PHONETIC FIELDWORK IN THE PACIFIC NORTHWEST

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ABSTRACT

This paper focuses on how to design and conduct phonetic experiments with speakers of Pacific Northwest languages of North America, focusing on two main topics: 1) challenges related to eliciting data and 2) ethical considerations.

Keywords: Pacific Northwest languages, experimental design, data elicitation challenges, ethical considerations

1. INTRODUCTION

Traditional phonetic fieldwork serves to document the phonetic details of languages which are not easily studied in a laboratory setting. Whatever the specific goals of individual phoneticians, the general process is the same: 1) design an experiment and get ethics approval for the research, 2) go to the field, find speakers, and make recordings, 3) analyze the data, and 4) make appropriate theoretical claims based on the findings.

Working with speakers of Indigenous languages often adds a level of complexity to this process, because of a number of factors that fall into two broad topics: challenges in eliciting data and ethical considerations. In this paper, I explore these topics, focusing specifically on the languages of the Pacific Northwest of North America. Section 2 presents a brief overview of the languages in question. Section 3 focuses on some of the challenges in eliciting data: speaker numbers and characteristics (3.1) and available materials (3.2), and suggests ways to overcome these challenges (3.3). Section 4 discusses ethical considerations. Section 5 concludes with a summary of how to conduct phonetic fieldwork in a way that is ethically sound and feasible from the perspective of experimental design.

2. LINGUISTIC BACKGROUND

The languages of North America are immensely diverse, genetically and structurally. According to Mithun [15], nearly 300 distinct, mutually unintelligible languages existed north of the Rio Grande before European arrival, falling into approximately 50 language families. While this number has decreased through language shift resulting from colonization, phoneticians have a great deal to learn from speakers of North American languages in terms of understanding language-specific and universal properties of phonetic and, more generally, linguistic structure. This paper focuses on the languages spoken in the Pacific Northwest, more specifically in British Columbia (BC), Canada. Approximately 60% of Canada's First Nations languages are spoken in BC, where approximately 5 language families and 43 languages are spoken [1, 10]. While the majority of these languages are highly endangered, intense language revitalization efforts are currently underway in many communities, offering hope that the languages will be passed on to future generations.

3. DATA ELLICITATION CHALLENGES

3.1. Speaker numbers and characteristics

Accessing speakers in most cases involves first building a relationship with the community involved (see section 4 below). Assuming this has been done, the first, obvious challenge in eliciting data in the North American context is number of speakers. The languages of the Pacific Northwest are among the most endangered of the world: many are spoken by fewer than 10-20 elders. For example, the three languages I have worked on are the Lheidli dialect of Dakelh (Athabaskan), with only 2 remaining fluent speakers, the Upper dialect of St'át'imcets (Northern Interior Salish), with approximately 100 speakers, and the SENĆOŦEN dialect of North Straits Salish (Central Salish), with under 20 speakers. Even if one were to work with 100% of the speakers of such languages, the number would still be very small.

Working with speakers of Pacific Northwest languages also involves age-related challenges. For example, elderly speakers often have an overall creaky voice quality, which can mask the acoustic cues of phonemic laryngealization. Salish and Wakashan languages are rare cross-linguistically in

contrasting plain and laryngealized resonants [13]. These sounds are interesting from the perspective of phonetic variability because they vary along two dimensions: the realization of the laryngeal gesture (full stop vs. creakiness) and the timing of the laryngeal gesture relative to the oral gesture(s) [3, 4]. Characterizing the phonetic correlates of these sounds it is tricky however because these correlates are often masked by speakers' overall creaky voice quality.

Finally, designing tasks appropriate for work with speakers of First Nations languages requires a certain amount of creativity. Typically, both speech production and perception studies involve reading tasks. However, many elders have declining eye sight; others are not comfortable reading in the indigenous language(s) that they speak. As a result, it can be inappropriate to use a reading task to elicit data. A number of years ago I undertook a production study of rhythm in Athabaskan languages [2] based on the work of Ramus, et al. [16]. A limitation of this study was the fact that I could not replicate Ramus, et al.'s methodology, which involved a reading task. For this reason I could not reliably place Athabaskan languages along Ramus, et al.'s rhythm continuum.

Perception studies in particular require very different methodologies from those used in standard phonetic research; it is for this reason that they are very rarely undertaken with speakers of Pacific Northwest languages (though see [9] and [14] for examples). Perception tasks are particularly problematic if Response Times (RTs) are needed, because listeners are not comfortable making judgments on stimuli quickly enough to obtain RTs that can be interpreted using tests that are standard in the Speech Perception literature. In addition, perception studies in which listeners are asked to make judgments on words they hear are tricky because the listeners likely know the speakers who produced the words, and there is a danger of putting them in an uncomfortable position if they think they are evaluating another speaker's speech.

3.2. Elicitation materials

A funny thing about phoneticians is that they can often conduct their research without knowing much at all about the morphological and syntactic structure of the language on which they work. This is not the case in research with Pacific Northwest languages, where phonetic work cannot be carried out independently from learning about the language as a whole. This is partly because phonetic documentation is only one aspect of language revitalization, with which field phoneticians are most often involved (see section 4 below). This also has to do with how elicitation materials are complied. Phoneticians interested in a particular sound will traditionally create lists of nonsense or real words designed to contrast the sound with other, similar ones. For example if one is interested in how the laryngealized sonorant /m'/ is pronounced in St'át'imcets, one might want to compile a list contrasting /m/ and /m'/ in an *a_a* context, controlling for segmental, syllabic, and stress positions. In English, this would be a fairly straight-forward process: the average university student – a typical participant in phonetic studies – is comfortable pronouncing nonsense words as long as they are phonotactically viable; in addition, English has many minimal and near-minimal pairs if one prefers using real words (e.g. *a* ***m****at* vs. *a* ***b****at* vs. *a* ***p****at*, and so on).

In the languages of the Pacific Northwest, the process requires more subtlety. For one thing, in my experience, speakers are not comfortable pronouncing nonsense words. A few years ago, in an attempt to characterize the phonetic details of laryngealized resonants in St'át'imcets (like /m'/ mentioned above), I asked several speakers if they could pronounce the relevant sounds in *a_a* context. The short answer was 'no'; the sounds had to be embedded in words familiar to speakers. I suspect the same would hold in other Pacific Northwest languages.

Not only are nonsense words *out*, minimal pairs are often very hard to come by. In the languages of the Pacific Northwest, words are morphologically complex, and include many co-occurrence restrictions among component morphemes. Consequently, words are relatively long, and minimal pairs are rare. Taking St'át'imcets laryngealized resonants as an example again, words differing only in whether they contain a plain vs. a laryngealized resonant are essentially non-existent: a single minimal pair was found, and this one only occurring in the Lower St'át'imcets dialect: *az* (a form of negation) vs. *az'* ('to buy') (H. Davis, p.c.). The rarity of minimal pairs makes comparing sounds in well-controlled environments challenging.

Putting together elicitation lists often involves a combination of leafing through printed dictionaries (although electronic databases are starting to be more common) and constructing forms based on

morphological concatenation, which requires substantial knowledge of the language. The advantage of this process is that it can be done collaboratively with fluent speakers. This leads to a more equal partnership between university-based researchers and community-based language experts. It also often leads to forms which have not yet been documented, and more generally to new and exciting research directions. The disadvantage is that not all speakers are familiar with the same forms, which can lead to recording lists tailored to individual speakers, and consequently to speaker-specific data.

Given how elicitation materials are compiled, what is the best way to design and conduct research with speakers of Pacific Northwest languages? In my experience, the process involves four steps: 1) creation of an elicitation list; 2) verification of the list with each speaker; 3) creation of a revised elicitation list for each speaker; 4) recording. This process is best done over two or more days during fieldwork, to avoid fatigue both on the part of the researcher and the speakers.

3.3. Data elicitation - Implications

Summarizing so far, a number of factors involved in eliciting phonetic data make research with speakers of Pacific Northwest languages relatively complex. What can we do about this issue? Assuming we are up for the challenge, we must adjust our research questions, methodologies, and analysis techniques appropriately. Ways to design research questions in collaboration with language experts are discussed in section 4 below. In terms of the kinds of questions phoneticians are interested in, ones that can only be addressed using large scale studies are *out*; ones that can be addressed using small scale studies are *in*. Large-scale studies tend to be used to answer questions about broad, invariant phonetic patterns (e.g. universal articulatory patterns), while small-scale studies can be used to answer questions about variable patterns (e.g. speaker-specific articulatory patterns). Fortunately, research highlighting phonetic variability is currently very popular, because of its implications for how phonetic and phonological structure is encoded in the grammar. As an example from the Pacific Northwest, a recent study of /qi/ and /iq/ in SENĆOŦEN revealed that different speakers employ different strategies for pronouncing these articulatorily difficult sequences, and that even individual speakers vary in the strategies they use [5]. The implication is that, if these articulatory strategies are specified in the grammar at all, 1) they are specified on an individual basis and 2) they serve as "guidelines" rather than strict rules of phonetic implementation.

In terms of research methodologies, particular attention must be paid in designing the task required of speakers. Tasks relying on fluency in reading are *out*, as are tasks relying on subtle differences in RTs, for example (for perception studies). Tasks that are *in* are ones with which speakers are comfortable, i.e. ones which allow them to produce or perceive speech in a familiar way. Many innovative methodologies for eliciting relatively naturalistic speech have come out of recent work on Pacific Northwest languages by researchers interested in prosody, e.g. Caldecott [7] and Koch [12]. On the perception side, Lyon [14] uses a creative methodology to mimic minimal pairs in which he has speakers listen to partial words and fill them in based on what they hear. These methodologies show that it is possible, with a little imagination, to elicit the same kinds of data as are used in the wider field of phonetic science. A useful research project would be to take a widely spoken language like English and elicit the same data using a range of methodologies. This would allow us to determine to what extent data elicited in fieldwork on Indigenous languages are comparable to those elicited using more standard methodologies.

Finally, in terms of data analysis, it is crucial to recognize that studies with one or two speakers are fundamentally different from ones with 20-30 speakers. With large and relatively homogeneous pools of participants, individual differences are most often washed out; this is not the case with small and heterogeneous groups of participants. The Pacific Northwest is home to many different languages and dialects within a relatively small geographical area. As a result, speakers vary a lot in their linguistic background, based on where they grew up and where their family was from. For this reason, studies with speakers of Pacific Northwest languages are perhaps best treated as sets of case studies. Alternatively, a statistical test which holds a lot of promise in this kind of situation is multiple regression, which allows researchers to determine which of any number of factors influence the data elicited, including speaker-specific traits such as linguistic background, age, etc.

4. ETHICAL CONSIDERATIONS

Perhaps the most important thing speakers of Pacific Northwest languages have taught us is that it is essential to take ethical concerns into consideration at every step of the research process. By this I do not mean obtaining *university-based* ethics approval, I mean obtaining *community-based* ethics approval. Some communities in the Pacific Northwest have created Memoranda of Understanding (MoUs) [17], which lay out the ways in which research should be conducted within their community. Whether or not official documents exist, it is the researcher's responsibility to ensure that projects are conducted in a way that is respectful of the community's wishes. One way to do this is to design research questions in partnership with the community involved [8]. This can lead both academic and community-based researchers in new and exciting directions. Another way to do this is to design research methodologies so that the data acquired are useful both for academic research and for language revitalization. As an example, we are in the initial stages of a project funded by the Jacobs Research Fund [11] and conceived in collaboration with language-speaking elders to hold regular "SENĆOŦEN Coffee House" sessions at which elders and other interested community members can come together to be immersed in the SENĆOŦEN language. The coffee house sessions will be recorded and used for linguistic analysis. They will also serve multiple purposes related to language revitalization: immersion opportunities for language learners; transcription/translation training for community members; and creation of a conversational speech database for archival purposes.

5. CONCLUSION

If the time is taken to conduct phonetic fieldwork in an experimentally and ethically sound way, it has the potential to shed enormous light on the field of phonetic sciences, serve the needs of the language-speaking communities involved, and build respectful and empowering relationships between academic and indigenous communities. As a final example, we have recently begun using lingual ultrasound to explore the articulation of difficult sound sequences in SENĆOŦEN [6]. This work has had a very positive impact on both academic and indigenous communities: ultrasound is a wonderful tool for visualizing how sounds are produced, and it is much more accessible and fun for community members than many other tools used in phonetic fieldwork. In our case, recording sessions have always been social and entertaining events, connecting linguists, elders, and language learners, as we all learn together about how speech sounds are produced.

6. REFERENCES

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