Brook Danielle Lillehaugen, Allyson Stronach, and Flora Berklein (Haverford College)

Towards understanding the phonology of Colonial Valley Zapotec: methods & early results

The Zapotec language family (Otomanguean) has a long history of alphabetic writing; the earliest alphabetic text in a Central Zapotec language is a will written by a Zapotec-speaking scribe that dates to 1545 (Oudijk 2008). There are approximately 400 such native-speaker written documents in Colonial Valley Zapotec (CVZ) (such as the one shown in Figure 1) in addition to materials produced under the auspices of the Catholic Church, including a dictionary (Córdova 1578b), a grammar (Córdova 1578a), and a doctrine of the Catholic Faith (Feria 1567).
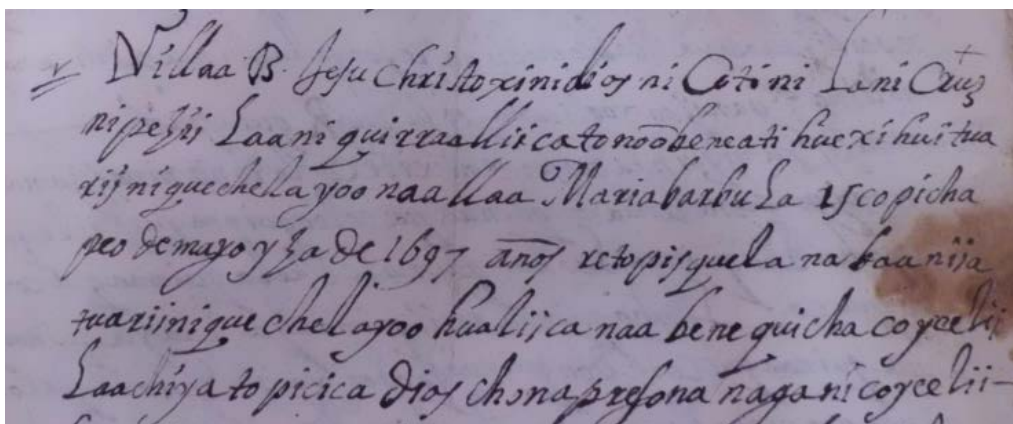

Figure 1. The first few lines of the testament of Maria Barbula
written in San Pedro el Alto, Oaxaca, Mexico, in 1697 (*AGN-Tierras 310, Exp 2, 62r-63r*)

This CVZ corpus is not widely used among (even Zapotec) scholars and most of the work that does exist is morpho-syntactic in nature, save for a few exceptions: Broadwell (2010, 2013) and Smith Stark (e.g. 2003). The non-standard and inconsistent writing conventions make any type of phonological analysis challenging. Words can be spelled in different ways across the corpus and within a single document. In particular, fortis/lenis distinctions and suprasegmental features of vowels (including tone, stress, and phonation) seem difficult to recover from the spelling conventions. For example, 'brother (of a male)' is *behts* in San Lucas Quiaviní Zapotec (SLQZ) (1a) and *bi'chi'* in Isthmus Zapotec (IZ) (1b), both modern Central Zapotec languages. (1c) shows the orthographic forms of the cognate in our CVZ database. Note the variation in spelling: the first consonant is spelled <b> and <p>, the first vowel is written with and without a grave accent, the final vowel is spelled as <e>, <ee>, and <i>. Are the spelling variations phonetically or phonologically meaningful?

1. a. SLQZ *behts* (Munro & Lopez, et al. 1999)   'brother (of a male)'
   b. IZ   *bi'chi'* (Pickett 2007)
   c. CVZ   *beche / bechi / bechee / pèche / peche*

Smith Stark (2003) examined such spelling patterns within one text—Córdova's *Vocabulario* (1578b)—and notes that fortis stops are written with letters representing voiceless sounds in Spanish and lenis stops may be written with letters representing either voiced or voiceless sounds. This pattern does not happen to hold in the native speaker wills, however—there are fortis sounds written with letters that correspond to voiced sounds. Nevertheless, it encouraged us to explore the possibility of finding statistical correlations between spelling choices and phonological features across the CVZ corpus.

In this paper we present both our method in exploring the phonology of CVZ through the writing conventions used in these early alphabetic texts as well as our results showing that there are statistically significant patterns in the orthographic representations of certain phonological features in the CVZ texts, particular in regards to stress. For example, in one CVZ testament, 83% of the orthographic double vowels correspond with vowels that are stressed in cognate words in San Lucas Quiaviní Zapotec, while only 50% of the orthography single vowels did. Double vowels in this particular text, then, corresponded with stressed vowel in modern cognate languages at a rate significantly higher than chance ($p < 0.0001$).

While any particular instance of a word may not be useful in understanding the pronunciation of that word in CVZ, such data suggests that comparing all the ways a word is spelled in the corpus and the relative frequencies of each spelling may, in fact, be fruitful. Such data not only can contribute to our understanding of the phonology of CVZ, but to the phonological development of the Central Zapotec languages and the internal classification of this branch of the family. In addition, understanding how CVZ was likely pronounced may aide in the decipherment of the logophonic script in the Later Oaxacan scribal tradition (Urcid 2011). Moreover, the methodology used to obtain these results may be applied to other archival corpora of this type, opening possibilities of doing phonological work in this manner in other Mesoamerican languages and beyond.

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