the day. The TT is again likely the UT, or time of utterance. In this example, an imperfective reading is possible if one assumes the ET is perhaps an hour of the day, and the TT is the current moment within that hour.

(312) hessém beyá
how.much ASP
'What time is it [currently]?' (4.4 N4 1958:4)

As the next section will discuss, there are several constructions using *bo* where it is not clear what prevents *be* from being used, or what meaning(s) may change if it were used. Because these readings are predicated so heavily on the English translations, they are also likely inaccurate in other ways, including the fact that I am judging Nomlaki temporal relations largely by an English translation. It would be ideal if I could find minimal pairs showing how a change in the relationship between ET and TT causes an alternation in the use of *be* and *bo*; it would be even more ideal to find *negative* examples of why *be* cannot be used in perfective contexts (as Cover and Tonhauser 2015 suggest). Such examples are not available in the corpus as it stands. While an imperfective reading does not seem to be ruled *out* by the facts described above, it does not offer conclusive evidence either.

Auxiliary *bo*

The morpheme *bo* appears cognate to the Wintu 'durative' auxiliary *boh*, which expresses 'the duration or extension in time' of an action Pitkin 1984:184. As with *be*, *bo* has been observed in constructions of identification (301) and location (302). Although Pitkin does not describe Wintu *boh* as perfective (this is given to *suk*), it is noted to be nearly in complementary distribution with the 'imperfective auxiliary' *bEy*. As with *be*, *bo* sometimes occurs in the construction *bom* (319), which in Wintu is analyzed as the combination of *bo* and the generic comitative *-m*.

In addition to Wintu, *bo* is cognate to the Patwin animate stative auxiliary (Lawyer 2021:336), and it is indeed true that all existing usages of *bo* in the Nomlaki corpus involve animate subjects. Nomlaki *be*/*bo* are in complementary distribution. If Wintu *bEy*/*bo* represent an imperfective/perfective distinction, it is possible that Nomlaki *be*/*boh* represent something similar. Under this analysis, *bo* may serve as a perfective marker, defined as where Topic Time includes Eventuality Time: $ET \subseteq TT$ (Klein 1994, Cover and Tonhauser 2015). However, assessing these elements is difficult when little context is generally given.

A perfective reading entails that Topic Time (TT) includes the Eventuality Time (ET). There are only two examples in the corpus with an explicit TT: (313) with *le:nen* 'yesterday' and (314) with 'now', though this latter TT is only included in the English translation. In (313), the ET is the act of the addressee seeing the speaker, and it indeed appears that this ET is fully contained within the TT of *yesterday*. This reading is more strained in (314), as the TT 'now' is only contained in the English gloss, and this gloss seems to imply an imperfective. However, the fact that this TT is not included in the original Nomlaki makes it possible that the speaker Andrew Freeman intended a different meaning than what Swadesh transcribed in English. It is also possible that this act of hearing is intended to be punctual; under this reading, the act of hearing (ET) happens in the same moment as *now* (ET), lending a perfective reading.

(313) le:nen ni-s winá:-∅ boh-ken
yesterday 1SG-OBJ see-INDIC ASP-2
'Yesterday you saw me' (4.4 N4 1958:6)

(314) pí múhuta-∅ ni-s bohá
3SG hear-INDIC 1SG-OBJ ASP
'He hears me now' (4.4 N4 1958:10)

Other examples, though lacking an explicit TT, also seem to have a plausible perfective reading. This includes (315). Here it seems plausible that the act of staying behind (ET) occurred within some past TT (say, yesterday). (318) describes an ET of knowing, which, as a state, is likely not imperfective. It is notable that both examples glossed with the English past tense are marked with possible perfective marker *bo*, rather than possible imperfective marker *be*.

(315) yel-tin poo-ta
behind-LOC ASP-1
'[I] stayed behind' (Freeman 1953)

There are other examples where a perfective reading seems strained. This includes (316), (317), (318) and (319), where an imperfective reading seems more likely given the English gloss– however, the English gloss is not necessarily accurate, particularly in subtle matters like aspect. The use of *bo* is particularly interesting with *t'ipna* 'to know' which is typically defined as a state, and thus lends itself to the imperfective. As with *muta* 'hear' in (314), a perfective reading seems possible if 'know' is interpreted as a punctual, more akin to 'find out.'

Several examples in this section have analogues which take *be*, making it unclear what aspectual information distinguishes them. Compare (307), (308), and (309), also describing the subject's current location, but where *be* is used instead; compare also (310) and (311) to (319), the first two of which describe a user's emotional or physical state using *be*.

(316) khiin poha-m
where ASP-DUB
'Where is he?' (Freeman 1953)

(317) mii palle-t wenem pi poo-ta
tree two-PARTIC between 3SG ASP-1
'[I am] between two trees' (5.6 P6 1953:6)

(318) mí-ya t'ípna-∅ boh-ken
2SG-EMPH know-INDIC ASP-2
'You know it' (4.4 N4 1958:8)

(319) k'aysa-∅ pooha-m
be.alive-INDIC ASP-DUB
'Are you well?' (5.6 P6 1953:1)

Other examples of *bo* are seen in (320) and (321). These examples again seem not to be obviously perfective, as they seem to describe eventualities (states) that contain the topic time.

(320) n-el qa boo-ta
1-DU together ASP-1
'[We] are together' (5.6 P6 1953:4)

(321) ʔe-w-á c'épaʔ-∅ bohó-m
3SG.DEM.PROX-GENER-? be.bad-INDIC ASP-?
'He's a bad man' (4.4 N4 1958:15)

Taken together, there is some evidence that *be* and *bo* represent an imperfective/perfective distinction, but it is not enough to be conclusive. As Cover and Tonhauser (2015) note, it is not sufficient to surmise the relation of ET and TT in a given utterance; there must also be counterexamples showing that a particular aspectual marker *cannot* be used in the same situation. It is not possible to elicit counterexamples for these data points. Worse, there appear many constructions that seem to describe the same situation, but use different aspectual markers: compare (308) and (309) using *be* vs (316) and (317) using *bo* to describe a subject's location, or (310) vs (311) using *be* vs (319) using *bo* to describe a person's health and current state. While more examination is needed into these auxiliary verbs, it is possible that their exact status and behavior might never be fully understood.

Proximal auxiliary *ʔiya*

Proximal auxiliary *ʔiya* is cognate with the Wintu auxiliary *ʔih* 'act proximately, make nearby, do nearby' (Pitkin 1985:806) and the Patwin copula *ʔi/ʔih* (Lawyer 2021:333). In Wintu, this is ultimately from *ʔi:/h* 'to do, use'. As very few examples of *ʔiya* are attested in Nomlaki, its semantic meaning is largely inferred from Wintu. It is largely untranslated in existing examples, as in (322) and (323), and frequently occurs with the completive *-k* (322, 324).

(322) no:p henma-∅ ʔiya:-k ni ʔuni
deer return.home-INDIC do.prox-COMP 1SG REPRT
'They used to bring home deer then, they say.' (4.4 N4 1958:10)

(323) ho:na ni po:ke:-ba p'uk-ca-∅ hah-∅ ʔiya:-∅
long.ago 1SG boy-HUMAN.PL hunt-TRANS-INDIC go-INDIC do.prox-INDIC
'When I was a boy, I used to go hunting with my grandfather.' (4.4 N4 1958:4)

In some cases, *ʔiya* clearly selects for the nominalized form of the main verb, as in (324): compare *wina* 'see'. As a verb's nominal form may be the same shape as its indicative or imperative for some verb classes, it is unclear whether this is true for all verbs.

(324) lé:nen winíh-∅ iya-k ni
yesterday see-NOM? do.prox-COMP 1SG
'I saw you, yesterday.' (4.4 N4 1958:6)

Desiderative *ko*

Desiderative *ko* is cognate with Wintu auxiliary *kuy*, which indicates 'intent, preference, or desire' (Pitkin 1984:207). There does not appear to be a clear Patwin cognate to either. As with Wintu *koya*, there is some evidence that *ko* selects for the nominalized form of the main verb. This is seen most clearly in (332b) and (333b). The first person agreement marker *-da* selects for the form *ku*, also as in Wintu (*cf.* Wintu *koya* 'want', *kuda* 'I want'; Pitkin 1984:190). Also as in Wintu, *ko* may be used to express desire (325) as well as future events (326).

(325) niya hah ku-ta
1SG go DES-1
'[I] wanted to go.' (5.6 P6 1953:21)

(326) ʔe-w łomu-meh ko no:p
3SG.DEM.PROX-GENER boil-CAUS DES deer
'The woman will boil the deer.' (4.4 N4 1958:15)

ko may also be used with attempted actions. It appears in (327) as an element of a subordinate clause.

(327) hah koa ceppa-mi-ta
go DES try-?-1
'[I] tried to go.' (5.6 P6 1953:22)

ko may also be used in expressions of deontic modality, as in (328).

(328) ha ku-da hêpên
go DES-1 ?
'I have to go now.' (4.1 N1 1951:2)

In a likely colloquial sense, *ko* is also seen in some expressions expressing taste (329):

(329) we:l kuyá:-∅
salt DES-INDIC
'It tastes salty' (4.4 N4 1958:14)

Diachronically, *ko* seems to derive from the verb *kowa* 'to hurt', as seen in (330) and (331). This analysis is shared by Pitkin for Wintu (Pitkin 1984:190).

(330) phooq kow-ta
head hurt-1
'My head hurts' (5.6 P6 1953:18)

(331) kha-t kow-ta
stomach-PARTIC hurt-1
'My belly hurts' (5.6 P6 1953:18)

There is some evidence that desiderative *ko* selects for the nominal form of the main verb. (332) shows two forms of *pol-* 'buy.' In (332a), the verb *pol-* 'buy' is suffixed to the first-person agreement marker *-da*, which conditions the indicative form *poluu*. In (332b), the verb takes the seemingly nominal form *poli* when followed by desiderative *ko*.

(332) a. poluu-ta
buy-ASP
'[I] bought a horse' (5.6 P6 1953:24)
b. poli ko-da
buy DES-1
'I want to buy [a horse]' (BW Ch. 4 1978:2)

A similar pattern is shown in (333), where first-person agreement triggers the indicative *Xa* form of *c'a:w-* 'sing' in (333a), while the desiderative seems to trigger the nominal *Xi* form (333b).

(333) a. c'aawo-da
sing-1
'I sing' (BW Ch. 2 1978:1)
b. c'aawi-∅ ko-da
song-NOM DES-1
'I will sing' (BW Ch. 4 1978:9)

Negative auxiliary *elewa*

The verb *elewa* may be used as a main or auxiliary verb. As a main verb, it is used to show negative existence (334) or lack of possession (335):

(334) pia ɛlɛwa
3SG NEG
'He's not here' (Freeman 1953)

(335) 'elew-ta poosaq
NEG-1 club
'I don't have a stick [club]' (5.6 P6 1953:4)

elewa may also be used adverbially to mean 'never' (336), as well as to answer a question negatively (337):

(336) 'eleewa
NEG.COP
'never' (5.6 P6 1953:8)

(337) 'eleewa
NEG.COP
'no' (5.6 P6 1953:1)

In verbal negation, *elewa* occurs with the syntactically dependent suffix *-mena* (338), here used (in its probably original sense) as a negative marker.

(338) ni-ya 'elewa 'u-mmena
1SG-EMPH NEG say-NEG
'I didn't say' (5.6 P6 1953:4)

While *-mena* always attaches to the verb under negation, the placement of *elewa* is more flexible. It may precede only the verb, as seen in (338) or (341), or the entire verb phrase, as in (339) or (340). It is unclear if *elewa*'s attachment at either the word or phrase level corresponds to a difference in scope.

(339) ElEw-da mi-s wIn-mena
NEG-1 2SG-OBJ see-NEG
'I didn't see you' (BW Ch. 5 1978:2)

(340) ElEw-da nom-ti-pom hay-mena
NEG-1 west-DIR.LOC-place go-NEG
'I didn't go to Covelo [Nomtipom]' (BW Ch. 5 1978:1)

elewa may also negate the aspectual auxiliary *bo* (and likely *be*) (341).

(341) 'elee-ta poh-mina 'ikina
NEG-1 ASP-NEG here
'[I] am not here' (5.6 P6 1953:4)

elewa may also be used in relative clauses within a noun phrase (342).

(342) qhaaɬ 'elew-ta tipna-mina
other NEG-1 know-NEG
'stranger' [lit. 'outsider I do not know' (5.6 P6 1953:19)

-mena is cognate to the Wintu negative suffix *-mina* (Pitkin 1984:121), which similarly co-occurs with Wintu *elewa* to form negative constructions. The combined Nomlaki/Wintu evidence suggests that Nomlaki *-mena* originally began as a negative suffix, a role reflected in its use in verbal negation and negative commands. However, when used alone, *-mena* developed into expressing possibility, without any negative reading. This appears to be a Nomlaki innovation.

As an auxiliary, person agreement typically attaches to *elewa*. However, it is possible for such agreement to attach to the main verb instead. (343) shows an example of the first-person agreement marker *-da* attaching to both a main verb (343a) and the auxiliary *elewa* (343b).

(343) a. ʔɛlɛw lɛ:q-lɛqa-dah mena
NEG speak-speak-1 NEG
'I'm not talking to you' (4B 1956:16)

b. ni ɛlɛ-da u-m:ena
1SG NEG-1 say-NEG
'I did not say' (Freeman 1953)

(343a) is an additionally interesting example because of the presence of *-mena* following *-da*. Some evidence (116) suggests that *-mena* and *-da* may not co-occur, yet the two plainly do in (343). However, *-mena* is not used in (343b) as a marker of possibility, but rather as part of a negative construction. One analysis is therefore that *-mena*/*-da* restrictions are limited to *-mena*'s usage as a possibility marker. Another possibility is that *-mena* in its capacity as a negative is an auxiliary or some otherwise verbal element.

7.3 Particles

The concept of the particle varies from framework to framework. It is used here chiefly in the sense described by Zwicky (1985:290), as a general term for morphemes which are not easily categorized into more established word classes. While clitics are phonologically dependent morphemes (e.g. they do not receive independent stress), particles do not have this restriction. It is possible that some of the morphemes described here are clitics: however, as the sources used in this grammar are mostly without audio, it is difficult to assess the prosodic properties of these units.

The particle *i* occurs most commonly in negative commands, as in (344) and (345). *i* is also documented once expressing deontic modality (346). This suffix does not have a known cognate in either Wintu or Patwin, and it is difficult to understand its function in the contexts available. This grammar's description of the particle *i* as a 'mysterious morpheme' fits closely into Zwicky's observations on this topic, noting that 'reference to 'mystery particles' in South American languages is a typical use of the term [particle]' (Zwicky 1985:290). It is glossed simply as PARTIC in this grammar.

(344) witila-mena i
run-NEG PARTIC
'Don't run.' (BW Ch. 6 1978:3)

(345) leaqa-mena i
talk-NEG PARTIC
'Don't speak.' (BW Ch. 6 1978:3)

(346) nii hay-paq i
1SG go-BEN PARTIC
'[I] ought to go.' (5.6 P6 1953:22, N3 1953:14)

Reported speech is marked with the reportative particle *ʔuni*. As the speech reported is not direct, it is not glossed as a quotative. Only one example of this morpheme is attested, shown in (347).

(347) no:p henma-∅ ʔiya:-k ni ʔuni
deer bring.home-INDIC do.thus-COMP 1SG RPT
'They used to bring home deer then, they say.' (4.4 N4 1958:10)

Topic and focus are rarely elicited, and difficult to identify in general. There do not appear to be topic or focus particles (or markers of any kind) within the corpus.

7.4 Subordinate clauses

Few subordinate clauses are attested in the Nomlaki corpus. Of the sentences attested, complement clauses are expressed without specialized morphology or conjunctions. The subordinate clause appears to the left of the main clause. In complement clause constructions, person agreement attaches to the matrix verb. As the embedded clause is the complement of the matrix verb, it occurs to its left. This is shown in (348) and (349).

(348) hah koa ceppa-mi-ta
go DES try-ʔ-1
'[I] tried to go.' (5.6 P6 1953:22)

(349) hah-paqay bet'aan haay-ta
go-BEN ? go-1
'[I] had to go.' (N3 1953:5)

In the example below, it is likely the first *cala:* 'be good' is repetition; thus the independent clause is the second *cala:* 'be good', and the dependent clause is *soni:n ɬe:t k'oymha* 'to kill a snake with a rock' (350).

(350) cala:-∅ son-i:n ɬe:t k'oym-ha cala:-∅
be.good-INDIC rock-INS snake kill-STAT be.good-INDIC
'It is good to kill a snake with a rock.' (4.4 N4 1958:1)

Some complement clauses take nominalized dependent clauses, as in (351).

(351) c'awwi-∅ kemi-ta
sing-NOM finish-1
'[I] finished singing.' (N3 1953:2)

Dependent clauses expressing reason ('because') are expressed (in the single attested example) by nominalizing the dependent clause, as seen in (352). That the dependent clause is indeed nominalized is evidenced by the addition of the nominal particular suffix *-t* to this clause.

(352) ma-tʃiya-t wɛ-da
2POSS-call-PARTIC come-1
'I came because you called me.' (Freeman 1953)

7.5 Illocutionary acts

Because archival recordings lack so much context, this grammar generally shies away from commenting on pragmatic meaning. However, we can gain a general sense of basic illocutionary acts. The following section will broadly explore declarative, interrogative, and imperative sentence types in Nomlaki. Many illocutionary types are only represented by a few sentences. As with all discussions in this grammar, and with pragmatics discussion in particular, everything should be taken with the knowledge that examples are limited, and there exist no current first-language speakers to consult.

The most common declarative sentences observed in the corpus are assertions. Nomlaki assertions do not appear to take special morphology, besides a null indicative morpheme. Examples of declarative sentences are shown in (353), (354), and (355).

(353) ʔe-w-á: c'épa-∅ bohóm
3SG.DEM.PROX-GENER-? be.bad-INDIC ASP
'He's a bad man' (4.4 N4 1958:15)

(354) wIn boya-∅ wea-∅
man be.many-INDIC come-INDIC
'Many men are coming' (BW Ch. 4 1978:2)

(355) ʔe-w-á wó:ti-t wit^{h}u:n
3SG.DEM.PROX-GENER-? be.short-PARTIC man
'He's a short man' (4.4 N4 1958:15)

Negative existential assertions are achieved with the negative existential verb *elewa* (356). Negative non-existential assertions are made by placing the negative auxiliary *elewa* before the target clause, and suffixing *-mena* (here used in its diachronic negative sense) to the final verb of the clause (357).

(356) pi-a ɛlɛwa
3SG-EMPH NEG
'He's not here' (Freeman 1953)

(357) ni ɛlɛ-da u-m:ena
1SG NEG-1 say-NEG
'I did not say' (Freeman 1953)

One example of a declarative suggestion is recorded (358). In this example, the verb *hay-* 'go' is accompanied by both the benefactive suffix *-paq* and the particle *i*. *i* appears only in this construction, as well as negative commands (discussed below). It is of course difficult to generalize with a single example. It is unclear whether the benefactive suffix appears here because the target of the suggestion is the speaker (which the action benefits), or because it is a general feature of the construction.

(358) nii hay-paq i
1SG go-BEN PARTIC
'[I] ought to go.' (5.6 P6 1953:22, N3 1953:14)

One declarative invitation appears in the corpus as (359). In this sentence, the speaker invites the addressee to tell him something, using the hortative marker *-le*. As discussed in Chapter 4.5, *-le* is used in several related contexts, including to express ability and deontic modality. It is likely not used in (359) to express ability or permission, but rather to invite the addressee to do something. Though it is glossed in English as a question, it does not follow Nomlaki interrogative structure and is assumed here to be a declarative.

(359) ni-s mi yomoy-le
1-SG-OBJ 2SG tell-PL.HORT
'Can you tell me?' (5.6 P6 1953:3)

Polar interrogative questions are marked with the dubitative morpheme *-m*, as shown in (360), (361), and (362).

(360) qiisa toppa-m
children have.children-DUB
'Have you any children?' (5.6 P6 1953:2)

(361) q'ayyaa-∅ peya-m
be.alive-INDIC ASP-DUB
'Are you about?' (5.6 P6 1953:2)

(362) mem li:hipo-m
water thirst-DUB
'Are you thirsty?' (4.4 N4 1958:8)

Dubitative *-m* may be optionally added to non-polar interrogative questions, as in (363) and (364). However, it is more common for non-polar questions to only be signalled through an interrogative pronoun. These include *peh* 'what', *papi:* 'who', *ho:n* 'when', *keh* 'where', *kheusin* 'why, how', *keone* 'how', and *hese* 'how many, how much.' (365) and (366) show non-polar questions marked only with interrogative pronouns, in contrast with (363) and (364), which include the dubitative *-m*. (367) shows a non-polar question asked with only an aspectual auxiliary acting as a main verb, while (368) shows a non-polar question asked only with an interrogative pronoun.

(363) keh hayya-m
where go-DUB
'Where are you going?' (4B 1956:49)

(364) k^{h}eonaɪ weya-m
why come-DUB
'Why did you come?' (Freeman 1953)

(365) ho:n p-ɛl hay-le:
when 1INCL-DU go-PL.HORT
'Where are we going?' (Freeman 1953)

(366) ho:n mi komoi
when 2SG be.born
'When were you born?' (Freeman 1953)

(367) hɛsɛ:-m bɛa
how.much-GENER ASP
'How many are there?' (Freeman 1953)

(368) papii'i
who
'Who is it?' (5.6 P6 1953:40)

Imperative commands are conditioned by a zero-morpheme imperative suffix, as shown in (369), (370), and (371). Of these, only (371) shows the *Xu* form most common to imperatives in Wintu.

(369) hinu:na-∅
be.careful-IMP
'Be careful!' (4.4 N4 1958:4)

(370) kenbɛʔ-∅
down.sit-IMP
'[Sit] down!' (4.4 N4 1958:5)

(371) tc'á:wu-∅
sing-IMP
'Sing!' (4B 1956:48)

Negative commands may be accomplished in Nomlaki through the addition of the possibility marker (here used in its historical negative form) *-mena* and the (somewhat mysterious) morpheme *-i*. As mentioned in Chapter 7.2, the possibility suffix *-mena* is cognate with the Wintu negative suffix *-mina*, and likely originated as a negative marker. When used alone, *-mena* now expresses possibility; however, it still obligatorily occurs in negation (Chapter 7.2) and (as seen) negative commands. The morpheme *i* is more enigmatic in usage and origin. It does not appear to have a Wintu or Patwin cognate, and occurs only in the limited available constructions negative command, as well as (possibly) with the benefactive in (93).

(372) wocu-mena i
cry-NEG PARTIC
'Don't cry.' (BW Ch. 6 1978:3)

(373) haya-mena i
go-NEG PARTIC
'Don't go.' (BW Ch. 6 1978:3)

Like imperative commands, imperative invitations are conditioned by a zero-morpheme imperative suffix (374).

(374) ʔel-bah weʔ-∅
in-eat come-IMP
'Come in and eat.' (4.4 N4 1958:15)

Imperative pleas also appear to be conditioned by a zero-morpheme imperative suffix.

(375) 'elhiwcu-∅ ni-s
help-IMP 1SG-OBJ
'Please help me.' (5.6 P6 1953:1)

Chapter 8

Conclusion

8.1 Main findings and future work

This dissertation has used archival documents to examine Nomlaki phonetics, phonology, morphology, and syntax. These areas have only been described in the literature cursorily, if at all. More than work with currently spoken languages, archival language work engages with philological concerns. As Goddard (1973) writes, philology recognizes that a linguistic analysis is a secondary (or even tertiary) product whose creation from recordings, notes, and other impressions leaves traces. These vestiges are important not only for understanding the underlying assumptions of a given analysis, but for gleaning knowledge from a source that its authors did not necessarily intend to include. All of the findings of this grammar come from pre-existing sources collected by others. Many phenomena are only briefly described, and often obliquely. In these cases especially, relying on comparative Wintu data has been essential to shedding light on the limited facts at hand.

Chapter 1 begins with situating the Nomlaki language in relation to its linguistic family and phylum. It then discusses the Nomlaki archival materials. This includes biographical information about the recorders (in the spirit of Hymes (1966)'s discussion of the importance of such knowledge for philological analysis), as well as an overview of Nomlaki synonymies. When known, information about the language consultants, including their names, dates of birth, ages at the time of recording, and place of recording, are included. This Nomlaki bibliography is, to my knowledge, currently the most extensive and up-to-date, building on Wintuan biographies by Pitkin (1962) and Lawyer (2015). Chapter 1 concludes with a discussion of the problems of using archival material for a grammatical analysis, with a focus on philological solutions.

Chapter 2 presents an overview of Nomlaki phonetics, including spectrograms and waveforms for all phoneme types. I examine the Nomlaki vowel space across stressed and unstressed conditions, elaborating on previous work that vowel pairs are cued consistently by duration, and often (but not always) by F1 and/or F2 (Björklund 2021). This is suggestive of Nomlaki moving away from the historical Proto-Wintun duration-cued system, to a mixed-

cue system more reminiscent of English tense/lax vowel pairs. An examination of Nomlaki ejectives reveals that they pattern consistently with 'Hausa-type' ejectives (Ladefoged and Maddieson 1996); as with other California languages, these stops freely vary phonetically between true ejectives and glottalized stops. I go on to examine VOT and locus equations for all stop types, finding that aspirated stops typologically fall between 'unaspirated' and 'aspirated' (Ladefoged and Maddieson 1996). Locus equation coefficients for alveolar stops pattern closest to English, suggesting that Nomlaki does not share the post-apical alveolars common to the region. Also interestingly, both bilabial and uvular stops pattern together. This is somewhat unexpected given their extremely divergent places of articulation; it suggests future work to better understand Nomlaki uvulars and how measures such as the locus equation can be refined to capture this. Finally, I also examine the spectral moments of fricatives and affricates, finding that center of gravity, skew, and kurtosis most cleanly distinguish [ɦi] from other fricatives, while results for affricates were not predictive. This is likely due to a low number of tokens. Multitaper spectra findings suggest that Nomlaki [s], [tʃ], and [tʃ'] share a similar place of articulation, perhaps mimicking the post-alveolar [s] shared by older speakers of Wintu, and the 'California s' more common in the region generally. An acoustic analysis has never been conducted for Nomlaki –or Wintu– phonetics before, making this chapter the most complete survey of Northern Wintuan phonetics to date. Future work building on the findings of this chapter will make use of the full 60-minute recording of Freeman (1953), which was not available to me until after these analyses were completed. This should expand our understanding even further.

Chapter 3 examines Nomlaki phonology, including phonotactics, syllable structure, basic phonological processes, loanwords, lexical stress, and phrasal intonation. Though Wintu and Patwin both report a strict CVC syllable structure, I cast some doubt on the phonetic reality of glottal stop insertion before word-initial vowels in Nomlaki. The absence of word-initial glottal insertion, at least phonetically, calls into question whether Nomlaki has strict CVC syllable structure, which is otherwise rigidly observed and informs other phonological rules. Resolving this tension is an avenue for future work. Chapters 2 and 3 also examine lexical stress from a phonetic and phonological perspective. Phonetically, stress is cued by more extreme vowel frontness/backness, duration, intensity, and pitch. Phonologically, it may align with the beginning, middle, or end of the syllable, without discernible difference in meaning. An examination of common intonational patterns reveals that most declarative, interrogative, and imperative sentences show a H*(L) L-L% pattern, which may be a result of the somewhat artificial elicitation environment. These patterns (and their consistency) match those observed for Patwin in Björklund (2023), and it is not always clear how lexical stress interacts with intonation. Though both pitch and intensity are associated with stress, they do not always trade off consistently: sometimes pitch alone seems to mark stress; other times, the case is reversed. In some phrases, stress appears to be signalled not by a pitch peak but by a pitch fall. These phenomena reflect an ongoing gap in our understanding of how Nomlaki stress and intonation interact.

Chapters 4-7 examine Nomlaki morphology and syntax. These chapters touch on the behavior of various Nomlaki word classes, including nouns (including common nouns, kinship

nouns, and pronouns), noun modifiers, adpositions, verbs (including auxiliary verbs), verb modifiers, and other elements such as particles. Like other Wintuan languages, Nomlaki has SOV word order and is generally head-final. I posit that Nomlaki lacks a true adjective class, instead using verbs and nouns derived from verbs. This is in contrast to the analysis of Blankinship and Wenger (1978a), and is mostly in line with Patwin, which is reported to have only a handful of true adjectives (Lawyer 2021). Pitkin never directly addresses Wintu adjectives directly, but examples in Pitkin (1984) and Pitkin (1985) suggest that its behavior is the same as Nomlaki's. I also examine nominal, pronominal, and verbal morphology. I find that Nomlaki nouns take six cases, including a possible ablative case which is not reflected in other Wintuan languages or Penutian generally. Nomlaki also participates in the unique Northern Wintuan 'particular' and 'generic' noun marking that Wintu does, though semantic usage appears to diverge. These chapters also find that Nomlaki verb structure generally conforms to that of Wintu, being primarily affixing with a small and limited set of prefixes. There are three stem types, conjugated based on verb class. Each stem type is associated with a complex of suffixes, and suffixed verbs may be reanalyzed as new stems. Morphemes which appear unique to Nomlaki, or whose behavior demonstrably differs from Wintu, include the hortatives *-le*, *-wen*, and *-du*, the unique innovation of the negative suffix *-mena* into a marker of possibility, and the still-mysterious particle *i*. Aspectual markers *be* and *bo* may mark imperfective and perfective aspect, but much of their behavior is still not understood.

8.2 On the status of Nomlaki

The distinction between a 'language' and a 'dialect' can be very porous, and is in many cases more politically than linguistically motivated (Cysouw and Good 2013). One consideration in distinguishing languages, especially within a dialect continuum, is the notion of 'heteronomy': that is, the interdependence of some language variety to an established standard. For instance, though many varieties in the Rhenish fan may be equally distant from standard Dutch or German, they are considered one or the other based on which standard variety their speakers look towards as their model or standard (Chambers and Trudgill 2012:9). Early Nomlaki documentation usually considered Wintu and Nomlaki to be one language, with Nomlaki simply a dialect among many (e.g. Powers 1877; Powell 1891). Kroeber expressed the view that Wintu, Nomlaki, and Patwin comprised three distinct groupings within the Wintuan language family, while Golla (2011:143) refers to Nomlaki as 'a distinct dialect area –or emergent language– within Northern Wintuan.' Nomlaki speakers themselves have tended to take a more particular view than linguists, viewing each variety as a standard unto itself.

In many ways, whether something should be considered a language or dialect depends on the scale at which one peers into the linguistic fractal. A common yardstick involves mutual intelligibility: two varieties which are not mutually intelligible are separate languages, while those which are mutually intelligible (ideally differing only slightly in grammar and/or vo-

cabulary) are 'dialects.' This definition is rather ambiguous for intermediate cases where two varieties are partially (and possibly asymmetrically) intelligible. Central to most definitions of 'dialect' is the isogloss, or the geographical boundary of a particular linguistic feature. Dialects are then demarcated by 'bundles of isoglosses', multiple linguistic features diverge in the same geographic location (Campbell and Mixco 2007:87). This definition also contains an ambiguous middle ground: how many isoglosses are necessary to demarcate a dialect? Indeed many isoglosses may separate what are conventionally called languages.

Dialect continua highlight the gradient nature of the isogloss problem. While neighboring language varieties are mutually intelligible, and may only differ in a few features, linguistic differences accumulate with geographic distance. Thus language varieties geographically furthest from each other show the most differences between them. The varieties at the continuum's poles may be barely mutually intelligible (if at all), and thus classed as separate languages. But what of the intermediate varieties between these extremes?

Many factors have contributed to Nomlaki being the least documented and described of the Wintuan languages. Foremost is the notion held by many throughout Nomlaki's documentary history that Nomlaki is not sufficiently distinguishable from Wintu to be a separate entity worth much documenting in its own right. There is some debate within the literature over whether dialects exist within Wintu at all, in which case Nomlaki would be completely identical to Wintu. Merriam (1919) claims Wintu dialect boundaries, while Kroeber (1925:353) expresses surprise that Wintu is so linguistically uniform given the great size of its territory. Wintu speakers interviewed in DuBois (1931) give evidence that Wintu and Nomlaki comprise a dialect continuum: a Wintu speaker from the McCloud River states that Hayfork Wintu (to the southwest) and Nomlaki (even further south) are incomprehensible. Meanwhile, a speaker from Bald Hills (just north of Nomlaki) states that Nomlaki was easy to understand 'after a while.' Kroeber (1932:355) reports that Nomlaki speakers understood speakers from Trinity County to Mt. Shasta, the northernmost extension of Wintu-speaking territory. Though Schlichter (1979) claims that all Wintu dialectal boundaries are cultural, with little linguistic difference between them, Whistler (1980) finds this analysis too pat to encompass the facts. Nomlaki speaker accounts in DuBois (1931) support the interpretation that Nomlaki and Wintu form a dialect continuum.

It is indeed true that both language varieties agree in almost all major structural features. They are both SOV, generally head-final, and agglutinative. Verbs consist of three stem types and multiple conjugational classes whose inflection shows classic Penutian stem ablaut. Both languages share a core inventory of verbal inflection, including the causative *-ma*, stative *-ha*, reflexive *-na*, benefactive *-paq*, plural (Nomlaki)/future (Wintu) hortative *-le*, first-person agreement marker *-da*, second-person agreement marker *-(s)ken*, dubitative *-m*, possibility (Nomlaki)/negative marker (Wintu) *-mena*, and completive *-k*. Noun modification of the kind often achieved cross-linguistically using adjectives is accomplished through verbal modification.

Nominally, Wintu and Nomlaki share the unique Northern Wintuan semantic particular and generic markers *-t* and *-s*, as well as a special class of kinship nouns that are inalienably possessed and take their own class of possessive markers. Both languages have unmarked

subjective case, as well as marked objective, possessive, instrumental, and locative case (though only Nomlaki possibly has ablative; the instrumental case also takes different forms). Both pronominal systems mark three persons, three numbers (singular, plural, dual), and clusivity in the first person.

However, the similarities between Nomlaki and Wintu are not total, and there exist several phonetic, morphological, syntactic, and lexical isoglosses that separate the two. Because Nomlaki documentation is quite fragmentary, the fact that a construction is not attested in the Nomlaki corpus does not necessarily mean that it is actually absent from the language. For this reason, this discussion will focus on *positive* examples of differences between Nomlaki and Wintu (i.e. an attested feature that Nomlaki has and Wintu lacks) rather than *negative* examples (i.e. an attested feature that Wintu has and Nomlaki lacks). Because Wintu is more thoroughly documented than Nomlaki, it is more likely that a feature not attested in Wintu is actually absent from that language, than vice versa.

Phonetically, Nomlaki is distinguished from its sister languages by its loss of the Proto-Wintun **r*, which is maintained in Wintu and Patwin (Shepherd 2005:5–6). In almost all cases, **r* becomes /j/; it is deleted intervocalically. Examples of these changes are shown in Table 8.1.

Morphologically, Nomlaki and Wintu display some differences. Both share particular and generic noun marking, which may be a system unique to Northern Wintuan. In Wintu, there exist several pairs of related nouns achieved by marking a single root with either particular or generic suffixation. These include eye/face, toe/foot, and finger/hand. Most of these pairs are separate words in Nomlaki: *ɬuwi* 'eye' (BW Ch. 3 1978:3)/*q'apa* 'face' (5.6 P6 1953:14), *tophme* 'toe'/*koli* 'foot' (5.6 P6 1953:14), *k'a:t* 'fingernail; toenail'/*sem* 'hand' (itself a generic of *se*; 5.6 P6 1953:14) all clearly derive from separate roots.

Wintu and Nomlaki case marking also differs slightly. While both share (unmarked) subject, object, genitive (for Nomlaki this is only attested in pronominals), instrumental, and locative case, forms differ for the instrumental case, and it is not clear that they are cognate: compare Nomlaki *-(t)in* to Wintu *-r*. In addition, Nomlaki shows evidence of an ablative case marker *-wa*. If so, this may be a Nomlaki innovation, as this is unusual for Penutian (Dixon and Kroeber 1913), and a cognate is not apparent in either Wintu or Patwin.

The Nomlaki hortative system appears more developed than the Wintu. Both language varieties have the hortative suffix *-le*, which in Wintu is used to indicate non-volitional future events, ability, and likelihood (Pitkin 1984:117). In Nomlaki, it is used to mark plural hortative mood and ability. Unlike Wintu *-le*, Nomlaki *-le* can be (and most often is) used for volitional events: *haile* 'Let's go!' (BW Ch. 6 1978:3). However, though Pitkin (1984:117) claims that Wintu *-le* cannot be used volitionally, he seems to include volitional examples such as *harle* 'Let's go'. The Nomlaki dual hortative *-wen* appears cognate to the Wintu suffix *-wen*. Pitkin (1985:692) does not give a defined function for this morpheme, defining it as 'Shall I? I will. I'm going to'. This seems to allude to it being first-person volitional marking of some kind. However, person agreement is not alluded to (for either Wintu *-le* or *-wen*). The Nomlaki usage of *-wen* to indicate dual hortative marking, in strict complementary

Proto-Wintun	Nomlaki	Wintu
**moroq-* 'move'	*mo:q-* 'move'[1]	*moroq-* 'move, be alive'
**xurxur* 'sugar'	*kUyKut* 'sugar'[2]	*xurxur* 'pine sugar'
**wer-* 'come'	*wey-* 'come'[2]	*wer-* 'come'
**hur-* 'sew'	*huy-* 'sew'[2]	*hur-* 'sew'
**nor* 'south'	*nuy* 'south'[2]	*nor* 'south'
**nur* 'salmon'	*nuu(t)* 'salmon'[2]	*nur* 'salmon'

Table 8.1: Reflexes of Proto-Wintun **r*, in both Nomlaki and Wintu. Proto-Wintun vocabulary is taken from Shepherd (2005); Wintu data is taken from Pitkin (1985). Nomlaki sources marked with [1] are from 5.6 P6 (1953c), those marked with [2] are from Blankinship and Wenger (1978a).

distribution with *-le* as plural hortative marking, seems to be a Nomlaki innovation. A third hortative *-du* is also attested once in Nomlaki, in the directional construction *olkudu* 'Get up' (BW Ch. 6 1978:3). There is not a clear Wintu cognate for this, though it could possibly be related to the Wintu hortative/optative *-di*. Nomlaki *-le* and *-wen* show innovative behavior with respect to their Wintu counterparts, while *-du* may be entirely a Nomlaki innovation.

The Nomlaki suffix *-mena* also shows behavior which is not attested in its Wintu counterpart *-mina*. In both languages, negation is achieved by preceding the verb phrase with the negative auxiliary verb *elewa* and suffixing the verb with *-mena/-mina*. This in effect 'brackets' the negated phrase between *elewa* and *-mena*, the latter of which is syntactically dependent on the former: *pi ElEwa baamena* 'She didn't eat' (BW Ch. 5 1978:2). This general construction is also cognate to Patwin negative auxiliary *ʔele:* and negative suffix *-mele:* (Lawyer 2021:246). That this behavior is shared across all three Wintuan languages suggests that *-mena/-mina* originated in Proto-Wintun as a negative morpheme. This is further supported by Nomlaki negative commands, which involve attaching the suffix *-mena* to the verb to be negated, followed by the particle *i*: *wocumena i* 'Don't cry' (BW Ch. 6 1978:3). This negative command construction is unique to Nomlaki as well; Wintu negative

commands may be constructed using only the negative *-mina*, as in *xebumina* 'Don't dig!' (Pitkin 1984:715), and possibly also the prohibitive preverb *be:di*: *be:di hu:mus war bamina* 'Don't eat any fat' (Pitkin 1984:121). The particle *i*, which appears in Nomlaki negative commands, does not have a clear Wintu cognate. Nomlaki *-mena* also appears to have independently developed a unique usage as a marker of possibility. Used alone in Wintu and Patwin, *-mina* still has a negative reading. In Nomlaki, *-mena* suffixed alone to a verb indicates possibility: *ni baamena* 'I might eat' (BW Ch. 4 1978:8).

While both Wintu and Nomlaki have reflexes of the dubitative suffix *-m*, this term more strictly describes the suffix's behavior in Wintu. In Wintu, *-m* indicates that a statement is doubtful or dubious in some way. It is contrasted with the non-modal interrogative marker *-i:*, dubbed the 'impersonal interrogative' by Pitkin (1984:124). On the other hand, Nomlaki *-m* can be used for questions which do not seem to carry strict dubitative mood, e.g. *khewsin henam?* 'How do you make it?' (5.6 P6 1953:1). Additionally, Wintu *-m* may be used to indicate dubitative mood with statements, while Nomlaki *-m* is only observed marking questions.

Evidentials are attested in both Wintu and Patwin (Golla 2007:146). In Wintu, these include the diachronic visual evidential (now imperfective marker) *bEy*, the nonvisual evidential *-nt^{h}ere*, the hearsay suffix *-kele*, the inferential evidential *-re:*, and the experiential evidential *ʔel*. The existing Nomlaki corpus does not show evidence of these or other evidentials. For instance, Wintu non-visual sensory evidential *-nt^{h}ere* is used for the statement 'I have a headache' (376), while no such morphology is used for the Nomlaki 'My head hurts' (377).

(376) p^{h}oyoq kuya:-bi-nt^{h}i-da
head hurt-COP-NONVIS.SENSORY.EVID-1
'I have a headache.' (Pitkin 1984:131)

(377) phooq kow-ta
head hurt-1
'My head hurts.' (5.6 P6 1953:18)

In addition to phonological and morphological differences, Wintu and Nomlaki show several lexical differences. Many of these lexical differences are in core vocabulary domains, such as terms for parts of the body, numbers, and nature. Table 8.2 shows a sample of lexical differences between the two varieties. This table does not mean to imply that Nomlaki does not have cognates for these Wintu words, or vice versa. Rather, Table 8.2 illustrates differences in lexical usage between the two language varieties.

In sum, we see several differences in phonology, morphology, and lexicon between Nomlaki and Wintu. Phonologically, Nomlaki completely lacks Proto-Wintun **r*, which Wintu retains. While Nomlaki shares particular and generic marking with Wintu, these suffixes do not derive pairs of different lexical items, such as eye/face, hand/arm, or foot/leg. Morphologically, Nomlaki differs from Wintu in the potential presence of the ablative case marker *-wa*,

Nomlaki	Wintu
tʃumɛɬ 'seven'[1]	*lolokit* 'seven'
sema 'ten' [hand] [1]	*tiqeles* 'ten'
c'antɬawi 'nine ('half plus four)'[1]	*k'ete:m ʔele:s* 'nine ([ten] minus one)'
ćittiq 'heart'[1]	p^{h}u:r 'heart'
c'aay 'willow'[1]	*ton* 'willow'
kalal 'flower'[2]	*lul* 'flower'
bolbolóq 'butterfly'[3]	*say* 'butterfly'
thuuku 'sun, day, watch'[1]	*sas* 'sun, day, clock'
caha 'creek'[2]	*waqat* 'creek'
teppay 'early'[1]	*ho:n* 'early' (cf. Nomlaki *ho:n* 'when, long ago')

Table 8.2: Lexical differences between Nomlaki and Wintu. Wintu sources are from Pitkin (1985); Nomlaki sources marked with [1] are from Swadesh (1953c), those marked with [2] are from Blankinship and Wenger (1978a); those marked with [3] are from Pitkin (1958).

semantics of *-le*, dual/plural hortative distinction with *-wen/-le*, possibilitative use of *-mena*, use of the particle *i* in negative commands, use of dubitative *-m* in non-modal/non-doubtful questions, and a lack of evidentials. Nomlaki and Wintu additionally show differences in lexical usage, including in basic domains such as body parts, numbers, and nature.

The observed differences between Wintu and Nomlaki seem certainly sufficient to call them separate language varieties, or 'dialects.' Their degree of difference recalls the Scandinavian languages, another archetypal dialect continuum whose status as separate languages is largely political. In the case of Northern Wintuan, this consideration is less helpful, as political and cultural boundaries were never (and still are not) coextensive with language boundaries. Rather, Wintuan people (and native California people more generally) identified

with smaller polities (Kroeber 1925). Nomlaki speakers thus did not think of themselves as a larger, cohesive political unit in opposition to Wintu speakers or any other language group.

However, in modern times, many Nomlaki people –while still identifying in traditional ways– also regard all Nomlaki heritage speakers as members of a cultural group distinct from Wintu and other languages. This is evidenced, for instance, in ongoing dialogue during Nomlaki language revitalization efforts regarding how to (or whether to) integrate vocabulary and grammar from Wintu in the case of documentary gaps. In my own experience working with both Nomlaki and Wintu language revitalization groups, both regard themselves as separate in key ways and wish to preserve their particular ways of speaking and thinking.

It was my goal from the outset of this thesis to demonstrate that despite its fragmentary documentation, Nomlaki is a separate enough entity from Wintu to merit independent study. Differences between these language varieties demonstrably exist, and more will likely become apparent with further study. Whether these merit calling Nomlaki a 'distinct dialect area', 'emergent language', or simply 'language' may never be satisfactorily resolved, because these terms have never been satisfactorily defined. As modern Nomlaki and Wintu people regard their heritage languages as important sources of pride and distinction, there is as much reason to distinguish Nomlaki as a language separate to Wintu as there is reason to distinguish the Scandinavian, Romance, or South Slavic languages. Regardless of the precise nomenclature, it is my hope that this grammar can be a small stepping stone towards Nomlaki's flourishing future.

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