PROSODIC PHRASING IN NXAʔAMXCÍN (SALISH) DECLARATIVE CLAUSES

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1. INTRODUCTION

This paper reports results from a pilot study of the phonetic correlates of declarative clauses from a narrative in Nxaʔamxcín (Salish). There is a small but growing body of research describing the properties of prosodic phrasing in Salish languages. While seminal research on prosodic phrasing in English and Japanese is based on targeted elicitations [9], [11], work on prosody in endangered languages often comes from varying sources. In the case of Salish languages some of this research is based on examples elicited to answer specific phonetic questions associated with intonation and phasing [5], [6], [7], some is based on examples that were elicited for syntactic rather than prosodic purposes [4], some on conversational data [7], and some on analysis of connected speech found in a narrative text [1], [2], [3]. In addition, there are differences in the types of correlates examined for different phrase/clause types in Salish: e.g., while [3] uses pauses as cues in narratives, [7] does not consider pauses in elicited sentences. Thjs pilot study examines the phonetic correlates of prosodic phrases in Nxaʔamxcín, an Interior Salish language whose prosodic phrasing has not been studied previously, to determine the extent to which data from this language is consistent with results from other Salish languages. Specifically, we examine whether i) lexical prominence is associated with a pitch peak and ii) the boundaries of prosodic phrases are correlated with boundary tones, pitch resets and pauses.

2. METHOD

2.1 Materials

The analysis was conducted on a 30-minute narrative xáʕxaʕ stámkaʔs "Crow's Daughter" told by a fluent storyteller in her 70s. It was recorded in 1990 on a Marantz 430 cassette recorder, using an AKG D320B unidirectional microphone, and digitized in 2002. The narrative consists of approximately 500 lines of text, each representing approximately one clause.

To make the data directly comparable to that used in earlier studies, two phrase-types were initially selected for analysis: the first 13 random phrases of the text, uncontrolled for word order, and predicate-initial (V-initial) declarative clauses, reflecting the most common non-focus word order [1,12]. The text contained only 13 such clauses (including 2 from the first 13), all with an overt Subject and/or Object. The scope was then widened to include all kʷaʔ-initial

phrases, whose form differs minimally from V-initial sentences. This resulted in an additional 14 phrases, 9 in which kʷaʔ is a conjunction, 4 where its function is that of a discourse linking particle and one where it is ambiguous. 7 phrases were excluded due to mistranscriptions, misspeaks or rhetorical lengthening. The total number of phrases analysed was 32.

2.2 Acoustical analysis procedure

The data were analyzed using [10] on a Macbook Pro computer. The measurements made are comparable to those in the earlier work on Salish languages cited above. The maximum F0 of stressed, phrase-initial and -final vowels of the target phrase, as well as the final vowel of the preceding phrase were measured. If pitch was higher than that of either surrounding vowel, it was considered a pitch peak. Low tone was assigned to initial/final vowels if the pitch was i) lower than the following or preceding vowel, respectively. Pitch resets were calculated by subtracting the pitch of a phrase-initial vowel from that of the final vowel of the preceding phrase. In addition, the length of pauses before each phrase was calculated. As this is a pilot study no statistical analyses were performed.

3. RESULTS

73% of primary-stress vowels are correlated with pitch peaks, as seen in Figure 1:
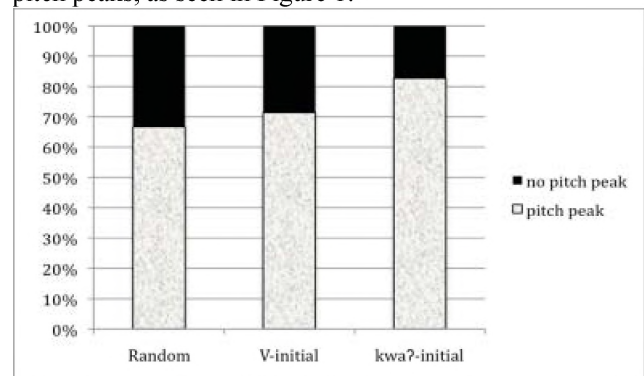

Figure 1: Percentage of tokens where primary stress was correlated with a pitch peak.

Phrase boundaries were correlated with a L% initial and final tone, provided the boundary vowels were not stressed. 89% of phrases with unstressed boundary vowels were associated with a L%, while 91% of phrases with a stressed boundary vowel showed no rise or fall. Verb-initial phrases had predominantly initial stressed vowels, while kʷaʔ-initial phrases were rarely initially-stressed.
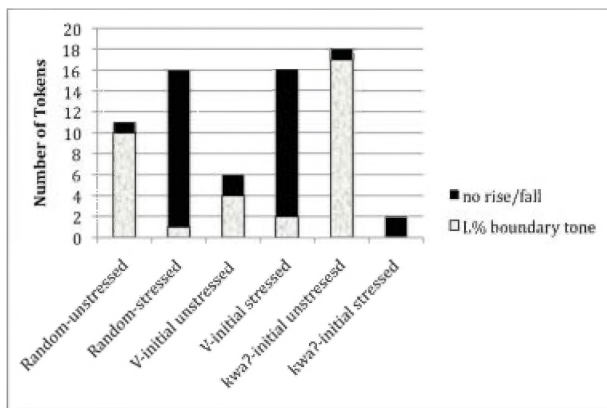
Figure 2: Boundary tones by phrase type and vowel type.

Pitch resets at boundaries occur 69% of the time in random phrases, 50% of the time in V(S)(O) structures, and never in structures beginning with k^waʔ.
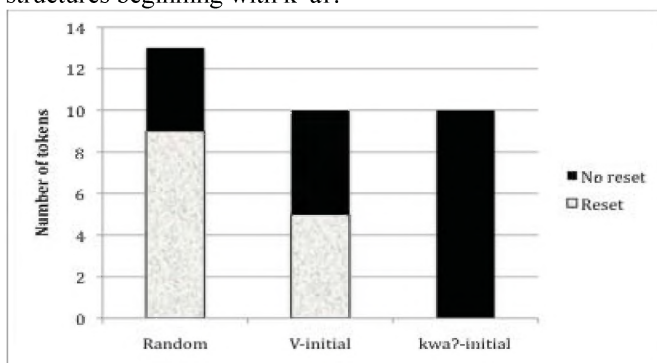

Figure 3: Pitch resets by phrase type

In V(S)(O) structures, pauses delimit phrases 70% of the time. k^waʔ-conjunction cases have no preceding pause, but k^waʔ-discourse particle cases do. The pauses in the k^waʔ-initial phrases in Fig. 4 represent only the discourse particles.
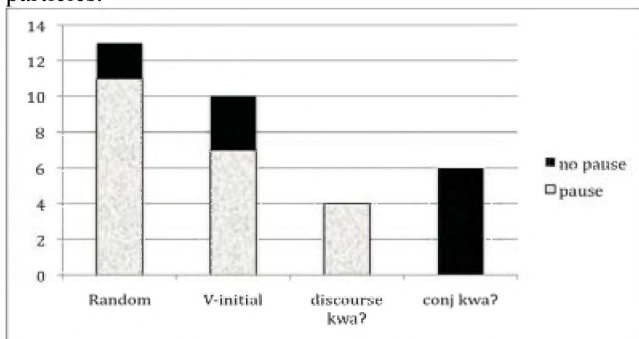

Figure 4: Tokens preceded by pauses by phrase-type

4. DISCUSSION

These results are partly consistent with observations made for other Salish languages. In Nxaʔamxcín, higher pitch is generally correlated with primary lexical stress, as in Nlhekepmxcin [7]. Declarative clauses are delimited by boundary tones, as is the case in St'át'imcets [5]. However, pitch resets are not consistent correlates of prosodic units in Nxaʔamxcín, unlike in Lushootseed [3] and Okanagan [1]. Even in phrases with

initial stress (e.g. V-initial) where a pitch reset might be predicted, they occurred only 50% of the time. Lastly, pauses do not reliably delimit V(S)(O) phrases, which is not consistent with results found for Lushootseed and SENĆOTEN [3, 4, 8]. This result is surprising, given that pauses did delimit phrases where k^waʔ acted as a discourse particle (and thus marked a new phrase), as opposed to when it functioned as a conjunction.

Our results, while preliminary are both comparable and vary systematically from the results found for other Salish languages. This suggests that while correlates for prosodic phrasing are selected from a universal set, the implementation is language-specific. A final point raised by our pilot study is the extent to which our results are directly comparable to those from studies using other types of data (elicited, conversational or narrative). The fact that our analysis produced comparable results to data elicited using other methods suggests that the source of the data may not have a strong effect on results. This would be an encouraging result for those communities with limited audio recordings.

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